Assessment of the Impact of Business Development Improvements around Nautical Tourism

Final report

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Abstract

Nautical tourism is a subsector of coastal and maritime tourism, which is promoted as an important source of job creation and growth in the Blue Economy. The purpose of the study was to identify issues affecting the nautical tourism sector that could benefit from action at EU level, specify options for such interventions and assess their likely impacts. Informed by interviews and a literature review, the study identified a number of market and regulatory failures which are inhibiting access to nautical tourism, affecting the sector's economic performance, and having a negative impact on the environment. The study found problems that could benefit from EU action relating to: professional skipper qualifications, private skipper qualifications, on-board safety equipment, marinas and boating development, combined nautical and coastal tourism products and end of life boats. An impact assessment was conducted on a set of shortlisted options and the six best interventions (one in each topic area) were identified based on their effectiveness and efficiency.

Résumé

Le tourisme nautique forme un sous-secteur du tourisme côtier et maritime, lequel est présenté comme une importante source de croissance et de création d'emplois dans l'Economie Bleue. Cette étude avait pour objectif d'identifier les problèmes auxquels le secteur du tourisme nautique fait face qui pourraient se résorber grâce à des mesures prises à l'échelon de l'UE, de préciser les différentes interventions envisageables et d'évaluer leurs incidences probables. S'appuyant sur des entretiens et une analyse bibliographique, l'étude a repéré un certain nombre de défaillances du marché et de la règlementation, qui freinent l'accès au tourisme nautique, minent les performances économiques du secteur et nuisent à l'environnement. L'étude a identifié des problèmes pouvant être traités grâce à des actions de l'UE dans les domaines suivants: qualifications des skippers professionnels et amateurs, équipements de sécurité à bord, développement des ports et de la navigation de plaisance, produits associés du tourisme nautique et côtier, et la fin de vie des navires. Une évaluation d'impact a été réalisée sur une série de mesures présélectionnées, et les six meilleures interventions (une par domaine thématique) ont été identifiées au regard de leur efficience et de leur efficacité.

Executive summary

Introduction

In its 2012 Communication on Blue Growth[1] the Commission identified coastal and maritime tourism as one of the five sources of new jobs and growth in the Blue Economy[2]. The 2014 Commission Communication "A European strategy for more Growth and jobs in Coastal and Maritime Tourism" (the CMT strategy)[3] proposed actions to be undertaken at European level, in cooperation with national, regional and local stakeholders, to tackle the needs and challenges of the sector.

Coastal and maritime tourism is a significant sub-sector of both the wider tourism sector and the Blue Economy. It is estimated to employ approximately 3.2m people and generate €183bn of gross value added (GVA)[4]. Nautical tourism is an important subset of coastal and maritime tourism, generating annual revenues of between €20 and €28 billion per year and employing between 200,000 and 234,000 people[5]. The services sector, which includes equipment repair, boat charter, marinas and other services, accounts for around half of this value[6].

The Commission is exploring whether there is unexploited potential for jobs and growth in the nautical tourism sector and looking at ways to address the associated barriers. The basic thesis underpinning the nautical tourism initiative is that there are a series of market failures that are: inhibiting growth of nautical tourism in Europe; having negative impacts on the environment; and creating barriers to access to recreational boating as a leisure activity for some groups.

The objective of this study was to provide the European Commission with evidence to inform decisions about the development of EU policy on issues relevant to nautical tourism. The specific objectives were to, for a predefined set of nautical tourism topics:

- Explore and identify problems affecting the market performance;
- Identify policy options and an elaborated short list of options that address the causes of these problems; and
- Analyse the expected impacts of the short-list of policy options

The project methodology employed included a literature review and an extensive interview programme with over 50 organisations across the various topic areas covered by the study.

There are comparatively few secondary source data available on nautical tourism and in particular on the range of specific topics covered by the research. Secondary data was combined with primary data generated through qualitative research in order to establish appropriate assumptions on which to undertake quantitative analysis. Quantitative research approaches were not feasible within the available study resources. This imposes some limitations on the scope to describe, both quantitatively and specifically, the scale and nature of some activities, and to identify the scale and nature of some potential impacts. Where quantitative information is presented, both in

[1] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth'; COM (2014) 254 final/2 of 13.5.2014.

[2] Comprising the economic activity of the marine and maritime sectors.

[3] Specifically, related to CMT Strategy actions 5, 6, 9, 10, 11, 12 and 13

[4] Ecorys (2013). Study in support of policy measures for maritime and coastal tourism at EU level: Final Report

[5] There is no comprehensive dataset for nautical tourism activity. The estimated range is from ICF calculations using ICOMIA 2014 data; and Communication from the Commission to the European Parliament calculations using 2011 ICOMIA data (published in COM(2014) 254 final/2 of 13.5.2014)

[6] ICF estimate based on ICOMIA data for 2014.

the situation analyses and assessments, it is based on a number of necessary assumptions which are clearly stated in the text.

Problem definition

Current market and regulatory conditions are placing constraints on the development of the nautical tourism sector in the EU. These constraints are limiting the contribution that the sector can make to blue growth objectives and in some areas undermining the sustainability of the sector's growth. Problems affecting different aspects of the sector are set out below.

Professional and private skipper qualifications

Skipper qualifications are required by individuals to permit them to skipper boats (of under 24 metres) for professional purposes and, in a majority of Member States, for private recreational purposes. Each Member State sets its own qualification regulations. These differ across Member States due to differences in local rules, meteorological and oceanographic conditions and cultural norms. When skippering a boat flagged under one state in another state's waters, skippers are required to hold the accepted qualifications for both states. There is not mutual recognition of national qualifications between Member States. The current situation is not expected to change in the absence of intervention.

The impacts of this are greatest in the professional skipper market. It imposes barriers to the free movement of professional skipper workers and/or additional costs if they wish to work around the EU[7]. This has consequences for the performance of businesses relying on such workers, including legal implications if working skippers are found to hold inadequate qualifications. The impact is less significant for private skippers, for whom *de facto* recognition of home state licences, and recognition of an International Certificate of Competence, is common but not universal. However uncertainty over qualification acceptance can constrain cross-border boating tourism.

On-board safety equipment

Boats are required to carry certain safety equipment (e.g. a VHF radio, a life raft). National legislation is drafted so that safety equipment is adequate for local meteorological and oceanographic conditions, and aligned with national maritime and safety attitudes. This has resulted in a divergence of requirements across the EU. When a boat is sailed outside its home state waters it must comply with the on-board safety requirements of both the boat's flag state[8] and those of the host state. This means that boats used in such situations should hold multiple sets of on-board safety equipment. The current situation is not expected to change in the absence of intervention.

The effects on the commercial market, where dual requirements are enforced through the licencing and boat inspection processes, are greater than those on private boat users, for whom the dual requirements are seldom enforced[9]. The rules lead to additional costs for companies using boats commercially (e.g. yacht charter) in cross-border situations and can reduce the efficiency with which fleets are deployed across the EU during the boating seasons. The lack of certainty about what the non-Home State requirements are can have a negative effect on participation by private boat users. National authorities also face challenges inspecting compliance which can lead

[7] Language and insurance – common barriers to mobility in other professions – are less important drivers. Indeed skippers with non-host state languages are often in demand in order to match customer demands. Insurance needs are tied to the legal requirement that the skipper qualification has to match the flag of a vessel, hence it is the lack of qualification recognition that affects insurance needs.

[8] Which is typically the same as their home state.

[9] Acceptance of compliance with Home State on-board safety equipment only is common for private boats, despite not being the legal position.

to incorrect acceptance or non-acceptance, with potential impacts on boater safety and the operation of both private and commercial boats.

Satellite applications

Despite improvements in satellite-based products and their increased use in commercial shipping and cruise markets, such products for the leisure market remain relatively expensive in terms of their price/functionality ratio. Relatively high prices persist largely because of a lack of investment in leisure boat products by suppliers due to the limited market size and potential returns. The benefits of satellite-based safety equipment are perceived to be limited and this deters boat owners from investing. Such equipment is typically recommended for use in offshore and ocean waters, which most vessels rarely or never visit, where alternative, cheaper technologies utilising the GSM network cannot operate.

In the absence of intervention, development in the underlying satellite infrastructure is expected to continue. Maritime applications are already the target of EU and other support programmes. Advances in technology and decreasing prices are expected as developments in the commercial shipping and cruise markets feed through to the recreational market. There are no clear market or regulatory failures, nor overriding public safety issues. The study concludes that there is no clear justification for EU intervention in the satellite applications market.

Marinas and combined tourism products

Structural issues in the nautical tourism sector, including sector fragmentation, a lack of investment and imperfect information, affect its capacity for innovation and investment. This contributes to a lag between changes in consumer preferences and the emergence of new or improved products and services which satisfy these demands. This weakens sector competitiveness, diminishing growth prospects.

Market innovation and investment is expected under baseline conditions and will go some way to satisfying these demands, but structural issues will continue to limit the pace and extent of sector adjustment. Existing tourism support will only be partially effective in addressing the market barriers. There is particular benefit in supporting interventions which seeks to address barriers to cross-border collaboration and knowledge exchange, access to finance and information failures.

End of life boats (ELB)

One to two per cent of the 6 to 6.5 million recreational boats[10] in the EU reach the end of their lives every year. Across the EU, there are no legal disposal requirements targeted specifically at such 'end of life boats' (ELBs). Current ELB management practices are insufficient; recycling of recreational boats is uncommon and a missed opportunity to enhance the circular economy. A large number of ELBs are abandoned, illegally landfilled or sunk. These practices generate environmental impacts with risk to human health as well as hazards to navigation. Marina and municipal authorities incur additional costs dealing with abandoned boats.

The limited scale of the ELB recycling and dismantling market reflects the unfavourable economics of the business, i.e. high costs for dismantling and disposal and few revenue opportunities from recycling. This high cost, low return context discourages operators from providing facilities and boat owners from seeking appropriate means of disposal. A lack of boat owner registration systems makes effective monitoring and enforcement of ELB rules difficult, undermining the ability for effective control management.

Some improvements in ELB management are expected, driven by existing research projects and voluntary and regulatory efforts in a small number of EU countries. The

[10] Range based on ICF estimate using ICOMIA 2014 data and EBI estimate using ICOMIA 2011 data – see Annex 7.

negative effects of poor ELB management are expected to increase under baseline conditions. Interventions that influence the underlying economics and encourage R&D need to be provided on a larger scale, along with sufficient funding, for more significant improvements in ELB management to be achievable.

Assessment of intervention options

The general objectives of intervention in the nautical tourism sector mirror those for the broader costal and maritime tourism sector:

- Stimulating performance and competitiveness.
- Enhancing employment and efficient use of labour.
- Strengthening environmental sustainability.

Thirty potential intervention options were identified. These were screened[11] to establish a shortlist of the most promising options. These options were further developed and subjected to a full assessment of their economic, social and environment impacts. Based on these assessments, a preferred set of six interventions was identified.

The selected measures are described below. The majority are 'soft' regulatory measures or economic instruments. Information-based solutions had too little traction on the problems to warrant being taken forward independent of other measures and failed to make the priority list. There is only one example of a 'hard' regulatory intervention being the most effective and efficient response (intervention 1 for professional skipper qualifications)[12].

Intervention 1	**Professional skippers qualifications: European core curriculum with national top-up modules**

Description: A **European core curriculum with national top-up modules.** The core curriculum will provide an agreed common set of knowledge, skill and competence requirements, and be complemented by additional top-up modules to accommodate justifiable national differences in training requirements e.g. those linked to climatic conditions. This would be implemented via a new EU Directive[13].

Effect: The intervention will improve the functioning of the internal market, improving mobility of skipper and charter boats.

Impact: Charter companies will benefit from reduced loss of business due to mismatches of skippers and boats. Charter sector revenue is estimated to ultimately increase by €100m – €170m per year[14]. An estimated 25,000 professional skippers would benefit from lower costs and better access to employment through reduced qualification costs and reduced loss of income due to time spent requalifying. These benefits are estimated to amount to approximately €50m per year[15]. Hence total benefit of €150m - €220m/year.

Intervention 2	**Private skipper qualifications: Enhanced ICC**

[11] Screening criteria: acceptability/ease of implementation, effectiveness, proportionality and EU added value.

[12] Regulatory approaches were also considered in the professional skipper qualifications, private skipper qualifications, on-board safety equipment and ELB topic areas, but were discounted either at the screening stage or after assessment of the full impacts. Further details can be found in the topic annexes.

[13] The options of utilising Common Training Frameworks (CTFs) under Directive 2005/36/EC (Amended 2013) was also considered and assessed, but rejected. See Annex 1 for further details.

[14] Estimates are made with low confidence. See Annex 1 for full details of assumptions.

[15] Estimates are made with low confidence. See Annex 1 for full details of assumptions.

Intervention 2	Private skipper qualifications: Enhanced ICC

Description: An **enhanced International Certificate of Competence (ICC)** to improve the standard of competence for ICC qualified skippers and widen its acceptance across the EU. The formulation of an enhanced ICC would be the responsibility of UNECE and its committees. The EU could initiate and support this process and recommend the acceptance of the ICC as an EU-wide cross-border licence.

Effect: Enhancing the ICC's standard supports broader EU-wide mutual recognition, improving the functioning of the international market for private skippers sailing outside of their national waters.

Impact: Removing legal uncertainties will encourage increased cross-border EU private boat and charter tourism and remove costs associated with qualification checks. Benefits, in the form of additional revenue and reduced costs could reach €25m to €28m per year, with a commensurate effect on employment.

Intervention 3	On-board safety equipment: Minimum EU standards

Description: An agreed **reference list of EU minimum safety equipment** required by private and charter boats when undertaking cross-border sailing in the EU to improve harmonisation of Member State requirements. An EU-led initiative with standards implemented via an EU Recommendation and **supported by an online comparison tool.**

Effect: The intervention will minimise legal uncertainty about and reduce variability in national standards, supporting efficient cross-border deployment of private and charter boats. It will improve the functioning of the internal market.

Impact: Improved efficiency of charter boat deployment, reducing costs and supporting increased sales. A modest increase in cross-border private boater tourism. Estimated €30m per year of additional sector revenue and of €6m per year in cost savings, with a commensurate effect on employment.

Intervention 4	Marinas and boating: Funding and capacity building package

Description: A package of interrelated actions including: EU funding for innovation and investment in marina infrastructure and boating products; EU research on the economic benefits of marinas; and capacity building on integration of marinas into regional development planning. Implemented through EU research contracts and funding instruments, supported by active dissemination.

Effect: The intervention will address information, sector fragmentation and finance failures to support improved collaboration and cooperation between marinas, local authorities, and businesses and foster learning and innovation.

Impact: Encourage planning, innovation and investment that supports the sector adjust to, and exploit, changes in consumer demand and broader its role as a hub and catalyst for economic activity. This is expected to benefit the competitiveness of the sector and the performance of coastal regions more broadly[16].

Intervention 5	Combined products: Virtual platform and micro-funding support

[16] There was insufficient evidence from which to establish robust quantitative assessment of impacts.

Intervention 5	Combined products: Virtual platform and micro-funding support

Description: Establish a virtual platform for combined coastal and nautical tourism products to support networking, engagement and information exchange; provision of a micro-funding facility for SMEs developing combined products. Implemented through an EC service contract (for the virtual platform) and an existing EU fund.

Effect: The two measures will be mutually reinforcing and support innovation and investment in the combined product market. The virtual platform will help to address problems created by the fragmented nature of the sector, providing a forum for information sharing, collaboration and partnering. The funding will address the cost challenges associated with partnership building and development of product ideas.

Impact: Support the diversification of tourism products to meet a growing area of consumer demand, improving the competitive position of the sector. Benefits to businesses and jobs[17].

Intervention 6	ELB: Support and non-legislative direction

Description: Establishment of a €100m/year ELB fund, financed by boat manufacturers and/or boat owners (equivalent to ~€700/new boat or €16/boat owner). Harmonised and coherent implementation by Member States. Guidance and best practice promotion provided by the EU.

Effect: Incentivise better disposal practices, enable investment in technological developments to bring down costs and drive up recycling revenue opportunities to improve the economics of ELB management. This is expected to support an increase in sound ELB management and a reduction in boat abandonment.

Impact: Reduced environmental impacts, and associated risks to human health, of boat abandonment and unsound disposal practices. Expansion of the dismantling sector and increased recycling revenue (at least €80m/year of revenue). Public authority cost savings as fewer abandoned boats need to be removed.

Conclusions

As a group, the interventions are expected to have the strongest impact on the performance and competitiveness of the nautical tourism sector, supporting the Blue Growth agenda. The interventions can be delivered over the short-to-medium term. The expected benefits are larger than the expected costs. Those with quantified economic impacts (Interventions: 1, 2, 3 and 6) could collectively contribute €290 million per year to the EU economy; which represents a 1% expansion of the nautical tourism sector[18]. This does not include the potential benefits of interventions focussed on the marinas and boating topic or the combined product topic (interventions 4 and 5). Employment benefits are also anticipated, although these may not be as significant as the economic impacts. Only intervention 6, on ELB management, is expected to result in significant environmental benefits.

Each intervention addresses a different problem in different parts of the sector. Applied together they will have a mutually reinforcing effect that should enhance the overall impact. In particular, there are strong synergies between interventions 1 and 3, and between 2 and 3 in enabling cross-border movement and hence securing the potential benefits from each intervention. Intervention 6 will address the ELB problem and help to ensure that nautical destinations remain safe and attractive for participants.

[17] There was insufficient evidence from which to establish robust quantitative assessment of impacts.

[18] Further details on economic impacts and their calculations can be found in the relevant topic annexes.

Résumé analytique

Introduction

À travers sa communication sur la croissance bleue[19] de 2012, la Commission a présenté le tourisme côtier et maritime comme l'une des cinq sources de création d'emplois et de croissance dans l'économie bleue[20]. La communication de la Commission intitulée « Une stratégie européenne pour plus de croissance et d'emploi dans le tourisme côtier et maritime » adoptée en 2014 (la stratégie CMT)[21] a suggéré des actions pouvant être menées à l'échelon européen afin de répondre aux besoins du secteur et d'en relever les défis, en collaboration avec des acteurs nationaux, régionaux et locaux.

Le tourisme côtier et maritime représente un sous-secteur significatif du secteur du tourisme dans son ensemble et de l'économie bleue. On estime qu'il emploie près de 3,2 millions de personnes et génère 183 milliards d'euros de valeur ajoutée brute (VAB)[22]. Le tourisme nautique constitue un important sous-groupe du tourisme côtier et maritime ; il génère 20 à 28 milliards d'euros par an de revenus annuels et emploie entre 200 000 et 234 000 personnes[23]. Le secteur des services, qui comprend notamment la réparation des équipements, l'affrètement et les ports de plaisance, participe pour près de la moitié de cette valeur[24].

La Commission cherche à savoir s'il existe un potentiel sous-exploité pour l'emploi et la croissance dans le secteur du tourisme nautique, et recherche des moyens de lever les obstacles associés. L'idée principale justifiant l'initiative pour le tourisme nautique stipule qu'il existe un certain nombre de dysfonctionnements du marché, à savoir : entraves à la croissance du tourisme nautique en Europe ; retombées négatives sur l'environnement ; et création d'obstacles à l'accès de certaines catégories de personnes à la navigation de plaisance en tant que loisir.

L'objectif de cette étude fut de fournir des données à la Commission européenne afin d'éclairer ses décisions relatives à l'élaboration d'une politique de l'UE sur les questions touchant au tourisme nautique. Les objectifs spécifiques, pour un ensemble prédéfini de sujets liés au tourisme nautique, consistaient à :

- Rechercher et identifier les problèmes freinant les performances du marché ;
- Identifier les solutions politiques potentielles, ainsi qu'une sélection de moyens permettant de traiter les causes de ces problèmes ;
- Analyser les effets escomptés de la sélection de solutions politiques.

La méthodologie utilisée pour ce projet associe une analyse bibliographique à un vaste programme d'entretiens auprès de plus de 50 organisations appartenant aux différents domaines thématiques abordés par l'étude.

Il existe comparativement peu de sources de données secondaires disponibles sur le tourisme nautique, et en particulier sur l'éventail de sujets plus ciblés couvert par cette étude. Les données secondaires furent associées aux données primaires issues

[19] Communication de la Commission au Parlement européen, au Conseil, au Comité économique et social européen et au Comité des Régions « L'innovation dans l'économie bleue : réaliser le potentiel de création d'emplois et de croissance de nos mers et océans » ; COM (2014) 254 final/2 du 13/05/2014.

[20] Comprenant l'activité économique des secteurs marins et maritimes.

[21] Liée en particulier aux actions 5, 6, 9, 10, 11, 12 et 13 de la stratégie CMT.

[22] Ecorys (2013). Étude à l'appui des mesures en faveur du tourisme maritime et côtier à l'échelle de l'UE : rapport final.

[23] Il n'existe pas d'ensemble complet de données sur l'activité que représente le tourisme nautique. L'estimation provient des calculs d'ICF effectués à partir des données ICOMIA de 2014, et des calculs basés sur les données ICOMIA de 2011 et figurant dans la communication de la Commission au Parlement européen (publiée le 13/05/2014, COM(2014) 254 final/2).

[24] Estimation ICF à partir des données ICOMIA pour 2014.

des recherches qualitatives, de manière à formuler des hypothèses pertinentes quant aux éléments devant faire l'objet d'une analyse quantitative. Les méthodes de recherches quantitatives n'étaient pas envisageables dans les limites des ressources disponibles pour cette étude. Ceci entraîne quelques restrictions sur la capacité à décrire à la fois quantitativement et précisément l'échelle et la nature de certaines activités, ainsi que sur l'identification de l'échelle et de la nature de certains impacts potentiels. Les informations quantitatives qui sont présentées — à la fois dans l'analyse de la situation et lors des évaluations — reposent sur un certain nombre d'hypothèses nécessaires, explicitement formulées dans le texte.

Définition de la problématique

Les conditions actuelles en termes de règlementation et de marché entravent le développement du secteur du tourisme nautique dans l'UE. Ces contraintes limitent la contribution potentielle du secteur aux objectifs de croissance bleue et, dans certains domaines, compromettent une croissance durable du secteur. Les problèmes, qui touchent différents aspects du secteur, sont énoncés ci-dessous.

Qualifications des skippers professionnels et amateurs

Des qualifications de skipper sont exigées pour les particuliers souhaitant commander des navires (de moins de 24 mètres) à des fins professionnelles et, dans la plupart des États membres, dans un but récréatif privé. Chaque État membre fixe ses propres règles en matière de qualifications. Les différences observées entre les États membres s'expliquent par des règlementations, des conditions météorologiques et océanographiques ainsi que des références culturelles qui varient localement. Lorsqu'ils commandent un navire battant pavillon d'un État dans les eaux d'un autre État, les skippers ont l'obligation de détenir les qualifications requises par ces deux États. Il n'existe pas de reconnaissance mutuelle des qualifications nationales entre les États membres. La situation actuelle n'est pas appelée à évoluer en l'absence d'intervention.

Les conséquences de cet état de fait sont plus lourdement ressenties sur le marché des skippers professionnels. Cela dresse des obstacles à la liberté de circulation des skippers professionnels, et entraîne des dépenses supplémentaires lorsqu'ils souhaitent exercer à travers l'UE[25]. Une telle situation porte également atteinte aux performances des entreprises dépendant de tels professionnels, y compris avec des conséquences juridiques si des skippers en activité sont contrôlés et ne peuvent justifier des qualifications requises. Ces effets ont une portée moindre auprès des skippers amateurs, pour qui la reconnaissance de facto des permis de l'État d'origine et la reconnaissance d'un certificat international d'aptitudes est fréquente (mais pas universelle cependant). Les incertitudes à l'égard de l'acceptation des qualifications peuvent toutefois restreindre le tourisme de plaisance transfrontalier.

Équipements de sécurité à bord

Les navires ont obligation de transporter certains équipements de sécurité (par ex. une radio VHF, un canot de sauvetage). Les législations nationales sont formulées de manière à ce que les équipements de sécurité soient adaptés aux conditions météorologiques et océanographiques locales, et s'ajustent aux attitudes de chaque nation à l'égard de la sécurité en mer. Il en résulte des écarts en termes d'exigences au sein de l'UE. Quand un bateau navigue en dehors des eaux de son État d'origine, il est tenu de respecter à la fois les exigences de sécurité à bord de l'État du pavillon[26]

[25] Les langues et les assurances, qui constituent des obstacles habituels à la mobilité dans d'autres professions, jouent ici un rôle de second plan. Les skippers maîtrisant des langues autres que celles de leur État d'origine sont naturellement souvent recherchés afin de répondre aux demandes des clients. Les besoins en termes d'assurances sont liés aux exigences légales auxquelles le skipper doit se soumettre en fonction du pavillon de son navire ; c'est par conséquent l'absence de reconnaissance des qualifications qui influera sur les besoins en matière d'assurance.

[26] Qui sont généralement les mêmes que celles de son État d'origine.

et celles de l'État dont il parcourt les eaux. En d'autres termes, les navires utilisés dans de tels contextes sont censés détenir plusieurs jeux d'équipements de sécurité à bord. La situation actuelle n'est pas appelée à évoluer en l'absence d'intervention.

Les conséquences sur le marché commercial, où les doubles critères sont appliqués lors des processus d'octroi de permis et d'inspections des navires, sont plus lourdes que celles touchant les utilisateurs de navires privés, chez qui les doubles exigences sont rarement appliquées[27]. Les règles entraînent des dépenses supplémentaires pour les sociétés utilisant des navires à des fins commerciales (par ex. affrètement de navires de plaisance) dans des contextes transfrontaliers, et peuvent réduire l'efficacité avec laquelle les flottes sont déployées à travers l'UE au cours des saisons de navigation. Le manque de certitude à l'égard des conditions requises par le pays étranger peut avoir une incidence négative sur la participation des utilisateurs de navires privés. Les autorités nationales connaissent aussi des difficultés à contrôler le respect des règles, ce qui mène parfois à des reconnaissances ou non-reconnaissances injustifiées, avec de possibles implications sur la sécurité nautique et l'utilisation à la fois des navires privés et commerciaux.

Applications satellitaires

Malgré certaines améliorations apportées aux produits satellitaires et leur utilisation croissante sur les marchés des croisières et de la navigation commerciale, de tels produits restent relativement onéreux pour le marché des loisirs si l'on considère leur rapport prix/fonctionnalité. Ces prix encore relativement élevés sont principalement dus au manque d'investissements des fournisseurs dans les produits destinés à la navigation de plaisance, en raison de la taille modeste du marché et du faible rendement potentiel. Les avantages des équipements de sécurité satellitaires sont jugés limités, ce qui dissuade les propriétaires de navires d'investir. De tels équipements sont généralement recommandés pour un usage au large et sur l'océan ; or la plupart des navires ne vont jamais ou rarement dans ces espaces où les technologies alternatives et moins coûteuses utilisant le réseau de téléphonie mobile sont inutilisables.

Le développement des infrastructures satellitaires de base devrait se poursuivre, même en l'absence d'intervention. Les applications maritimes figurent déjà parmi les objectifs de l'UE et d'autres programmes de soutien. Des progrès technologiques et une baisse des prix sont à prévoir à mesure que le développement de la navigation commerciale et du marché des croisières se répercute sur le marché de la navigation de plaisance. Il n'existe aucune défaillance réglementaire ou de marché manifeste, ni aucun problème majeur en matière de sécurité publique. L'étude en conclut qu'aucun élément ne vient justifier une intervention de l'UE auprès du marché des applications satellitaires.

Ports de plaisance et produits touristiques associés

Les problèmes structurels touchant le secteur du tourisme nautique, notamment la fragmentation du secteur, le manque d'investissements et l'insuffisance des informations freinent sa capacité à innover et à investir. Il en résulte un décalage entre l'évolution des préférences des consommateurs et l'apparition de services et de produits nouveaux ou améliorés venant répondre à ces demandes. Cela entraîne un affaiblissement de la compétitivité du secteur, qui mine les perspectives de croissance.

L'innovation et les investissements sur le marché devraient avoir lieu dans les conditions de référence, et contribueront à satisfaire ces demandes, mais les problèmes structurels continueront à ralentir le rythme et la portée de l'ajustement du secteur. Le soutien actuellement apporté au tourisme ne parviendra que partiellement à supprimer ces obstacles entravant le marché. Il sera particulièrement utile de

[27] L'observation du respect des équipements de sécurité à bord exigés par l'État d'origine seulement est fréquente sur les navires privés, bien que cela ne corresponde pas au cadre juridique en vigueur.

favoriser les interventions visant l'élimination des barrières à la collaboration transfrontalière et à l'échange de connaissances, l'accès aux financements et les insuffisances en matière d'information.

Navires en fin de vie (NFV)

Un à deux pour cent des 6 à 6,5 millions de navires de plaisance[28] deviennent hors d'usage chaque année dans l'UE. Il n'existe aucune disposition légale particulière relative à l'élimination de ces « navires en fin de vie » (NFV) à travers l'UE. Les pratiques actuelles en matière de gestion des NFV sont insuffisantes. Le recyclage des navires de plaisance est peu fréquent, ce qui constitue une occasion manquée de renforcer l'économie circulaire. De très nombreux NFV sont abandonnés (par ex. dans des ports de pêche et de plaisance, sur des propriétés privées, sur des chantiers), illégalement mis en décharge ou coulés. De telles pratiques génèrent des impacts environnementaux comportant un risque pour la santé humaine, et représentent un danger pour la navigation. Les ports de plaisance et les autorités municipales encourent des dépenses supplémentaires à devoir s'occuper des navires abandonnés.

La dimension réduite du marché du démantèlement et du recyclage des NFV reflète la rentabilité défavorable de cette activité, à savoir des coûts de démantèlement et d'élimination élevés, et de maigres perspectives de gains par le recyclage. Cette situation caractérisée par des coûts élevés et un faible retour sur investissement n'incite pas les acteurs concernés à fournir les infrastructures nécessaires, et les propriétaires à rechercher des moyens appropriés de se débarrasser de leur navire. L'absence de systèmes répertoriant les propriétaires de navires rend difficile une mise en œuvre et un suivi de règles relatives aux NFV, ce qui sape la capacité à effectuer un contrôle efficace de leur gestion.

Certaines améliorations dans la gestion des NFV sont à prévoir, apportées par des projets de recherches en cours ainsi que par des efforts réglementaires et bénévoles dans un petit nombre d'États de l'UE. Les retombées néfastes d'une piètre gestion des NFV sont appelées à augmenter dans les conditions de référence. Des interventions modifiant les modalités économiques sous-jacentes et favorisant la R&D devront survenir à une plus grande échelle, accompagnées d'un financement suffisant, afin que des améliorations plus notables dans la gestion des NFV soient permises.

Évaluation des possibilités d'intervention

Les objectifs généraux d'une intervention dans le secteur du tourisme nautique reflètent ceux du secteur du tourisme maritime et côtier dans son ensemble :

- Stimuler la performance et la compétitivité.
- Favoriser l'emploi et l'utilisation efficace de la main-d'œuvre.
- Renforcer la durabilité environnementale.

Trente interventions envisageables ont été identifiées. Elles ont été filtrées[29] afin d'effectuer une sélection des options les plus prometteuses. Ces options ont été ensuite approfondies et soumises à l'évaluation complète de leurs impacts environnementaux, sociaux et économiques. Un jeu de six interventions jugées optimales a été identifié à partir de ces évaluations.

Les mesures retenues sont présentées ci-dessous. La plupart constituent des mesures réglementaires ou des outils économiques « souples ». Les solutions reposant sur de l'information avaient trop peu d'influence sur les problèmes pour mériter un approfondissement indépendant d'autres mesures, et ne figurent par conséquent pas

[28] D'après des estimations d'ICF s'appuyant sur des données ICOMIA 2014, et des estimations d'EBI s'appuyant sur des données ICOMIA 2011 ; voir l'annexe 7.

[29] Critères de sélection : acceptabilité/facilité de mise en œuvre, efficience, proportionnalité et valeur ajoutée UE.

dans la liste des priorités. Il n'y a qu'un exemple pour lequel une intervention réglementaire « dure » représente la réponse la plus efficace et efficiente (intervention 1 concernant les qualifications des skippers professionnels)[30].

Intervention 1	Qualifications des skippers professionnels : un tronc commun européen accompagné de modules nationaux complémentaires

Description : Un **tronc commun européen accompagné de modules nationaux complémentaires**. Le tronc commun offrira un ensemble commun approuvé d'exigences en termes de connaissances, d'aptitudes et de compétences, qui sera complété par des modules complémentaires visant à s'adapter aux spécificités nationales légitimes en matière d'exigences de formation, par ex. celles liées aux conditions climatiques. Ceci serait mis en œuvre à travers une nouvelle directive européenne[31].

Effet : L'intervention améliorera le fonctionnement du marché intérieur, favorisant la mobilité des skippers et des navires affrétés.

Impacts : Les entreprises d'affrètement tireront profit des moindres pertes commerciales dues à l'inéquation entre skippers et navires. Les revenus du secteur de l'affrètement devraient à terme croître de 100 à 170 millions d'euros par an[32]. Il est estimé que 25 000 skippers professionnels verraient leurs dépenses réduites et connaîtraient un meilleur accès à l'emploi, grâce à la baisse du coût des qualifications et aux moindres pertes de revenus liées au temps consacré à la reprise de formations. Ces retombées positives sont estimées à environ 50 millions d'euros par an[33]. Le bénéfice total atteindrait donc 150 à 220 millions d'euros par an.

Intervention 2	Qualifications des skippers amateurs : ICC amélioré

Description : Un **certificat international d'aptitudes** (permis bateau plaisance, en anglais *International Certificate of Competence*, ICC) **amélioré** qui permette de rehausser les niveaux d'aptitudes des skippers dotés d'un permis et d'en étendre l'acceptation à travers l'UE. L'élaboration d'un ICC amélioré relèverait de la responsabilité de la CEE-ONU et de ses comités. L'UE pourrait amorcer et soutenir ce processus, et recommander l'acceptation de l'ICC en tant que permis transnational à l'échelle de l'UE.

Effet : Élever le niveau de l'ICC favorise une meilleure reconnaissance mutuelle à travers l'UE, en améliorant le fonctionnement du marché international pour les skippers amateurs naviguant en dehors de leurs eaux nationales.

Impacts : Lever les incertitudes juridiques participera à stimuler le tourisme de location et de navigation privée, et mettra fin aux dépenses associées aux contrôles des qualifications. Les bénéfices, sous forme de revenus supplémentaires et de réduction des coûts, pourraient atteindre 25 à 28 millions d'euros par an, avec un effet proportionnel sur l'emploi.

[30] Les approches réglementaires furent aussi envisagées pour les qualifications des skippers professionnels, les qualifications des skippers amateurs, les équipements de sécurité à bord et les domaines thématiques liés aux NFV, mais furent écartées soit lors de l'étape de sélection soit lors de l'évaluation de l'ensemble des impacts. De plus amples détails figurent dans les annexes.

[31] La possibilité d'utiliser les cadres communs de formation (CCF) visés par la directive 2005/36/EC (modifiée en 2013) a également été envisagée et évaluée, avant d'être écartée. Se reporter à l'annexe 1 pour plus d'informations.

[32] Ces estimations ont été réalisées avec un faible degré de certitude. Se reporter à l'annexe 1 pour une présentation détaillée des hypothèses.

[33] Ces estimations ont été réalisées avec un faible degré de certitude. Se reporter à l'annexe 1 pour une présentation détaillée des hypothèses.

Intervention 3	Équipements de sécurité à bord : normes UE minimales

Description : Convenir d'une **liste de référence des équipements de sécurité minimaux de l'UE** imposés aux navires privés et de location lors de déplacements transfrontaliers au sein de l'UE, de façon à améliorer l'harmonisation des exigences des États membres. Une initiative portée par l'UE, avec des normes mises en œuvre au moyen d'une recommandation de l'UE, **avec l'aide d'un outil de comparaison en ligne**.

Effet : L'intervention réduira les incertitudes juridiques et diminuera la variabilité des normes nationales, favorisant un déploiement transfrontalier efficace des navires privés et de location. Cela améliorera le fonctionnement du marché intérieur.

Impacts : Meilleure efficacité du déploiement des navires de location, réduisant les coûts et favorisant une augmentation des ventes. Légère croissance du tourisme plaisancier transfrontalier privé. Les revenus supplémentaires pour le secteur et les économies réalisées sont respectivement estimés à 30 et 6 millions d'euros par an, avec des retombées proportionnelles sur l'emploi.

Intervention 4	Ports de plaisance et navigation : programme de financement et de renforcement des capacités

Description : Un programme d'actions reliées entre elles comprenant : des financements de l'UE pour l'innovation et l'investissement dans les infrastructures des ports de plaisance et les produits liés à la navigation ; des recherches de l'UE sur les atouts économiques des ports de plaisance ; et un renforcement des capacités pour l'intégration des ports de plaisance dans la planification du développement régional. Mis en œuvre à travers des contrats de recherche et des instruments de financements de l'UE, et favorisé par une diffusion active.

Effet : L'intervention s'attaquera aux lacunes en matière d'information, de fragmentation du secteur et de financement afin de permettre une meilleure collaboration et coopération entre les ports de plaisance, les autorités locales et les entreprises, et de stimuler les connaissances et l'innovation.

Impacts : Encourager la planification, l'innovation et les investissements aidant le secteur à s'adapter aux évolutions des demandes des consommateurs, ainsi qu'à les exploiter, et à renforcer son rôle de carrefour et de catalyseur des activités économiques. Cela devrait stimuler la compétitivité du secteur, et plus généralement les performances des régions côtières[34].

Intervention 5	Produits associés : plateforme virtuelle et soutien au micro-financement

Description : Mettre en place une plateforme virtuelle pour les produits associés du tourisme nautique et côtiers afin de favoriser la mise en réseau, l'engagement et l'échange d'information ; offrir une possibilité de micro-financement pour les PME élaborant des produits associés. Mise en œuvre à travers un contrat de service de la commission européenne (pour la plateforme virtuelle) et à travers un fonds de l'UE préexistant.

Effet : Les deux mesures se renforceront mutuellement et soutiendront l'innovation et l'investissement sur le marché des produits associés. La plateforme virtuelle aidera à résoudre les problèmes découlant de la nature fragmentée du secteur, en fournissant un forum pour le partage d'informations, la collaboration et le

[34] Nous manquions de données pour établir une évaluation quantitative solide des impacts.

Intervention 5	Produits associés : plateforme virtuelle et soutien au micro-financement

partenariat. Le financement relèvera les défis en termes de coûts liés à la création de partenariats et à la conception des produits.

Impacts : Favorise la diversification des produits du tourisme afin de répondre à une palette de plus en plus large de demandes des consommateurs, améliorant la position concurrentielle du secteur. Profite aux entreprises et à l'emploi[35].

Intervention 6	NFV : appui et orientations non-législatives

Description : Mise en place d'un fonds NFV de 100 millions d'euros par an, alimenté par les fabricants et/ou les propriétaires de navires (à hauteur d'environ 700 euros par nouveau navire, ou 16 euros par propriétaire). Mise en œuvre harmonisée et cohérente par les États membres. Conseils et promotion des meilleures pratiques fournis par l'UE.

Effet : Promouvoir de meilleures pratiques en matière d'élimination, permettre des investissements dans de nouvelles technologies pour réduire les coûts et accroître les opportunités de revenus tirés du recyclage, afin d'assainir l'économie de la gestion des NFV. Cela devrait favoriser la diffusion d'une meilleure gestion des NFV, et la réduction du nombre de navires abandonnés.

Impacts : Atténuation des impacts environnementaux, et des risques associés en matière de santé humaine, liés à l'abandon des navires et aux mauvaises pratiques d'élimination. Croissance du secteur du démantèlement et hausse des revenus tirés du recyclage (au moins 80 millions d'euros par an de recettes). Économies réalisées par les autorités publiques, du fait du moindre nombre de navires abandonnés à faire enlever.

Conclusions

Effectuées ensemble, les interventions auront leur plus forte incidence sur les performances et la compétitivité du secteur du tourisme nautique, ce qui va dans le sens du programme de la croissance bleue. Les interventions peuvent être menées à court ou moyen terme. Les avantages attendus dépassent les dépenses prévues. Celles dont les retombées économiques ont été quantifiées (interventions 1, 2, 3 et 6) pourraient, considérées ensemble, contribuer à l'économie de l'UE à hauteur de 290 millions d'euros par an, ce qui représente une expansion de 1 % du secteur du tourisme nautique[36]. Ceci n'inclut pas les avantages potentiels d'interventions ciblant le domaine des ports de plaisance et de la navigation de plaisance, ou le thème des produits associés (interventions 4 et 5). Des bienfaits en termes d'emploi sont également attendus, même si ceux-ci pourraient ne pas atteindre l'ampleur des retombées économiques. Seule l'intervention 6 touchant à la gestion des NFV devrait être accompagnée de retombées environnementales positives significatives.

Chaque intervention s'attaque à un problème distinct, dans différents domaines du secteur. Appliquées ensemble, elles connaîtront un effet de renforcement réciproque, susceptible de confirmer l'impact global. Il existe notamment de fortes synergies entre les interventions 1 et 3, ainsi qu'entre les interventions 2 et 3, pour favoriser les déplacements transfrontaliers et garantir ainsi les gains potentiels de chaque intervention. L'intervention 6 abordera la question des NFV et concourra à s'assurer que les destinations nautiques restent sûres et attrayantes pour les personnes prenant part à ces activités.

[35] Nous manquions de données pour établir une évaluation quantitative solide des impacts.

[36] De plus amples informations sur les impacts économiques et leur calcul peuvent être consultées dans les annexes correspondant à chaque domaine.

1 Introduction

The European Commission (DG MARE)[37] commissioned this study on aspects of the nautical tourism market in order to establish the potential for, and impact of, Commission intervention to improve sector performance. The study is intended to support of Commission activity to develop an initiative to aid nautical tourism development, as mandated through the 2014 Commission Communication "A European strategy for more Growth and jobs in Coastal and Maritime Tourism" (henceforth the 'CMT strategy')[38].

This is the study's final report. It presents the research and assessment findings on the nautical tourism market and the potential policy options which could be implemented by the Commission.

The report is structured as follows:

- Section 1 provides an introduction to the study, covering the context and objectives of the assignment and providing an overview of the methodology employed.
- Section 2 provides an overview of the nautical tourism sector and examines the current market situation.
- Section 3 analyses the strategic problems prevalent within the nautical tourism sector and presents a view of the baseline situation i.e. the expected sector situation in the absence of any new policy interventions.
- Section 4 examines the rationale for EU intervention in the sector and with regard the specific problems identified.
- Section 5 sets out the strategic objectives for the nautical tourism sector and provides an assessment of the most promising intervention options against those objectives, as well as a qualitative multi-criteria analysis. A longer list of potential interventions and full assessment of economic, social and environmental impacts of a short-listed interventions are provided in the annexes.
- Section 6 provides conclusions on the most promising interventions which could be implemented to support nautical tourism development in the EU.
- Section 7 provides information on the main gaps in evidence on nautical tourism relevant to development of targeted public policy and suggestions for how these could be addressed.
- Annexes: These provide detailed examination of the specific problems identified in the nautical tourism sector. The annexes provide for each issue a detailed situation analysis, a problem analysis, an opinion on whether EU action is justified, a schedule of policy options and an assessment of the economic, social and environmental impacts for the shortlisted options. The annexes cover the following topics:
  - Professional skipper licences
  - Private skipper licences
  - On-board safety equipment
  - Satellite applications
  - Marinas and boating development

[37] via a framework contract of DG Environment in which the lead contractor is the Institute for European Environmental Policy, IEEP.

[38] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism', COM(2014) 86 final of 20.2.2014.

- Combined nautical and coastal tourism products
- Boat recycling / end of life boats

1.1 Context and objectives of the assignment

1.1.1 Context

In its 2012 Communication on Blue Growth[39] the Commission identified coastal and maritime tourism as one of the five areas for growth in the Blue Economy[40]. In turn, the CMT strategy[41] proposed 14 actions to be undertaken at European level, in cooperation with national, regional and local stakeholders, to tackle the needs and challenges of the sector.

Coastal and maritime tourism is a significant sub-sector of both the wider tourism sector and the Blue Economy. It is estimated to employ approximately 3.2m people and generate €183bn of gross value added (GVA)[42]. Nautical tourism is an important subset of coastal and maritime tourism. It is a significant source of employment and wealth creation, including in parts of the EU that have lower than average incomes.

In this context the Commission is exploring whether there is unexploited potential for jobs and growth in different parts of the nautical tourism sector and looking at potential ways to address the associated barriers. Nautical tourism is cross-sectoral by nature and the nautical tourism initiative refers to policies in a variety of domains. Examples of policy areas relevant to nautical tourism are: the internal market, research, circular economy, environmental protection, regional development, integrated coastal zone management (ICZM), maritime spatial planning (MSP), maritime safety, satellite communication and the Digital Agenda.

The basic thesis underpinning the nautical tourism initiative is that there are a series of market failures that are:

- Inhibiting growth of nautical tourism in Europe;
- Having negative impacts on the environment; and
- Creating barriers to access to recreational boating as a leisure activity for some groups.

Addressing market failures through EU intervention could increase the scale and sustainability of nautical tourism activities and increase the contribution of the sector to employment and economic growth across the EU.

1.1.2 Study objectives

The objective of this study is to provide the European Commission with evidence to inform decisions about the development of EU policy on issues relevant to nautical tourism. The specific objectives are to:

- Explore and identify problems affecting the market performance;
- Identify policy options and an elaborated short list of options that address the causes of these problems; and
- Analyse the expected impacts of the short-list of policy options.

[39] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth'; COM (2014) 254 final/2 of 13.5.2014.

[40] Comprising the economic activity of the marine and maritime sectors.

[41] Specifically, related to CMT Strategy actions 5, 6, 9, 10, 11, 12 and 13

[42] Ecorys (2013). Study in support of policy measures for maritime and coastal tourism at EU level: Final Report

1.1.3 Study scope

There are no official definitions of nautical tourism published by the European Commission or international organisations such as the UN World Tourism Organisation (UNWTO). The term is not, however, entirely novel. Working definitions have however been used in other research. For example: Luković and Gržetić (2007)[43] define nautical tourism as: *"The entirety of multifunctional activities and relations caused by the stay of tourists-boaters in nautical tourism ports or out of them, and by the use of vessels and other objects related to nautical tourism aimed at recreation, sports and entertainment and other needs".*

There is some debate about whether the adoption of the term 'nautical' should mean that nautical tourism refers only to the activities of 'navigation' (e.g. travelling by boat). However it is more commonly applied to boating-related activities that occur in the sea; where a boat is any waterborne craft, from a cruise liner to a kayak. It commonly excludes beach-based activities and may include or exclude activities such as surfing. For example, Luković[44] identified a hierarchical set of nautical tourism activities:

- *Main activities*: (i) harbours (berths, moorings, marinas), (ii) charters, (iii) cruising.
- *Secondary activities*: diving, surfing, rafting, diving-bells, rowing, fishing, etc.
- *Supporting*: activity providers and related services; manufacturing industries.

Nautical tourism and maritime tourism (as defined by Ecorys, 2013) are broadly similar concepts. For the purpose of this study, nautical tourism is taken to be a subset of maritime tourism as it does not cover cruise ship activities. Nautical tourism is here defined as comprising the following activities in coastal and offshore marine waters:

- Harbour and marina-based/facilitated activities;
- Boating activities (including charter and non-charter) i.e. yachting, dinghy sailing, boat based angling and wildlife watching, other watercraft (e.g. kayaking).

Cruise tourism is often included in definitions of nautical tourism and in studies on related issues. As an important sector itself, it has been subject to other research and initiatives by the Commission and hence is not included in the working definition applied in this study.

Within the nautical tourism sector, the subtopic areas in which the research has focussed are:

- Boat recycling;
- Boat safety equipment, including satellite applications;
- Marinas and boating development (including its influence on regional development) and combined nautical and coastal tourism products (henceforth, 'combined products') and

[43] Luković, T., & Gržetić, Z. (2007). "Nautičko turističko tržište u teoriji i praksi Hrvatske i europskog dijela Mediterana", Hrvatski hidrografski institut (HHI) Split, Split, 2007, p.30

[44] Luković (2012). Nautical Tourism and Its Function in the Economic Development of Europe, Visions for Global Tourism Industry - Creating and Sustaining Competitive Strategies, Dr. Murat Kasimoglu (Ed.), ISBN: 978-953-51-0520-6, InTech, Available from: http://www.intechopen.com/books/visions-for-global-tourismindustry-creating-and-sustaining-competitive-strategies/nautical-tourism-in-the-function-of-the-economicdevelopment-of-europe

- Skipper qualifications and licences.

1.2 Study methodology

1.2.1 Methodology

Our approach to meeting the objectives of the assignment and delivering the impact assessment has three core elements: research; the identification and appraisal of intervention options; and the assessment of impacts of selected options. We elaborate on the specific research and analytical aspects of each element below.

- **Research**

  The purpose of the research was to establish an understanding of the nautical tourism sector and a detailed understanding of the subtopic areas. The current situation was analysed. Key problem areas were identified, their causes and consequences were examined, and the prospects for their evolution considered in a scenario of there being no new EU policy interventions. The findings were presented in the study interim report and discussed with the study Steering Group at the study's interim meeting in April 2016.

  This phase of the work was informed by a review of available secondary data and literature and involved over 50 semi-structured interviews with relevant stakeholders. Interviews were conducted by telephone between March and April 2016. A small number of follow-up interviews were undertaken in May 2016 to gather additional information to satisfy issues raised at the interim meeting.

- **Identification and appraisal of intervention options**

  Based on the problem definitions defined in the research phase, and informed by a review of available literature and available examples of 'what works' as well as the above-mentioned stakeholder interviews and follow-up (as detailed above), a long list of policy options were identified. The basic logic underlying each option was elaborated and presented in the study interim report and discussed with the study Steering Group at the study's interim meeting.

  The identified options were then screened against a defined set of evaluation criteria (acceptability/ease of implementation, effectiveness, proportionality and EU added value). A shortlist of intervention options was identified and presented in a supplementary study report. The details of and findings from the screening exercise were discussed with the Commission and a preferred set of intervention options then agreed to be taken forward for full assessment.

- **Assessment of impacts**

  The impact assessment was prepared with close reference to the Commission's Guidelines on Impact Assessment. The task comprised two distinct activities. In the first, detailed assessments of the short-listed policy options were conducted for each thematic area. These provided a description of the anticipated impacts. In the second activity these assessments were brought together and used to develop scores within a performance matrix that provided an accessible tool for the ranking and comparison of the policy options for each topic area.

  The detailed assessment of the policy options first considered how each intervention option will address the underlying problems and the likely success of the intervention in meeting the objectives. Secondly, a quantitative (where feasible) and detailed qualitative assessment was conducted by reference to a set of economic, social and environmental criteria. The impact criteria were drawn from the Commission's Better Regulation Toolkit, and were presented in the supplementary report and agreed with the Commission.

The preferred policy options for each topic area were then selected and presented in an overarching performance matrix in the main body of the report.

1.2.2 Limitations

Data limitations: There are comparatively few secondary source data available on the specific topics covered by the research. Efforts were made to generate new data on issues of significance to the analysis through stakeholder interviews but, in many cases, these provided information for only one individual stakeholder or stakeholder group[45]. This imposes some limitations on the scope to describe, quantitatively and specifically, the scale and nature of activities, and to identify the scale and nature of potential impacts. It has resulted in some impacts being assessed in qualitative terms only. Where quantitative information is presented, both in the situation analyses and assessments, it is often based on a number of necessary assumptions (which are clearly stated alongside the estimates).

Stakeholder input limitations: The ICF team conducted over 50 interviews with stakeholders across the study topic areas. These were split across seven discrete subtopic areas, giving an average of around seven interviews per subtopic. Efforts were made to ensure that organisations representing key stakeholder groups, as well as major individual organisations, were engaged so that the representativeness of the opinions gathered, given the available study resources, could be maximised. However limitations on the number of stakeholders consulted has constrained the breadth and depth of evidence available to inform all elements of the study.

[45] Project resources were not sufficient to support interviews with a fully representative sample or to implement quantitative research methods.

2 Nautical tourism overview

2.1 Introduction

This section provides contextual information on the size, characteristics and economic contribution of the nautical tourism sector, which sits within the wider coastal and maritime tourism sector. It also summarises the policy context, specifically describing the aims of the Coastal and Maritime Tourism strategy in supporting Blue Growth objectives and delivering more jobs and growth.

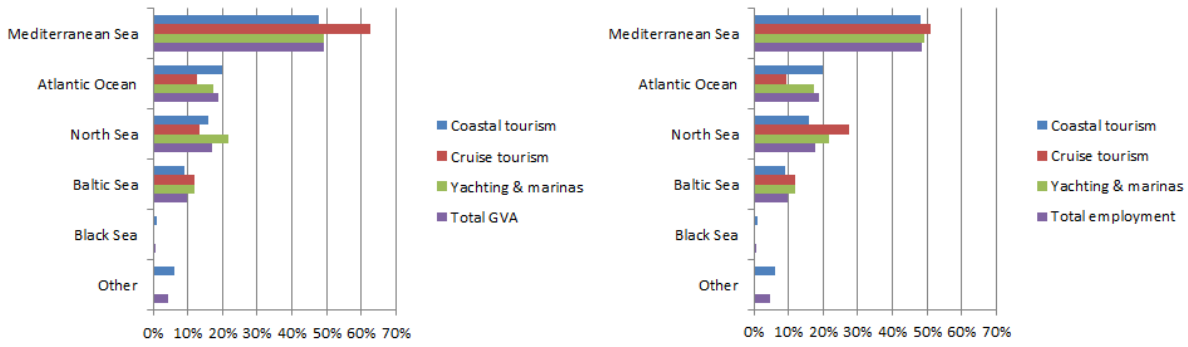
2.2 Coastal and maritime tourism

Tourism is a major economic activity in Europe. Tourist trade within the EU itself is a major part of the market but Europe is also the most visited region in the world. It accounted for 51 per cent of all international tourist arrivals (582 million) and 41 per cent of worldwide international tourism receipts (€383 billion) in 2014. International tourist arrivals increased at an average of 2.8 per cent per annum between 2006 and 2014. The World Tourism Organisation (UNWTO) reports that tourism has been a major contributor to the economic recovery in Europe. It also projects future growth of 2.3 per cent between 2010 and 2030[46].

The sea is a key part of Europe's identity. Twenty three of the 28 Member States have a coastal border. It is estimated that maritime activities (the so-called 'blue economy') supported 5.4 million jobs and created €485 billion of gross value added (GVA) in Europe in 2012[47]. These activities have been experiencing strong growth in recent years, a trend that is expected to continue. The EU's Blue Growth initiative aims to support this growth and contribute to Europe 2020, the EU's strategy for smart, sustainable and inclusive growth.

Coastal and maritime tourism is a significant sub-sector of both the wider tourism sector and the blue economy. It is estimated to have employed almost 3.2m people in 2011 and generated €183bn of GVA.[48, 49] Almost half of the employment and GVA is located in the Mediterranean region, while there are also significant coastal and maritime tourism activities bordering in Atlantic Ocean, the North Sea and the Baltic Sea.

Figure 1. Coastal and maritime tourism GVA and employment (2011)



Source: Ecorys (2013) Study in support of policy measures for maritime and coastal tourism at EU level: Final Report

[46] UNWTO (2015). Tourism Highlights, 2015 Edition.

[47] Ecorys (2013). Blue Growth - Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts - Final Report.

[48] Including direct and indirect effects of coastal tourism, cruise tourism and yachts and marinas (although it is unclear whether the yacht charter market is included in the figures for yachts and marinas).

[49] Ecorys (2013). Study in support of policy measures for maritime and coastal tourism at EU level: Final Report

2.2.1 The Coastal and Maritime Tourism Strategy

The Blue Growth strategy identified coastal and maritime tourism as a sector with high potential for sustainable growth and jobs. A Coastal and Maritime Tourism strategy (CMT strategy) has been developed to support the Blue Growth strategy. It identifies challenges and proposes regulatory changes and policy actions for the Commission, as well as recommending actions for Member States, regional and local authorities and the tourism industry itself. It sets out a framework to address cross-border challenges at the EU level and aims to enhance the sector's sustainability and competitiveness by promoting partnerships, cooperation and the sharing of best practice.

The CMT strategy aims to:

- **Stimulate performance and competitiveness** – by: 'improving knowledge' and the coherence and comparability of coastal and tourism data across Europe and beyond; 'addressing demand volatility' and reducing seasonality by introducing strategies, policies and products to target specific types of tourists in the low season (including the elderly and non-European visitors); and 'overcoming sector fragmentation' by promoting partnerships, cooperation and the sharing of best practice;
- **Promote skills and innovation** – through better targeted training and education, sector specific curricula, increased use of ICT, increased involvement of higher education institutions and transnational strategic partnerships and cooperation (e.g. to reduce variance in requirements for qualifications and safety equipment);
- **Strengthen sustainability** – 'addressing environmental pressures' by measuring and monitoring environmental performance, reducing waste and minimising environmental impacts; **'**promoting an innovative, sustainable and high-quality offer' by developing new products that link different aspects of coastal and nautical tourism, address seasonality, address capacity and accessibility of marinas and ensure high-quality services; addressing 'insularity and remoteness' in areas that are less accessible, since other economic activities (i.e. non-tourism) can be scarce in these locations, such as islands;
- **Maximise available EU funding** – to support the sustainable development of the sector using European Structural and Investment Funds (to co-finance sustainable tourism investments), Horizon 2020 (for research and innovation), the COSME framework programme (to enhance competitiveness of tourism SMEs), the Creative Europe programme (to support cultural and nature tourism), the Erasmus+ programme (to support education, training and employability), LIFE+ funding (to support resource efficiency), the EU Environment Action Programme (to support tourism infrastructure projects) and the European Investment Bank (to provide finance for investments involving tourism SMEs).

2.3 The nautical sector

The nautical sector is a major contributor to economic growth and employment at the EU level. Marinas and boating activities are important components of this. The manufacture, operation and hosting of recreational craft, and associated services, supports relatively high value and skilled employment as compared to most other coastal tourism activities. The sector is estimated to have a turnover of around €28 billion and employ at least 200,000 people in 2014[50]. Another estimate put turnover at

[50] Based on extrapolation of ICOMIA data for 2014 for a subset of EU MS, assuming a linear relationship between MS nautical sector and the size of the economy.

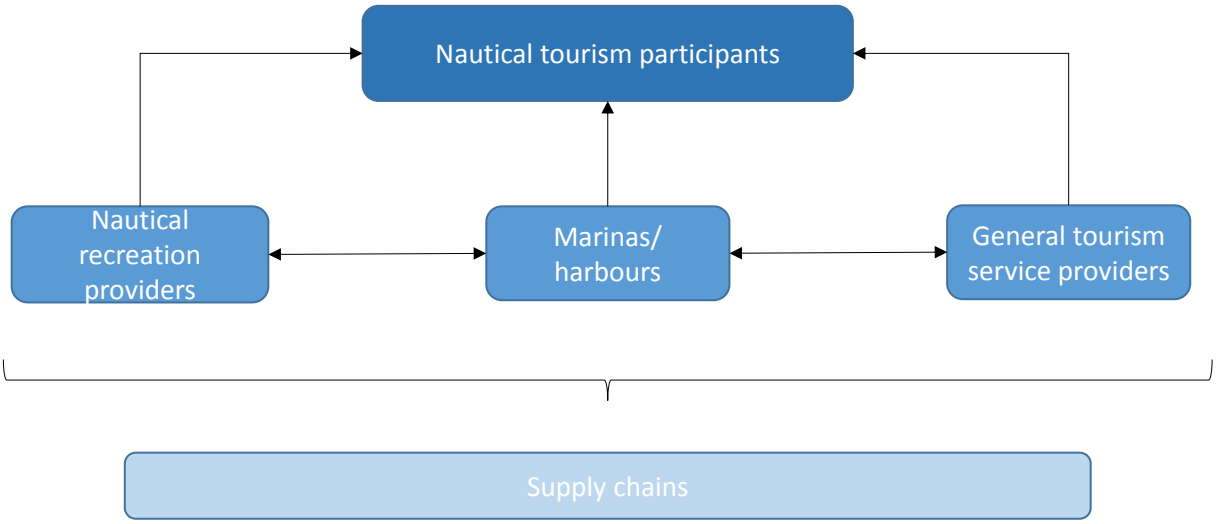
€20 billion and 234,000 employees in 2011[51]. Given the lack of comprehensive EU data, there is significant uncertainty attached to these estimates. Evidence suggests that activity levels remain below those seen prior to the 2008 financial crisis[52]. Nautical sector activity is concentrated in the services sector[53], which generates approximately 59% of its economic output[54]. Nautical sector activities are concentrated on the Mediterranean coast. This region generates around half of the sector's economic output and employment, followed by the North Sea (22%), Atlantic Ocean (17%) and Baltic Sea (12%) regions[55].

2.3.1 The nautical tourism value chain

In many instances only a proportion of a supplier's revenue is generated by nautical tourism, with the remainder coming from other non-nautical tourism or non-tourism sources (e.g. accommodation servicing the needs of nautical and other non-nautical tourists). Figure 2 depicts a simplified value chain comprising:

- Nautical tourism participants: end consumers of nautical tourism goods and services.
- Nautical recreation providers: enterprises providing recreation goods and services to participants e.g. charter and hire companies; instructors / schools; etc.
- Marinas / harbours: facilitators of participation through provision of infrastructure; direct providers of some tourism services.
- General tourism service providers: standard tourism service providers, selling services to nautical (and non-nautical) tourists e.g. accommodation and transport.
- Supply chains: boat and other equipment manufacturers, distributors, etc.; other suppliers to the three segments identified above.

Figure 2. Simplified nautical tourism value chain



[51] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth'; COM(2014) 254 final/2 of 13.5.2014

[52] Stakeholder interviews; and *ibid*

[53] Including: boat repairs and services, boat and watersports charter/rental, sailing schools, boat dealers/brokers, chandleries, marinas and financial and other professional services.

[54] Based on data for six MS sourced from ICOMIA Statistics Book 2015.

[55] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level

Source: Own Representation, Authors

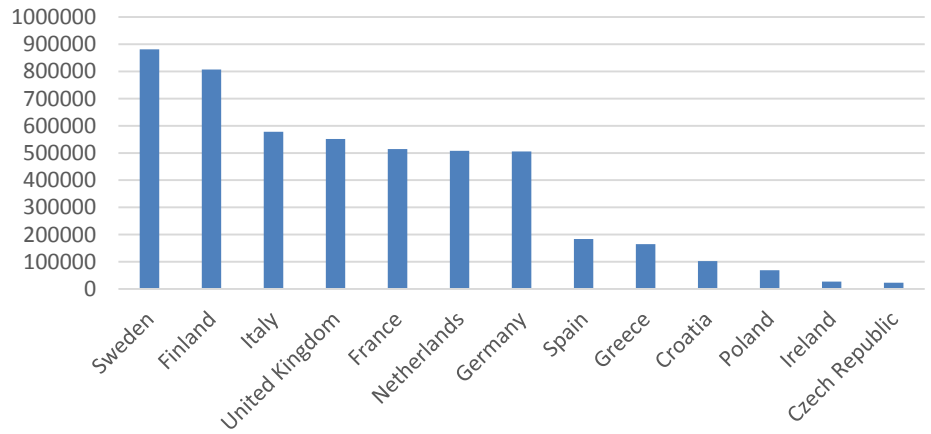
2.4 Components of the nautical tourism market

2.4.1 Nautical tourism participants

Nautical tourism is a popular activity across the EU. The European Boating Industry (EBI) estimates that 48 million EU citizens regularly participate in watersports, 36 million of whom are regular participants in boating activities[56].

The recreational craft used are either owned by the participants themselves or chartered (from businesses or directly from other boat-owners). The number of recreational craft in the EU is estimated at between 6 million[57] and 6.5 million[58]. Figure 3 shows the distribution of craft by country. Sweden and Finland host the largest number, followed by the Italy, UK, France, Netherlands and Germany.

Figure 3. Number of recreational craft in EU countries (2014)



Source: ICOMIA Statistics Book 2015

The EBI estimates that the average lifespan of individual craft in the recreational fleet is 30 years, although in some instances this may stretch to 40-45 years depending on the state/condition of the boat. Boat lifespans have been increasing over time due to the use of stronger materials, such as fibre reinforced plastic[59]. It is thought that at least 80,000 boats reach the end of their lives in the EU each year but of these only around 2,000 are dismantled[60]. The rest are left abandoned, stored by their last owners, sent to landfill or incinerated. This issue is explored in detail in Annex 7.

The number and value of new boat purchases registered each year fell significantly in the wake of the 2008 financial crisis. There are now signs of recovery in both consumer confidence and production levels and values (particularly for smaller and less expensive vessels), although these remain well below 2008 levels. The impacts on levels of boat ownership have been less significant; many people have chosen to keep and maintain their existing boats rather than replace them with new ones. Participation levels have also been supported by increasing demand for formal and informal chartering and shared (multiple-person) ownership of boats.

[56] http://www.europeanboatingindustry.eu/eu-affairs/tourism#B

[57] ICF estimate based on ICOMIA 2014 data. Based on an extrapolation of the data available for 13 MS assuming a constant relationship between number of craft and GDP and population.

[58] EBI estimate based on ICOMIA 2010 data.

[59] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen

[60] Authors estimated based on available data for three MS.

The demographic profile of the boating population has also changed. The average age of European boaters is estimated to have increased from around 45 to 55 years over the last ten years[61]. Contributory factors are thought to include the ageing of the EU's population overall and a decline in participation by younger people, in part due to increasing competition for leisure time from other recreational activities and family and work commitments. The ageing of the boating community is likely to continue; around 20 per cent of the EU population will be over 65 in 2020, increasing to 30 per cent by 2060.[62]

For nautical tourism businesses these trends are resulting in changes in customer requirements. Examples include demand for alternative boat ownership and charter models, including enabling shorter-term access and the ability to combine multiple activities / locations within single holidays or itineraries (so-called 'combined products). Infrastructure, equipment and support services need to cater for the specific needs of older participants. There is potential for businesses to exploit the opportunities provided by this market segment's relatively higher purchasing power and ability to participate outside the peak seasons.

These issues and opportunities are explored in more detail in the topic annexes on marinas and boating development (Annex 5) and combined products (Annex 6).

2.4.2 Boating and charter markets

The EBI and its partners in the TCC-SCV project estimate that there are up to 60,000 charter boats in the EU[63]. These generate €4bn[64] to €6bn[65] of turnover per year. Much of the world's charter boat market is in the EU; the Mediterranean is estimated to account for 40 per cent of the global market[66]. The global market for recreational boat charter is projected to grow at 7.1 per cent per annum to 2026[67]. Applying this growth rate to the EU suggests that the EU boat charter market could double in size by 2026.

Charter boats can be hired with or without a skipper/crew. A contract in which the vessel is skippered by the customer is known as a bareboat charter. The TCC-SCV project estimates that 5,000 to 12,000 of the total charter fleet of 60,000 boats are skippered charter boats, with the remaining 48,000 to 55,000 operating as bareboat charters.

Skippers, both professional and private, are required to hold relevant qualifications (with some exceptions for private skippers). Professional skippers are employed on charter boats and a number of other professions also require professional skipper qualifications[68]. It is estimated that there are between 30,000 and 100,000 active users of professional skipper qualifications in the EU[69].

[61] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[62] European Commission (2008), Regions 2020: An Assessment of Future Challenges for EU Regions.

[63] Significantly higher than recent estimates of 5,000 to 15,000 in ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector.

[64] Authors estimate – see Annex 2

[65] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level.

[66] Future Market Insights (2016), Yacht Charter Market (Under 24m Length): Global Industry Analysis and Opportunity Assessment, 2016 – 2026

[67] *ibid.*

[68] e.g. Professional skippers on commercial small charter vessels; Professional skippers on small excursion boats; Professional skippers on private small vessels; Boat delivery skippers; Boat service staff moving boats between moorings or to and from travel lifts; Boat brokers on sea trials with potential customers; Skippers of diving boats

[69] Authors estimate. See Annex 1 for the assumptions used in generating the estimate.

2.4.3 Marinas and harbours

Specific data on the size, type and capacities of the marina industry in Europe are scarce. As a result, there is some uncertainty about the number, capacity and utilisation of coastal marinas in the EU. The EBI estimates that there are over 4,500 marinas in Europe offering 1.75m berths[70], although this includes inland as well as coastal marinas. Other sources suggest that coastal marinas account for 65 per cent of all 'high quality' marinas in the EU. Assuming that coastal marinas also account for 65 per cent of all marinas in the EU, there are likely to be around 2,900 coastal marinas providing 1.1m coastal marina berths, across the EU. The marinas sector in the EU is estimated to have a turnover of between €3bn[71] and €4bn[72] and employ between 40,000 and 70,000 people[73].

Marinas support income and employment through their core activity of providing marina berths and related services and through their supply chains. But they also act as important economic catalysts. They influence the number of boats kept in the EU, which influences demand for upstream activities such as boat-building, distribution and retail services[74], and they support a marketplace that links boaters (consumers) and local suppliers of boating goods and services such as boat repair and maintenance, chandlers and brokers. Some marinas provide additional services, beyond their core marina offer, which can offer further economic benefits for local coastal economies. For example, some marinas:

- Increase the accessibility of the waterfront and offer a range of other leisure and tourism services (e.g. restaurants, hotels and shops) that attract additional 'non-boating' visitors, as well as boaters, to spend money on the marina site and in the local economy.
- Facilitate growth in other sectors, such as water transport and renewable energy, by providing berths for ferries or maintenance vessels (e.g. for offshore wind farms).

2.4.4 General tourism providers

Many coastal economies are dependent upon their tourism activities. In addition to the direct income and employment that tourism brings to coastal communities, it can provide additional benefits that include investment and infrastructure.[75]

Coastal and maritime tourism is a significant sub-sector of the wider tourism industry. Coastal tourism is defined as tourism employment within 10km of the coastline. It therefore covers all other tourism providers and activities including those associated with accommodation, restaurants, attractions, etc. in coastal destinations. It is by far the largest sub-sector of the wider coastal and maritime tourism market and is estimated to support €130bn of GVA and 2.5m jobs in the EU. There is insufficient data to enable the proportion of general tourism activity that is linked to nautical tourism activities to be disaggregated.

[70] http://www.europeanboatingindustry.eu/eu-affairs/tourism#B

[71] Estimate based on UK revenue per coastal marina berth (drawing on ICOMIA 2014 turnover data and BMF estimate of number of UK coastal marina berths), applied to the total estimate of 1.1 coastal marina berths in the EU.

[72] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[73] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[74] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands.

[75] UNEP (2009), Sustainable Coastal Tourism: An Integrated Planning and Management Approach

3 Strategic problem analysis and baseline scenario

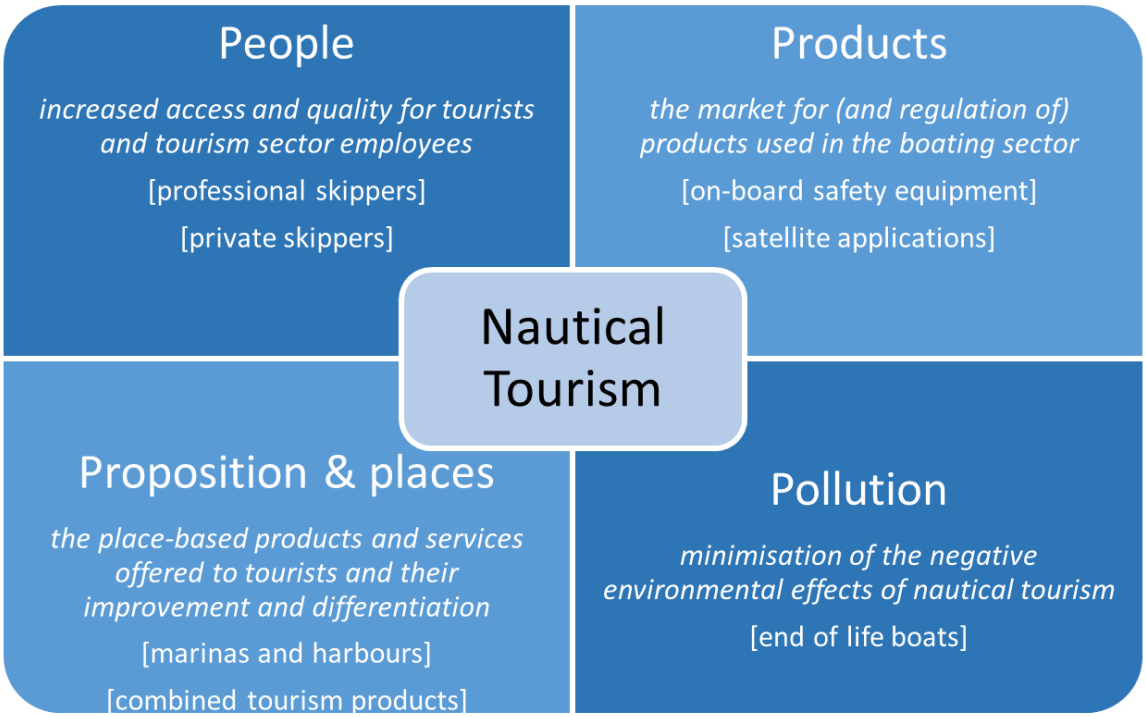
This section describes the main strategic problems facing the nautical tourism sector, within the bounds of the study scope. It is based on detailed topic-level analysis conducted for this study (presented in Annexes 1 to 7). The problems are identified with reference to the objectives relevant to the nautical tourism initiative, i.e.:

- Stimulating performance, competitiveness and innovation;
- Enhancing employment and efficient use of labour; and
- Strengthening sustainability.

3.1 Problem analysis

The overarching problem definition considers the core strategic elements of nautical tourism through which the problems identified through this study manifest, and interventions may be applied. Figure 4 provides a graphic overview of this structure.

Figure 4. Strategic problem structure



- 'People':
  - Professional skipper qualifications – qualifications required by individuals to permit them to skipper boats (of under 24 metres) for professional purposes.
  - Private skipper qualifications – qualifications required by individuals to skipper boats for private leisure purposes.
- 'Products'
  - On-board safety equipment – safety equipment that needs to be carried on board the boat (e.g. VHF radio, life raft).
  - Satellite applications – the application of satellite-enabled technologies to the boating sector.
- 'Propositions and places'

- Marinas and boating development – market development of marinas (and other facilities) that act as destinations in their own right, and provide for access to nautical tourism activities, in particular boating.
- Combined nautical and coastal tourism products – integrated, multi-activity products and product promotion.

- 'Pollution'
  - Boat recycling / end of life boats (ELBs) - the appropriate treatment of ELBs.

3.1.1 Problem definition

Current market and regulatory conditions are placing constraints on the development of the nautical tourism sector in the EU. These are limiting the contribution that the nautical tourism sector can make to blue growth objectives and in some areas undermining the sustainability of the sector's growth. The principal market and regulatory failures affecting the sector are:

- Imperfect information: Equal access to adequate information for nautical sector participants – be they tourists, businesses, workers or other stakeholders – is necessary for markets to operate efficiently. Information failures:
  - Create uncertainty for tourists and economic operators, which can reduce investment (or trigger unnecessary investment) and tourism activity. An example is uncertainty about the requirements for private skipper qualifications and on-board safety equipment, which vary across Europe.
  - Inhibit the development of partnerships and knowledge exchange, thereby stifling innovation. For example, the fragmented nature of the tourism market makes it difficult for businesses to identify potential partners and access market intelligence and best practices, effecting their ability to build partnerships and develop new combined products.
- Missing and incomplete markets: in some instances there are goods and services that are needed or wanted by society that are not being produced by markets i.e. the markets are incomplete or missing. For example, changing consumer preferences have resulted in increased demand for combined products, but development of the combined product market has not kept pace with this shift in demand. Missing/incomplete markets diminish consumer choice, and also the relevance and competitiveness of the sector.
- Externalities: an externality is the cost or benefit that affects a party who did not choose to incur that cost or benefit. An example is the environmental costs imposed on society of failing to properly manage the problems caused by end-of life boats (ELBs).
- Regulatory barriers to entry and innovation: regulation can have unintended consequences. For example, a lack of mutual recognition by Member States of other countries' national skipper qualifications and safety equipment standards creates barriers to the mobility of labour and capital, limiting the efficiency of the internal market. Information failures often contribute to poor design in regulation or an inability to address such unintentional effects of regulation.

3.1.2 People: skipper qualifications

Access to boating tourism and employment opportunities is reduced by a lack of harmonisation and mutual recognition of professional and private skipper qualifications across Member States. This issue is discussed in depth in Annexes 1 and 2.

Each Member State sets its own regulations on the type and nature of qualifications that private and professional skippers must hold. These differ across Member States for a number of reasons, examples being differing cultural attitudes to safety and

regulation, different maritime traditions, and different local meteorological and oceanographic conditions. Each Member State then allows the holder of its qualification to skipper boats in its coastal waters and boats which are flagged to that state. This leads to problems in cross-border situations, where the boat flag state is often different to the home state of which the skippers are holding their qualification.

The impacts of this problem are most acutely felt in the professional skipper market where professional qualifications for small vessels (under 24m) are not mutually recognised between Member States. There are no systems in place to facilitate recognition and/or mobility, and existing regulations are not being applied. This limits the free movement of professional skipper workers, acting as a direct barrier and/or imposing additional costs on them working around the EU[76]. This has consequences for the performance of businesses[77] relying on workers that require skipper licences, including legal implications if working skippers are found to hold inadequate qualifications.

The impact is less significant for private skippers, for whom *de facto* recognition of Home State licences is common, but not universal, thanks in part to the operation of the International Certificate of Competence (ICC)[78], which a majority of Member States accept. The lack of information on qualification acceptance across Member States nonetheless creates uncertainty for private skippers that can have a negative effect on their decisions to participate in cross-border boating tourism. It also reduces charter companies' ability to determine whether a potential client holds valid qualifications to allow a charter to be sold. In both instances (professional and private) the situation leads to an inefficient market.

3.1.3 Products: on-board safety equipment and satellite applications

On-board safety equipment: The costs of participating in private and commercial boating tourism are higher as a result of a lack of harmonisation or mutual recognition of on-board safety equipment across Member States. This issue is discussed in depth in Annex 3.

Boat safety equipment is governed by a mixture of international, EU and national legislation. International and EU legislation typically sets only minimum standards for certain aspects, with much on-board safety equipment left to the discretion of national authorities. National legislation is often intended to ensure that safety equipment is adequate for local meteorological and oceanographic conditions, and aligned with national maritime and safety attitudes. This has resulted in a divergence of requirements for on-board safety equipment across the EU. When a boat is sailed outside its Home State it must comply with the on-board safety requirements of both the boat's flag state[79] and its host state. This means that boats used in such situations hold multiple sets of on-board safety equipment.

Imperfect information on the safety requirements of different Member States creates uncertainty for both private boat users and for charter companies involved in cross-border tourism activities. This can result in boat owners and users making incorrect purchases of equipment in an effort to comply with national requirements. It presents a legal risk to private and commercial users who are uncertain whether the equipment they hold meets the necessary specifications. Imperfect information on the

[76] Language and insurance – common barriers to mobility in other professions – are less important factors. Indeed skippers with non-host state languages are often in demand. Insurance needs are tied to the legal requirement that the skipper qualification has to match the flag of a vessel, hence it is the lack of qualification recognition that affects insurance needs.

[77] Many boating related jobs include roles that require the worker to hold an appropriate skipper licences. The issue is not just limited to skippers of charter boats.

[78] A product of the United Nations Economic Commission for Europe Inland Water Committee (UNECE) Resolution 40.

[79] Which is typically the same as their Home State.

requirements also makes it more difficult for Member States to accurately judge the acceptability of the equipment requirements of other Member States, limiting the scope for mutual recognition of on-board safety equipment.

The impact is most acutely felt in the commercial market, where dual requirements are enforced through the licencing and boat inspection processes. The rules lead to additional costs for companies using boats commercially (e.g. yacht charter) in cross-border situations and can reduce the efficiency with which fleets are deployed across the EU during the boating seasons. The impact is less significant for private boat users, for whom *de facto* recognition of Home State on-board safety equipment is common. However the lack of certainty on equipment acceptance across Member States creates uncertainty for private boat users which can have a negative effect on their decision to participate in cross-border boating tourism. It also presents challenges for national authorities that inspect compliance and can lead to incorrect acceptance or non-acceptance, with potential impacts on boater safety and the ability to operate both private and commercial boats.

Satellite applications: Despite improvements in satellite-based products and their increased use in commercial shipping and cruise markets, such products for the leisure market remain relatively expensive in terms of their price/functionality ratio. Relatively high prices persist largely because of a lack of investment in leisure-boat products by suppliers, which results from the limited market size and hence potential returns. The benefits of satellite-based safety equipment are perceived to be limited - such equipment is typically recommended for use in offshore and ocean waters, which most vessels rarely or never visit. These factors deter boat owners from investing in satellite equipment. This is not thought to have significant impacts on safety – the majority of boating incidents occur in inshore waters, where non-satellite based technologies can operate using the GSM network (typically accessible within 10 miles of the coastline). This issue is discussed in depth in Annex 4.

3.1.4 Places and propositions: marinas and combined tourism products

There are structural issues in the nautical tourism sector that affect its capacity for innovation and its competitiveness, notably in the way marinas and harbours market themselves and the sector's ability to develop products that combine elements of different nautical and coastal tourism activities (so-called 'combined products'). These have impacts on the sector's performance and its contribution to the wider economy. The three key issues are sector fragmentation, a lack of investment and imperfect information. These are discussed in depth in Annexes 5 and 6.

Sector fragmentation: the nautical tourism sector is a complex and fragmented industry consisting predominantly of small and micro businesses[80]. This presents a barrier to collaboration and knowledge exchange between market players and with other stakeholders. This can limit innovation as well as the sharing of, and learning from, best practices. Such barriers to collaboration and knowledge exchange negatively affect the development of combined products as these products typically require partnerships to be built between multiple service providers. The challenges are greatest in the development of spatially dispersed and cross-border products. A similar issue is seen with marinas and their integration with wider tourism and non-tourism economic activities. Existing platforms to support collaboration and knowledge exchange appear to be either too high level or focussed on other areas of the market, limiting their effectiveness in addressing nautical tourism market issues.

Lack of investment: Access to finance is a generic issue for EU businesses across all industries. Whilst the tourism sector can access commercial financial markets as well as a range of EU (and other) funds[81], gaps remain. This is accentuated in situations

[80] The EBI states that 97 per cent of businesses in the sector are SMEs: http://www.europeanboatingindustry.eu/facts-and-figures

[81] e.g. see: European Commission (2016). Guide on EU Funding 2014-2020 for the Tourism Sector.

where investments require innovation and hence greater risk. For combined products a specific gap was identified for micro-scale funding to help meet the costs associated with building partnerships. For marinas the length of the investment cycle (due to the long-term nature of capital investments) also limits the rate at with which physical infrastructure can be replaced. In both instances the effect is to reduce the sector's capacity to exploit emerging opportunities and adjust to changing consumer demands (e.g. those of an ageing customer base). Investment prospects can also be affected by limits on the capacity of SMEs to take on larger investments e.g. multi-facility marina development, and by regulatory environments e.g. uncertainty on emerging issues such as marine planning and marine protected areas.

Imperfect information: There is limited EU-wide or national evidence on the economic value and role of marinas and other elements of nautical tourism. This limits the visibility of the sector and hence its importance in the eyes of public sector regulators and funding agencies/institutions.

3.1.5 Pollution: End of life boats

Current end-of-life boat (ELB) management practices are insufficient. One to two per cent[82] of the 6 to 6.5 million recreational boats in the EU reach their end of life every year. Recycling of recreational boats is uncommon. Materials that are recovered from ELBs usually end up in a landfill or are incinerated. A large number of ELBs are not dismantled but instead are abandoned in ports and marinas, private premises, yards, etc., or are illegally landfilled or sunk. This issue is discussed in depth in Annex 7.

The ELB recycling and dismantling market faces fundamental economic challenges. ELBs contain on average 60 per cent fibre reinforced plastic (FRP), a material for which there are currently few recovery options. Emerging technological solutions are not yet economically viable. ELBs contain a high volume of specialist components, many of which have no resale value. The size, weight and complexity of the ELB waste flow mean ELBs require specific treatment processes which can be costly, as can transportation costs. The high cost and low return environment discourages operators from providing such facilities and/or boat owners to use such facilities when they are available.

High costs related to the treatment of ELBs, lack of sufficient waste operator facilities, low recycling/recovery potential of ELB materials (e.g. fibre reinforced plastic) and the lack of legal requirements for proper treatment of ELBs results in boat owners to seeking alternative disposal routes e.g. boat abandonment. The current state of the market and lack of regulatory drivers also contributes to a lack of awareness amongst boat owners of the importance of properly disposing of ELBs.

Recreational boats will typically have multiple owners during their life[83]. A lack of boat owner registration systems makes effective monitoring and enforcement of ELB rules difficult, undermining the ability for effective legislation and other forms of control management.

Uncontrolled burning of both composite boats and wooden boats results in the generation of toxic fumes from components in waste, such as heavy metals, but can also create dioxins and furans. Pollution components are spread to air, soil and water and can result in long term effects. The abandonment of boats can cause negative local impacts such as pollution from oils and hazardous substances, hazards to navigation, nuisance and marine litter. In both instances there are risks of impacts to human health and the environment. Absence of recycling is a missed opportunity to enhance the circular economy.

Marina and municipal authorities incur additional costs to address the abandoned boats found in waterways and onshore. The costs to authorities of removing

[82] Range based on ICF estimate using ICOMIA 2014 data and EBI estimate using ICOMIA 2011 data.

[83] Boats typically last between 30 and 60 years.

abandoned vessels are generally much higher than the dismantling costs that boat owners would need to pay to send their ELBs to suitable facilities.

3.2 Baseline scenario

3.2.1 Evolution of the problems

In most instances the problems identified above are expected to persist unless action is taken to address them. The exception is satellite applications for leisure boating.

The current situation for skipper qualifications and on-board safety equipment is not expected to change.

EU research project outputs aiming to provide greater clarity and access to comparative information for professional skipper qualifications have seen little take up by Member States. National-level industry efforts to improve clarity for private skipper licences have had limited effect. There have been no equivalent initiatives for on-board safety equipment.

Without further intervention, the lack of clarity on Member State requirements and the lack of mutual recognition (or harmonisation) of Member State regulations in these areas will continue to present internal market barriers and affect the efficiency with which the boating sector, and charter market in particular, operates.

Incremental development of the market in areas of combined products and marinas, as well as ELBs, is expected.

Consumer demand characteristics will continue to evolve. Market innovation and development of combined products and marina facilities is expected but market barriers are expected to limit the pace and extent of sector adjustment. Existing tourism support (e.g. through regional seas strategies, EU funding programmes) will only be partially effective in addressing the market barriers.

Some improvements in ELB management can be expected. These are driven by existing ELB research projects and by efforts (both voluntary and regulatory) in a small number of EU countries to develop new treatment and processing technologies and to integrate eco-design principles in new boat construction. Germany and the Netherlands have banned the disposal to landfill of reinforced glass fibres, which are used extensively in boats. A company in the UK uses a recycling technology that can produce recovered materials from ELBs that is usable in construction materials such as cement, in bulk and sheet moulding compounds (SMC/BMC) and even in laminates for new boats or other products. However, the effectiveness of existing research projects, technologies and initiatives at the EU level is likely to be low-to-moderate. The rate of learning and knowledge transfer to similar activities in other Member States is also expected to be slow. Large scale improvements in ELB management would require a much greater level of R&D effort across the EU and funding to support ELB treatment capacity. Therefore, the overall negative effects of poor ELB management are expected to increase.

Rapid technological development is expected to bring satellite applications to the leisure boat market

Development of the satellite infrastructure on which the services of interest depend is expected to continue. EU and other support programmes are already targeting marine applications. Advances in technology and decreasing prices are expected as developments in the commercial shipping and cruise markets feed through to the recreational market. The availability of new products and services (satellite based and GSM-based applications) is expected to increase.

4 Justification for EU action

In its 2012 Communication on Blue Growth[84] the Commission identified coastal and maritime tourism as one of the five focus areas for growth of the Blue Economy. The CMT strategy proposed 14 actions to be undertaken at European level, in cooperation with national, regional and local stakeholders, to tackle the needs and challenges of the sector based on its important contribution for jobs and growth. A number of these actions[85] relate to the nautical tourism sector.

The market and regulatory failures prevalent in the sector provide a basis in law for EU action. These are summarised as follows:

- **Skipper qualifications and on-board equipment**

  The EU's right to act in these areas is established through Article 26 of the Treaty on the European Union with regard to the free movement of goods, persons, services and capital and the creation of an internal market.

  Regulatory differences among Member States and lack of mutual recognition (and, to a lesser extent, imperfect information on the differences between Member States systems) limit free movement of private and professional skippers and the efficiency with which capital (i.e. boats) can be used. This results in labour market inequalities and increased costs for commercial and private participants.

  Mutual recognition and acceptance is a relatively minor issue for private users, for whom it is common for flag state rules to be applied (although this is contrary to the legal position). There is therefore no strong case for EU action on the basis of impacts on private users. In commercial markets (i.e. the employment of professional skippers for leisure boats and deployment of charter boats) the issue is more significant.

  In the absence of an EU-wide initiative to deliver greater clarity and mutual recognition of private and professional skipper licences and on-board safety equipment, effective action to tackle the problem is unlikely.

- **End of life boats (ELBs)**

  The EU's right to act in in the area of ELBs is established through Articles 11 and 191 to 193 of the Treaty on the Functioning of the European Union (TFEU), under which the EU is competent to act in all areas of environment policy, such as air and water pollution, waste management and climate change, subject to the principle of subsidiarity.

  ELBs are currently considered to be waste. In contrast to the situation for end-of-life vehicles (ELVs), there are no end-of-life waste criteria[86] at EU or MS level for ELBs. The study analysed the possibility of establishing a scheme for ELBs similar to that adopted for ELVs in the EU and concluded that there are several significant differences between the two sectors that would need to be taken into account:

    - ELVs comprise 70-80 per cent metals – therefore most components are recyclable and recyclers earn money from ELV treatment;

[84] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth'; COM (2014) 254 final/2 of 13.5.2014.

[85] Specifically, related to CMT Strategy actions 5, 6, 9, 10, 11, 12 and 13

[86] End-of-life waste criteria specify when certain waste ceases to be waste and obtains a status of a product (or a secondary raw material). Article 6 (1) and (2) of the Waste Framework Directive 2008/98/EC specifies that certain waste shall cease to be waste when it has undergone a recovery (including recycling) operation and complies with specific criteria to be developed in line with certain legal conditions.

- ELVs are smaller, and can be transported and shredded more easily (thus contributing to a lower treatment cost);
- Every year, ELVs generate between 7 and 8 million tonnes of waste in the EU, compared to fewer than 200,000 tonnes for ELB (of which around 60% is FRP)[87].

Regulatory measures for ELB disposal are in place in France, and voluntary initiatives exist in Finland, Italy, Sweden and the UK. ELB treatment is costly and is usually paid for by the last owner of the boat. Further, the market for the recovery of ELB materials is virtually non-existent. There is little incentive for, nor related legislation to ensure that, owners and manufacturers handle ELBs properly and thereby avoid the potential negative environmental and health effects of alternative means of disposal. A low level of material recycling is not coherent with EU ambitions for a transition to a circular economy.

In the absence of a specific EU initiative on ELB management the problem is expected to persist. Whilst some national-level initiatives are ongoing, and additional initiatives may be launched in the future, the voluntary nature of many of these schemes limits their effectiveness. Where regulatory measures are adopted, these may be undermined by a lack of comparable action in other Member States, providing an incentive for boat owners to register under 'flags of convenience'[88] that mean they can avoid having to comply with ELB regulations.

- **Combined products and marinas**

Article 195 of the Treaty on the Functioning of the European Union (TFEU) requires the EU to complement Member State tourism sector actions 'particularly by promoting the competitiveness of Union undertakings in that sector'. EU action should be aimed at 'encouraging the creation of a favourable environment for the development of undertakings' and 'promoting cooperation between the Member States, particularly by the exchange of good practice'.

Many of the issues identified are pervasive across the wider tourism sector. There is a specific need to address the issues identified in the above analysis as they are prohibiting the nautical tourism sector from adjusting to changes in consumer demand, eroding the competitiveness of the sector. There is particular added value in supporting interventions which seek to address the cross-border aspects of barriers to collaboration and knowledge exchange, access to finance, and the information failures that are affecting tourist, commercial and public sector decision making.

- **Satellite applications**

There is no clear justification for EU intervention in the satellite applications market. Under baseline conditions the market is expected to satisfy the relatively small levels of unmet consumer demand over the medium term. Whilst there may currently be certain services that consumers want but the market does not provide (or provides but at too high a price), the evidence does not suggest this is due to an inability of the market to function. Rather it is due to the small market size and low return on investment. Further, it is not clear that the unmet demand is having an impact on the competitiveness of the

[87] Whist the market for FRP across all (including non-marine) products types is growing, end of life waste volumes are small e.g. in the UK, across all products, carbon-fibre reinforced polymers and glass reinforced polymers are estimated to result in around 2,500tonnes/year and 15,000tonnes/year respectively (Job et al. 2016. Composites Recycling: Where are we now? Composites UK).

[88] More commonly seen in the commercial shipping sector, 'flags of convenience' refers to the registration of a ship under the flag of a given country in order to avoid financial charges or restrictive regulations in the ship owner's country.

sector. Statistics indicate that the vast majority of incidents occur in near-shore waters, where non-satellite GSM networks are available and the benefits of satellite-based systems are not apparent. There is therefore no overriding public interest in deploying satellite applications based on safety.

5 Strategic intervention options assessment

5.1 Introduction

This section presents a review of the most promising options for addressing the problems identified in the nautical tourism sector. It provides a summary level assessment of these options against a set of strategic objectives for nautical tourism, before concluding with a multi-criteria assessment that covers a broader range of economic, social and environmental impacts.

Thirty potential intervention options were identified. These were screened[89] to establish a short-list of 16 of the most relevant options. These short-listed options were further developed and then subjected to a full assessment of their economic, social and environment impacts. Based on these assessments, a preferred option or group of options was identified for each topic area; six such interventions are presented in this section. The full set of options, the outcome of the screening exercises and detailed assessments are presented in the topic annexes.

The interventions are categorised by reference to the level of EU involvement in the sector that they would involve. In increasing order of ambition, these are:

- Information-based interventions: these are the lightest level of intervention - relatively straightforward, no/low-regret options.
- Non-regulatory support actions: these are actions such as the provision of funding, development of standards or delivery of events or supporting infrastructure, which do not required regulatory backing.
- Regulatory interventions: these are the strongest type of intervention and require the highest level of EU justification.

5.2 Strategic objectives for nautical tourism

The objectives set the direction and level of policy ambition. Two levels of strategic objectives are commonly defined: general objectives, which describe the high level ambition of an intervention in the sector, and specific objectives, which establish what the intervention is intended to achieve in addressing particular problems in the sector.

The CMT strategy defines the high level objectives for the sector, and provides a link back to the Blue Growth agenda. General and specific objectives are proposed below. These are based on an understanding of the CMT strategy and the issues affecting the nautical tourism sector.

- General objectives
  - Stimulating performance and competitiveness.
  - Enhancing employment and efficient use of labour.
  - Strengthening environmental sustainability.
- Specific objectives[90]
  - Improve collaboration and development of places and propositions (i.e. marinas and boating and combined products).
  - Improve mutual recognition of national regulations and enable the free movement of people, goods and workers (i.e. skipper qualifications and on-board safety equipment).
  - Improve ELB waste management.

[89] Screening criteria: acceptability/ease of implementation, effectiveness, proportionality and EU added value

[90] More detailed specific objectives for each topic area are included in the topic Annexes of this report.

5.3 Intervention options assessment

This section presents a summary assessment of the most promising intervention options[91], as listed in Table 1. An initial long list of 30 intervention options was screened based on criteria of acceptability/ease of implementation, effectiveness, proportionality and EU added value, to determine a short list put forward for impact assessment (see each of the topic annexes for details of the options and the full impact assessments). The interventions set out in Table 1 are the preferred option for each of the topic areas, where EU action is deemed to be justified.

Of the three categories of regulation[92] presented, there is only one example of 'hard' regulation being the most effective and efficient response. No information-based interventions were selected – they had too little traction on the problems to warrant being taken forward independent of other measures. The majority of the options presented are 'soft' regulation and economic instrument interventions. They often include elements of information-based interventions.

Table 1. Most promising nautical tourism sector interventions

Topic area	Intervention	Intervention type		
		Information	Soft regulation & economic instruments	Hard regulation
Professional skippers	1. A European core curriculum with national top-up modules, through a new EU Directive			x
Private skippers	2. Enhanced ICC private skipper qualification		x	
On-board safety equipment	3. Minimum EU standards (underpinned by comparison tool)		x	
Marinas and boating	4. Innovation funding and support for collaboration, regional integration and adoption of new ISO standards		x	
Combined products	5. Virtual platform and micro-funding support		x	
ELB management	6. Direct support and non-legislative direction through the use of financial instruments		x	

5.3.1 Intervention summary assessments

Topic	Professional skippers
Intervention 1	A European core curriculum with national top-up modules, through a new EU Directive.
Description	The European core curriculum will provide an agreed common set of

[91] A full assessment of these and other options is provided in the topic-specific annexes of this report.

[92] These are 'hard regulation', 'soft regulation and economic instruments' and 'information' – as defined in Tool 15 of the EC's Better Regulation "Toolbox": http://ec.europa.eu/smart-regulation/guidelines/tool_15_en.htm

Topic	Professional skippers
	knowledge, skill and competence requirements. Additional nationally specific top-up modules will accommodate justifiable national differences in training requirements e.g. on the grounds of safety.
Specific objectives	Improve mutual recognition of national regulations and enable the free movement of people, goods and workers.
Implementation	A European core curriculum (incorporating national top-up modules) is to be introduced via a new EU Directive[93]. The Erasmus+ funded project TCC-SCV[94] has developed a transparent process of qualification comparison, extracted a common set of knowledge, skills and competences for professional skipper qualifications in seven Member States and built a common core curriculum from these data. Further development of this framework is required to establish an agreed EU-wide common curriculum, acceptable to all MS. Top-up modules need to be developed and their content justified.
Effect	The intervention should lead to increased understanding and trust between national authorities regarding their respective qualification systems, with mutual recognition of skipper qualifications enabled directly via the core curriculum and national modules.
Key impact criteria	**Economic: Performance and competitiveness** Charter companies will benefit from reduced loss of business due to mismatches of skippers and boats[95]. This is estimated to provide one week of additional charter revenue per year for each skippered charter boat[96], equating to an overall increase in charter sector revenue of €50-€120m per year[97]. **Social: Employment and labour markets** An estimated 25,000 professional skippers would benefit from lower costs and better access to employment through reduced qualification costs and reduced loss of income due to time spent requalifying. This will enable greater access to work and therefore an increase in the number of days worked per season. These benefits are estimated to amount to approximately €50m per year[98]. **Environmental: Resource use and waste** No significant impacts are anticipated.
Efficiency and effectiveness	The intervention is expected to be successful in addressing the lack of mutual recognition of qualifications in the professional skippers market. Significant economic benefits are anticipated through

[93] The concept of national top-up modules is not compatible with the principles of Directive 2005/36/EC (revised by Directive 2013/55/EU).

[94] www.tcc-scv.eu

[95] i.e. where the skippers' qualifications are not appropriate given the boat's flag and an appropriate skipper being unavailable.

[96] There are estimated to be between 5,400 and 12,000 skippered charter boats active in the EU – see Annex 1 for further details.

[97] Estimates are made with low confidence. Please see professional skippers' topic annex for full details of assumptions.

[98] Estimates are made with low confidence. See professional skippers' topic annex for full details of assumptions.

Topic	Professional skippers
	enhanced charter revenues and reduced costs to professional skippers of requalification (as estimated above). No significant negative impacts are anticipated. The benefits are expected to significantly outweigh the costs of the intervention.

Topic	Private skipper qualifications
Intervention 2	Enhanced International Certificate of Competence (ICC)
Description	Enhance the existing ICC to improve the standard of competence. It would certify and improve the consistency with which training/examination is applied across Member States. The ICC would be enhanced by, for example, having a more detailed syllabus description, clear exam regulations, and specification of its validity (e.g. length of vessel, distance from coastline, age).
Specific objectives	Improve mutual recognition of skipper qualifications and enable the free movement of people, goods and workers.
Implementation	Implementation would be through national authorities becoming signatories to UNECE Resolution 40 (or an updated version of the resolution). Member States would have to become signatories to the Resolution and ensure that their own national pleasure boat licence satisfies the ICC requirements. Enhancing the ICC's standard is expected to increase its attractiveness to the nine MS who are not signatures to the current ICC. The formulation of an improved ICC would be the responsibility of UNECE and its committees. The EU could initiate and support this process and recommend the acceptance of the ICC as an EU-wide licence. How the EU and UNECE interact would need to be further explored and negotiated.
Effect	Adoption of an enhanced ICC as an international and European pleasure boating licence should resolve the recognition problems associated with pleasure boating licences in Europe and lead to a harmonisation of qualification standards within the EU for skippers sailing outside of their national waters.
Key impact criteria	**Economic: Performance and competitiveness** It is expected that an enhanced ICC would increase cross-border mobility and create greater demand for inter-EU private boat and charter tourism, benefiting other nautical tourism businesses. For charter businesses the implementation of an enhanced ICC would remove the legal uncertainties relating to their customers' private skipper qualifications and provide a common minimum level of competence. This should result in a lower risk of loss of revenue and lower qualification checking administrative costs for charter companies and may also provide charter companies with greater confidence to provide more bareboat[99] charters. Indicatively, if 1% of bareboat charters were previously lost but could now be agreed due to the intervention then charter revenue would increase by €24m to €27m per year. Additional cost savings

[99] Boats provided to charterers without the inclusion of a professional skipper or crew.

Topic	Private skipper qualifications
	to charter businesses from avoided qualification checking processes could equate to around €1m per year.[100] **Social: Employment and labour markets** The small increase in charter and own boat tourism would be expected to have a commensurate positive, but modest, impact on employment. **Environmental: Resource use and waste** No significant environmental impacts are expected.
Efficiency and effectiveness	An enhanced ICC would be effective in reducing uncertainty and eliminating internal market barriers. Minimum standards of qualification and broad mutual recognition of qualifications between Member States would lead to some economic and social benefits. These would be relatively minor given the relative high degree of *de facto* recognition under baseline conditions. The benefits are expected to be greater than under Intervention 1 as it enables full skipper mobility and is therefore more likely to have a positive effect on boating tourism. No significant cost impacts are anticipated. Implementation via the ICC's administering body, UNECE, will limit the extent to which costs are borne by the European Commission. Over the medium term benefits are expected to outweigh the costs. Working with UNECE would mean the EU does not have full control over the implementation process. This may present a risk to the satisfactory achievement of the intervention objectives and/or the timeframe within which implementation is desired.

Topic	On-board safety equipment
Intervention 3	Reference list of EU minimum safety equipment (supported by comparison tool)
Description	An agreed reference list of EU minimum safety equipment required by private and charter boats when undertaking cross-border sailing in the EU. Implemented via an EU recommendation[101].
Specific objectives	Improve mutual recognition of national regulations and enable the free movement of people, goods and workers.
Implementation	An EU-led initiative to define an accepted package of safety measures that would be required by all craft in EU waters, and accepted for boats temporarily navigating in coastal waters not of their flag state. Negotiations among EU Member States would be needed to refine and agree the minimum safety measures. The reference list would need to be disseminated to the EU boating community. In the short term, and as part of the evidence base for the minimum standards, a comparison tool of national safety equipment regulation

[100] Estimates are made with low confidence. See private skippers topic annex for full details of assumptions.

[101] Incorporation or extension of the Marine Equipment Directive to cover on-board safety equipment for recreational boats is not considered appropriate. Please see Annex 3 for further discussion.

Topic	On-board safety equipment
	(including navigation rules) can be developed. This would be an EU initiative, with participation from EU28 national experts, to gather complete details of all national safety regulations in all Member States and make them available via an online comparative tool in all EU languages. Ongoing maintenance of the tool would be needed to capture any amendments to national qualification requirements until such times as the minimum standards are enacted. Dissemination to the EU boating community would be required.
Effect	The implementation of this option would reduce legal uncertainties relating to on-board safety equipment standards in EU Member States and reduce variability in national safety equipment standards.
Key impact criteria	**Economic: Performance and competitiveness** Where charter boats operate across multiple Member States, the costs to charter businesses of meeting rules in different Member States would be reduced to a minimum. Boats could be used more efficiently due to the reduced need to change the equipment on board when changing locations. It is estimated that this could result in cost saving of around €6.4m per year and increased revenues of around €30m per year for EU charter businesses. The intervention may also encourage a modest increase in cross-border private boater tourism and associated tourist expenditure could equate to around €0.8m per year. **Social: Employment and labour markets** The increase in charter and own boat tourism would be expected to have a commensurate positive, but modest, impact on employment. **Environmental: Resource use and waste** No significant environmental impacts are expected.
Efficiency and effectiveness	The option would directly address the underlying intervention objectives: it would provide all stakeholders with the necessary information to understand the requirements for on-board safety equipment in cross-border situations; and it would establish a more harmonised set of standards for cross-border activities. The improved certainty and application of common standards would avoid the need for charter companies (and to a lesser extent private boaters, as only flag state regulations are typically enforced) to purchase multiple sets of on-board safety equipment. This would reduce their costs and facilitate more efficient deployment of their fleets. It may also encourage more cross-border tourism. Short term improvements will be provided by the interim comparison tool before the full benefits are felt in the medium term once an agreed set of minimum standards are in place. Over the medium term benefits are expected to outweigh the costs.

Topic	Marinas and boating
Intervention 4	Innovation funding and capacity building on collaboration and integration models
Description	The intervention includes a package of interrelated actions including:

Topic	Marinas and boating
	• EU funding for innovation and investment in marina infrastructure and boating products • EU research on the economic benefits of marinas • EU capacity building on integration of marinas into regional development planning
Specific objectives	To support increased investment and innovation in the development of new and improved marinas and boating products that capture the evolving demands of consumers. Foster integration of marinas into regional development plans to facilitate enhance the role of marinas in catalysing activity in the broader economy.
Implementation	EC commissioning of services (e.g. research) and provision of funding; with supporting dissemination activities[102].
Effect	The intervention will address gaps in information and increase awareness of the economic impacts of marinas and boating activities and the potential role of marinas to act as regional hubs, as well as support uptake of approaches that could encourage and promote these impacts and maximise potential synergies. It will help to address the fragmentation of the sector and increase collaboration and cooperation between marinas, local authorities, and businesses. It will tackle barriers to innovation and investment and support the sector as it adjusts to, and exploit, changes in consumer demand. This should increase the competitiveness of the sector and result in increased participation in boating activities, visitors and tourism expenditures, and strengthen the sustainability of marinas and boating activities.
Key impact criteria	**Economic: Performance and competitiveness** The performance and competitiveness of the sector will be enhanced through the following mechanisms: • Financial support will directly encourage increased investment and innovation in marina and boating products, enabling currently unmet consumer demand to be better satisfied, increasing the competitiveness and performance of the sector. • Supporting marina cooperation and regional integration will enhance marina performance and the contributions that the marinas make to their local and regional economies. The scope for successfully unlocking additional economic activity through such interventions is considerable. This is readily demonstrated by considering the extent of unmet demand from older people, estimated to be worth approximately €15bn[103] per year to the EU economy, a proportion of which may be unlocked with the assistance of the intervention. **Social: Employment and labour markets**

[102] E.g. through existing EU and regional platforms.

[103] Author's estimate based on extrapolation of information on the potential impact to the German economy of enabling older boaters to participate for an additional five years (see Section A.5.3.1.1).

Topic	Marinas and boating
	Any positive economic impacts for marinas and boating activities and the wider tourism sector are likely to have knock-on effects on job creation. **Environmental: Resource use and waste** Increased investment in physical infrastructure could have a negative effect on the marine environment – although this is likely to be mitigated by the extent to which investment is for the replacement of existing infrastructure and the extent to which innovation can reduce the environmental impact of infrastructure and activities.
Efficiency and effectiveness	The intervention comprises a package of measures, each of which addresses different issues that are currently restricting the development of marinas and boating and its potential role in regional development. The overall effectiveness is expected to be of moderate significance. The measures have moderate implementation costs (although this is dependent on the scale of funding made available and whether this represents redistributed or additional money). This means that the Commission's role is light-touch and focused on providing information and funds encouraging uptake.

Topic	Combined products
Intervention 5	Virtual platform and micro-funding support.
Description	Establish a virtual platform for combined products for networking and engagement and information exchange; provision of a micro-funding facility for SMEs developed combined products.
Specific objectives	Improve collaboration and development of combined products.
Implementation	This option comprises a micro-level funding facility and virtual platform for information dissemination and networking. An online nautical tourism platform will be developed to facilitate partnership engagement/networking and disseminate and share knowledge about innovations and products. It could be implemented through a Commission-funded service contract that provides set-up and maintenance as well as active content development and online facilitation (which will be particularly importance to stimulate engagement and ensure the forum is active). Implementation costs are estimated at around €100k per annum. Alternatively, existing sites may be appropriate for hosting, with the potential benefits of reducing costs and increasing platform traffic. Further dialogue with EU and regional industry representatives is necessary to determine the feasibility of such an approach. A micro-facility for combined product development will be created under an existing EU fund. It will need a streamlined application process to ensure low administrative costs for applications. Implementation costs depend on the scale of funds made

Topic	Combined products
	available – these may be additional or redistributed from within existing funding programmes.
Effect	The two measures will be mutually reinforcing. The virtual platform will help to address the problems created by the fragmented nature of the sector, providing a forum for collaboration and partnering, information sharing (e.g. on the new combined product funding opportunity) and virtual facilitation of product and partnership ideas and best practices between tourism organisations. The funding will provide improved access to EU funds for micro enterprises, addressing the cost challenges associated with partnership building and development of product ideas. The funding will ensure that activity stimulated through the platform can be supported with the funding necessary to further develop emerging partnerships and ideas. In turn the platform will be able to promote the funding mechanism to a wide range of eligible organisations (addressing issues of fragmentation and lack of awareness of such opportunities) and provide advice on how to access it. This is expected to foster greater engagement in the concept of combined products and facilitate increased collaboration between, and proactive product development by, businesses.
Key impact criteria	**Economic: Performance and competitiveness** The development of new combined products will support the diversification of tourism products to meet a growing area of consumer demand, improving the competitive position of the sector. The intervention could therefore stimulate an increase in tourism activity and value and hence improved business performance and increase sector GVA. **Social: Employment and labour markets** Improvements to the performance of tourism businesses are expected to support job creation and improved incomes. **Environmental: Resource use and waste** New combined products emerging as a result of the intervention could result in additional environmental impacts where coastal tourism increases. However, the intervention also provides an opportunity to reward environmental sustainability and disseminate best practice in low-impact and sustainable forms of tourism. Overall, environmental impacts are expected to be insignificant.
Efficiency and effectiveness	The intervention addresses each of the underlying causes of the problem and each aspect of the intervention will be mutually reinforcing. The overall impact is expected to be moderate given the nature of the intervention. The benefits are expected to outweigh the costs.

Topic	ELB management

Topic	ELB management
Intervention 6	Providing direct support and non-legislative direction through the use of financial instruments.[104]
Description	Establishment of an ELB fund, financed by boat manufacturers and/or boat owners. The fund would cover the cost of ELB treatment to ensure proper disposal and support research into implementing eco-design principles in new boat construction and more efficient ELB dismantling and recycling processes.
Specific objectives	Improve ELB waste management and encourage innovation across the entire life cycle of recreational boats.
Implementation	This intervention includes the establishment of an ELB management fund[105]. The funds collected would help to pay for ELB treatment costs and fund targeted research on the increased recyclability of ELBs and the use of eco-design in the construction of new boats. For example, it could support research on recycling processes/opportunities for polymer plastics and on new materials to replace polymer plastics or commission life cycle analysis assessments (LCA) that explore the relative merits and disadvantages of the various boat disposal options. The fund would be financed by boat manufacturers and/or boat owners and implemented at MS level. The ELB fund would be most effective if there is a maximum number of MS involved (or at least the maritime MS) due to the transnational nature of recreational boats. It would also be important that the implementation of the fund is harmonised and coherent across the MS involved e.g. using the same approach to calculate the contributions to be paid by boat owners across the MS in order to avoid creation of an uneven playing field and internal market distortion. The EU could provide guidance on setting up the fund and carrying out information and dissemination campaigns to promote the best practices reflected by the ELB management fund for addressing ELBs. The funding needed to cover ELB treatment costs is estimated to be at least €80 million (based on the assumption that it costs approximately €1,000/per ELB to be treated and around 80 000 ELBs need to be treated and disposed of every year). A further €10m - €20m is suggested to fund innovation[106]. A total fund of €100m/year is proposed. In the case where both manufacturers and boat owners contribute to the fund, a shared responsibility principle could be established. Manufacturers would need to decide whether to

[104] A legislative (mandatory) option was investigated for the ELB topic area, however it was discounted during the screening stage as it was considered to be too problematic to implement at EU level, with potentially low stakeholder acceptance and relatively lower efficiency than the preferred option. Further details can be found in the Annex 7.

[105] A study on the feasibility of a financial instrument to facilitate safe and sound ship recycling is currently being conducted in the framework of the Ship Recycling Regulation (SRR) 1257/2013 (article 29). Further discussion on potential linkages is provided in Annex 7 in the section on intervention options and analysis of impacts.

[106] Targeted research on the increased recyclability of ELBs and the use of eco-design in the construction of new boats. For example, research on recycling processes/opportunities for polymer plastics and new materials to replace polymer plastics or to commission life cycle analysis assessments (LCA) to address the relative merits and disadvantages of the various boat disposal options.

Topic	ELB management
	transfer the entire disposal fee to the boat purchaser (as a change in price), absorb the cost themselves or split the fee. In all cases, the addition of a disposal fee on new boat purchases would increase the overall purchasing price of the boat. As the fund would be financed by boat manufacturers and/or boat owners, the "disposal fee" would entail approximately €700 per new boat sale per year; or €16 per existing boat owner. For new boats, the disposal fee could be applied at the purchase of new boats and for existing boats, the disposal fee could be paid through marina or port fees when the boats call to port. The disposal fee amount to be collected through the fund could also be set based on the recycling potential of the boat to further promote eco-design and recyclability. For example, the disposal fee could be reduced based on eco-design characteristics of the boat that make it more "recyclable" at the end of its life compared to other boats on the market. The eco-design principles for the construction of new boats would use materials that can be more easily recycled or recovered. Here we assume that the recycled or recovered materials offset some of the treatment costs due to revenues generated from the re-sale of recovered materials. Therefore, in this context, the waste fee is established to reflect as accurately as possible the cost for treatment[107]. With the above in mind, it would be important to set up a "clearance" body, whose key role would be to establish the disposal fee to be paid and to oversee the monitoring and accurate reporting of the funds collected from port authorities/manufacturers. The clearance body would need to carry out regular, e.g. annual, reviews of the reported data (costs of treatment and funds collected) to determine whether the amount of fees applied need to be modified. This would require treatment facilities (or ports/marinas) to report to the clearance body to ensure that costs information are regularly updated. In the case several MS are involved in the scheme, the clearance body would need to ensure that the costs of ELB disposal and associated disposal fee do not differ significantly across the MS to avoid creating an uneven playing field and competition risks e.g. boat owners preferring to pay the disposal and use the disposal facilities of a particular MS because the fees are significantly lower compared to other MS. A notification system would also need to be established to track which boats have paid the disposal fee and those which have not. See Box A7.2 in the Annex section A7.2.3.5 for a description of how the CDNI model calculates similar fees to cover the costs of ship-generated waste treatment from inland vessels.
Effect	The fund would cover ELB treatment costs (approximately 80m€/year) and for research on eco-designed materials for new boats and recycling technologies (approximately 10-20m€/year). A key factor underlying the effectiveness of this option is the **incentive** for boat owners. Since they will have already paid for a

[107] It would be important to carry out an in-depth economic modelling exercise, using robust and reliable data on costs, new boat sales, recycling markets, etc. to ensure that the calculation of the disposal fee is fair and justified.

Topic	ELB management
	part of the disposal costs, boat owners will be more inclined to bring their ELBs to designated facilities, rather than to abandon them. The fund would also encourage investment from the recycling sector to invest in adequate facilities. It would also encourage innovation in new boat design and treatment process to improve cost-efficiency and recyclability as boats that meet eco-desgin criteria could be eligible for a fee reduction.
Key impact criteria	**Economic: Performance and competitiveness** Assuming that 50 per cent of the 78,000 boats not currently dismantled are disposed of through appropriate dismantling and recycling, €78 million of additional revenue for the dismantling industry could be potentially generated and consequently create new jobs for the ELB dismantling industry each year. However, this could be offset to some extent by negative impacts for other sectors. In terms of the potential impacts on manufacturers of boats, those that build more recyclable boats would be able to apply a lower "waste fee" on the purchasing price of the boat. This in turn could boost competitiveness in the sector to build more "recyclable" boats, assuming that the demand for such boats is sufficiently high and that there are guaranteed revenues from boat recycling and the recovered materials. It is uncertain to what extent this would impact manufacturers who do not construct eco-designed boats. Building the fund from new boat sales would equate to €700/boat/year, equivalent to approximately 1.3% of the annual value of new boat sales. According to some stakeholders, consumers may be very sensitive to changes in price. However it is uncertain that the fund would have a negative effect on new boat sales unless the disposal fee is extremely high, due to fact that some consumers consider recreational boats as a luxury good i.e. boats are highly price inelastic. It is uncertain to what extent this would impact manufacturers who do not construct eco-designed boats e.g. due to lack of technology or interest to do so, because of the characteristics of recreational boats e.g. as a luxury good, price is less of a factor effecting the demand. It is likely that eco-designed boats would be more expensive (at least in the short term) than non-eco-designed boats, even if a lower disposal fee is applied to the purchasing price, due to the investments needed for the recyclable materials used in new boats. Therefore, the overall impacts on manufacturers who continue to construct non-recyclable boats would greatly depend on sales and demand of new boat types There are likely to be impacts on competition between ELB disposal facilities (assuming an increase in ELB dismantling activities) in terms of encouraging investment in more efficient technologies and driving down disposal costs and prices. This highlights the importance of a financial instrument which creates a fair playing field through the establishment of minimum standards for disposal. Moreover, it would be important to ensure

Topic	ELB management
	that there is sufficient ELB treatment capacity within the EU to treat future increased volumes of ELBs. Further development of a market for recovered materials (assuming that there are improved processing and recovering technologies) would be expected. Some of the fund could be invested in researching opportunities to reduce dismantling costs and increase recycling-based revenue opportunities. **Social: Employment and labour markets** The positive economic impacts resulting from increased boat dismantling are likely to have modest knock-on effects in terms of job creation due to the low job/throughput ratio and ease with which existing waste facilities could be extended. It is estimated that if 50 per cent of ELBs were sent to dismantlers around 70 FTE jobs would be created. **Environmental: Resource use and waste** A dedicated ELB management fund will reduce the environmental impacts of boat abandonment by significantly reducing the number of boats abandoned each year (currently around 10,000 abandoned ELBs every year). The fund would encourage the environmentally sound dismantling of a significantly increased proportion of the annual 80,000 ELB arising. By encouraging eco-design in new boats, it can further lead to more reuse and recycling of materials. It is therefore likely to have a significant impact on resource use and waste.
Efficiency and effectiveness	An ELB management fund will provide an incentive for boat owners to bring their ELBs to a dismantling or authorised treatment facility, resulting in fewer boats being abandoned (and avoiding the associated costs for public authorities). It would help to offset some of the high costs associated with dismantling practices. However, for this option to be effective (and act as an incentive), the financing mechanism would need to be carefully designed and implemented to ensure that: • The disposal fee is established to reflect a fair and accurate share of the costs to be covered for ELB treatment. • The financial instrument does not create any market distortions or unfair competition between ports/disposal facilities. • Funds are collected and re-distributed appropriately (e.g. disposal fee applied at the sale of new boats, or from existing boat related fees such as through the fees applied by some ports to collect and treat ship-generated waste from boats). The above aspects could be the addressed by a dedicated clearance body and/or competent authority to oversee the scheme e.g. EMSA. The increased funds for research and investment should also contribute to developing technologies to increase the efficiency of ELB recycling and potentially the market for recovered materials from ELBs. Further, as manufacturers and/or boat owners would

Topic	ELB management
	be the ones most responsible for paying the dismantling costs, wide stakeholder acceptance would be needed. The cost of raising finance for the fund is likely to be borne by consumers – either directly or indirectly through increased prices. It is not clear that this would have any significant negative impact on demand, and hence on boat manufacturing sector performance. The recycling/disposal sector would benefit from increased throughput and potential recycling revenue generation opportunities. The cost to public authorities of managing the fund is estimated at around €0.4m per year (€0.8m per year if a registration system is also put in place). This would be offset by cost savings of approximately €15m a year for public authorities who will have fewer abandoned boats to address e.g. pollution and clean-up costs, space in harbours for active boats[108], more attractive marina and inland water areas for tourists, etc. It is not possible to quantity the direct environmental benefits of the intervention due to lack of data, however, it can be assumed that significant savings would also result from the prevention of environmental degradations and health consequences caused by abandoned boats.

5.4 Multi-criteria assessment

A multi-criteria assessment (MCA) was undertaken for each of the above intervention options, based on a more detailed assessment presented in the topic annexes. The results are presented in Table 2 below and Figure 6. Each intervention was assessed against a range of economic, social and environmental impact criteria. Each impact was scored using a seven point scale (--- / -- / - / 0 / + / ++ / +++) to reflect the expected nature and significance of impacts. This incorporates quantitative estimates of the economic impact associated with four of the six interventions[109].

The MCA shows that the interventions are expected to generate relatively stronger economic and social impacts than environmental impacts. The strongest impact is expected on the performance and competitiveness of the sector, thereby supporting the creation of additional jobs and growth.

The MCA indicates that intervention 4, focussed on marinas and boating, and intervention 5, for combined products, are expected to provide the greatest combined impact across the economic criteria. Their relative strength is in part due to the breadth of the economic activity that they affect, and their express focus on driving innovation and investment in improved product development and hence capture of additional visitors and/or greater value. Interventions focussed on private skipper qualifications (Intervention 2), on-board safety equipment (Intervention 3) and ELB (Intervention 6) are expected to have the most limited effect on the economic criteria.

Figure 5 provides a top line quantitative estimate of the potential economic value (increase in revenue and/or cost savings) that could be generated by the interventions[110]. For those interventions with quantified economic impacts

[108] Assuming that there 7,500 less abandoned boats every year at €2,000/year cost of disposing of abandoned boats

[109] It was not feasible to establish robust quantitative estimates of the impacts for two of the proposed interventions.

[110] Economic impact through improved performance and competitiveness and reduced costs were partially quantified through the research. These are partial estimates, based on a number of assumptions and limited data and hence confidence in the estimates is low. They should be treated as indicative of the likely order of magnitude of potential impacts.

(Interventions: 1, 2, 3 and 6), the combined impact could be in the region of an additional €290 million per year. This would represent a ~1% expansion of the nautical tourism sector. This does not include the potential impacts of interventions focussed on the marinas and boating topic or the combined product topic (interventions 4 and 5), for which robust quantitative estimates were not feasible. Inclusion of these impacts would see the above estimates increase considerably as both are anticipated to result in significant impact on this criteria.

The most significant of the quantified economic impacts are anticipated to come from establishment of a system to enable mutual recognition of professional skipper qualifications (intervention 1) and improved ELB management (intervention 6). These both provide for a mix of increased revenue generation as well as cost savings for involved organisations, of approximately €135m per year and €95m per year respectively, supporting the delivery of more jobs and growth. For ELBs, it is anticipated that the price inelasticity of boat demand will limit the extent to which raising finance for the ELB fund will push down demand for new boats. However there is some uncertainty around this, and some reduction in demand and hence sector economic performance may occur[111]. The detailed design of the scheme (e.g. how the fee changes with the size and recycability of the boat) will affect this.

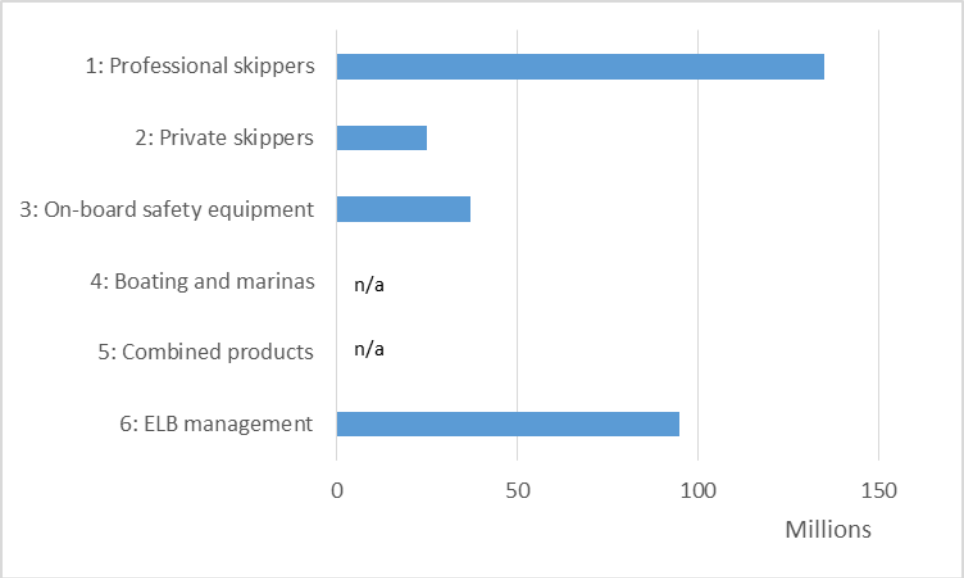
There is the potential for interventions support boating and marina development and combined product development to deliver significant economic impacts in excess of those that have been quantified. It has not been possible to establish robust quantitative estimates of these impacts. For illustrative purposes, however, one might consider the potential return on the funding proposed under the interventions for these two topic areas. Were €100 million of funding made available then this could stimulate upwards of €200 million per year of additional economic activity in the sector[112]. The actual scale of impact will be dependent on the amount of funding made available and the nature of products and services funded. Further, it is estimated that there is unmet demand from older boaters valued at €15bn/year[113], a proportion of which could be unlocked through the stimulation of appropriate innovation in products and services.

[111] It was not feasible to generate a quantitative estimate of the magnitude of this effect.

[112] Based on a relatively conservative multiplier of 1:2 for the funding provided. This could be significantly higher: the ex-post evaluation of the 7th EU Framework Programme (FP7) found that the €50bn contribution from the European Commission provided leverage for €40bn of additional contribution from grantees and indirect economic effects of €500bn resulting from the development of new technologies, products and markets. European Commission (November 2015), Commitment and coherence – Ex Post Evaluation of the 7th EU Framework Programme (2007-2013

[113] See Section A5.3.1.1 for details of assumptions.

Figure 5. Estimated impacts on economic output (increased revenue and/or reduced costs; €million/year)



Source: ICF calculations

Note: these estimates are based on multiple assumptions and should be treated as 'low confidence'. Details of the assumptions are provided in the relevant topic annexes.

Many of the interventions are also expected to generate significant positive impacts on the functioning of the internal market; principally those interventions focussed on professional skipper qualifications, private skipper qualifications and on-board safety equipment. The professional skipper qualification intervention is expected to have a significant effect by removing an existing internal market barrier and facilitating improved movement of both workers (skippers and other professions requiring skipper qualifications) and capital (principally charter boats).

In general, employment-related benefits are expected to flow from the economic benefits stimulated by the interventions. The professional skipper qualification intervention goes beyond this, directly supporting professional skippers in gaining improved access to jobs and reducing the costs associated with achieving multiple qualifications (in terms of both course/examination costs and lost income through enforced downtime during qualification). This intervention is also expected to deliver significant social benefits for workers in this profession, improving their access to jobs and increasing incomes.

Improved ELB management is expected to reduce the negative environmental effects of poor ELB management, as well as reducing the health and safety risks from abandoned boats. Some health benefits, in terms of reduced health and safety risks, are also anticipated through changes in behaviour (Interventions 1 and 2) and better access to appropriate safety equipment (Intervention 3).

The ELB intervention is the only one with a primary focus on addressing an environmental issue. It will address both the issue of boat abandonment and the environmental issues that stem from poor treatment of ELBs. It will also align activities in the sector with 'circular economy' ideals, with a significant positive impact on resource use and waste.

Table 2. Summary impact assessment scores

Intervention option / Impact criteria	1 Prof. skipper licences	2 Private skipper licences	3 On-board safety equip.	4 Marinas and boating	5 Combined products	6 ELB management	TOTAL
Economic impacts	29%	21%	21%	42%	38%	17%	**28%**
Performance and competitiveness	++	+	+	+++	++	++	61%
Administrative burdens on businesses	-	0	0	0	0	--	-17%
Public authorities[114]	-	-/+	-/+	-	-	++	-6%
Position of SMEs[115]	++	+	+	++	++	0	44%
Functioning of the internal market	+++	++	++	+	+	0	50%
Innovation and research	0	0	0	++	++	++	33%
Consumers and households	+	+	+	++	++	-	39%
Macroeconomic environment	+	0	0	+	+	+	22%
Social impacts	47%	13%	20%	40%	33%	20%	**29%**
Employment and labour	+++	+	+	+++	++	0/+	61%
Working Conditions	++	0	+	++	++	0	39%
Effects on social inclusion	+	0	0	0	0	0	6%
Public health and safety	+	+	+	+	0	++	33%
Culture	0	0	0	0	+	0	6%
Environmental impacts	0%	0%	0%	-6%	0%	39%	**6%**
Resource use and waste	0	0	0	+	-/+	+++	22%
Water quality and resources	0	0	0	-/+	-/+	+	6%
Biodiversity, flora, fauna and landscapes	0	0	0	-	-/+	+	0%
Sustainable consumption and production	0	0	0	+	-/+	++	17%
Transport and the use of energy	0	0	0	-	-/+	-	-11%
Land use	0	0	0	-	-/+	+	0%
All impacts	25%	11%	14%	25%	24%	25%	**-**

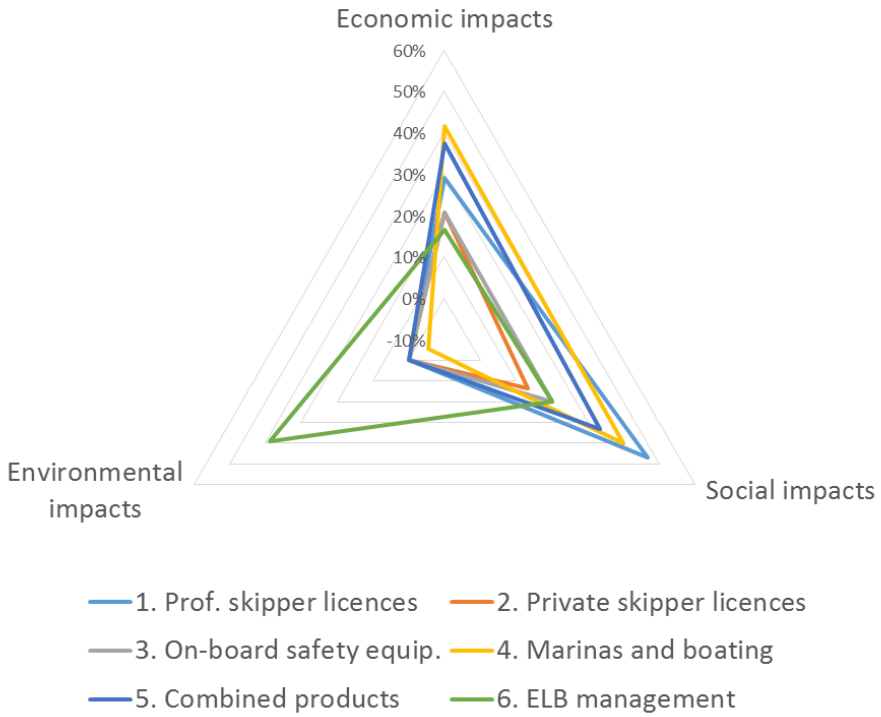
Notes:

- Scoring for each impact type is based on a qualitative seven point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact, with 0 as no impact.
- Aggregate scores for economic, environmental and social impacts represent the proportion of the total possible score achieved (where +++ i.e. 3, is the maximum possible score for each impact type).
- Final percentage score for 'all impacts' is an equal weighted percentage of the total possible score achieved (i.e. the aggregate percentage scores for economy, social and environmental each have a 1/3 weight).

[114] Whether the intervention has a negative or positive effect on the costs and operations of public authorities

[115] Whether the intervention has a negative or positive effect on the costs and performance of SMEs

Figure 6. Summary of the MCA analysis



Source: ICF calculations

5.4.1 Interlinkages between the interventions

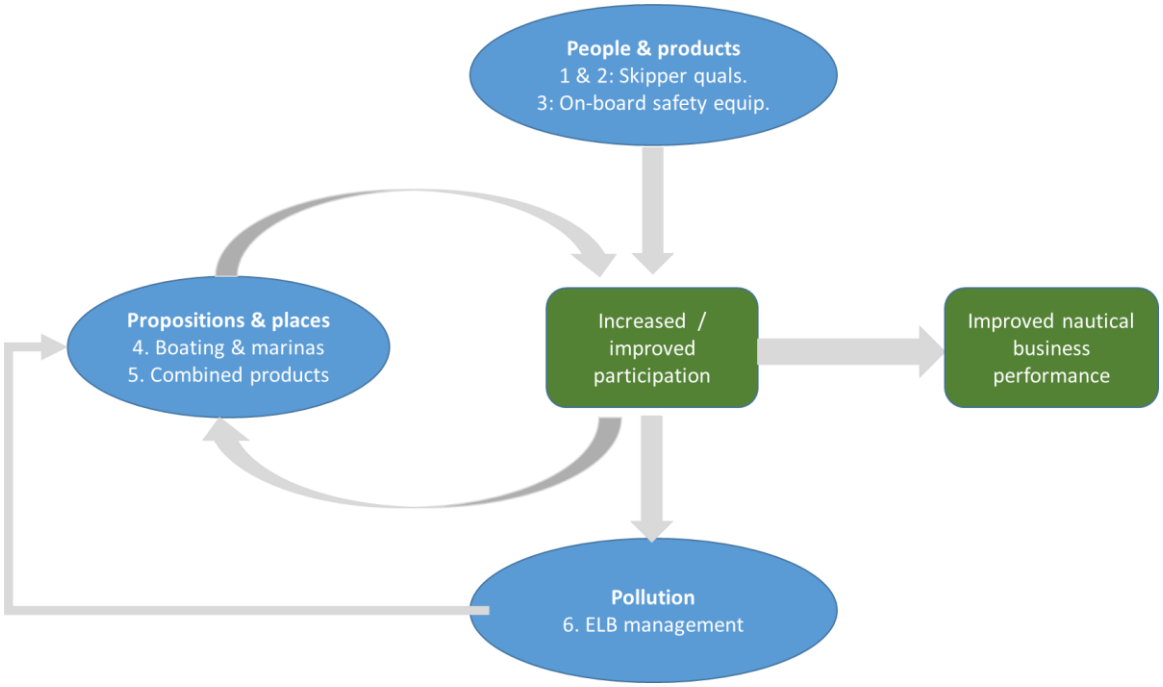
Each of the intervention options seeks to influence one of the main groups in the value chain – participants, service providers (e.g. charter companies), marinas/harbours and general tourism providers. The key linkages between the interventions are identified as:

- People and products: harmonisation to improve cross-border movement and increase participation
  - Private skipper qualifications and on-board safety equipment: Problems in these two topic areas both stem from a differences in national regulations, which have a detrimental effect on cross-border tourism by private boaters. The benefit of resolving one of the problems areas could be undermined if the other is not also resolved. Implementation of both together removes the two main uncertainties constraining private boater decisions on cross-border tourism and hence they have a synergistic relationship in encouraging increase tourism flows.
  - Professional skipper qualifications and on-board safety equipment: The efficient redistribution of charter boats between Member States requires adequate access to skippers and equipment to enable boats to be appropriately prepared for use. Improved access to skippers with the relevant flag/state qualification mix and a simplified process for adjusting on-board safety equipment have a synergistic relationship in aiding improvements in charter relocation efficiency.
- Proposition and places: investment to drive increased participation
  - Combined products and marinas and boating: Interventions in these topic areas can encourage investment in new/improved goods and services. Where a new combined product incorporates / relies on marina services and

drives boating participation, there is a mutually reinforcing relationship between the interventions in the two topic areas, supporting increased participation.

- Propositions and places and people and products: investment to support increased activity and participation
  - Combined products and skipper qualifications and on-board safety equipment: Intervention in qualifications and equipment are expected to enhance cross-border boating tourism. Investments in certain cross-border combined products will benefit from free mobility of tourists and boats across borders. Investments in each are therefore mutually reinforcing, driving increased participation in nautical tourism.
- Pollution and all others: investment to manage increased pollution and protect the propositions and places.

Figure 7. Simplified flow diagram of the main intervention relationships



6 Conclusions

The nautical tourism sector is a significant source of employment and wealth creation, including in parts of the EU that have lower than average incomes. Recent estimates place the annual turnover of the sector at between €20 and €28 billion and employment at between 200,000 and 234,000.

A number of market and regulatory failures are affecting discrete parts of the sector, and limiting its contribution to the Blue Growth agenda. These issues are not expected to be resolved without targeted interventions. The performance and competitiveness of the sector will be eroded if they are not tackled. This will have negative impacts on the sector's growth prospects and potential contribution to employment.

Six interventions are put forward, covering six topic areas[116]. These have been selected from a long list of 30 individual interventions on the basis that they offer the best prospect of addressing market and regulatory failures and promoting jobs and growth and provide the best net effect on economic, social and environmental conditions. The interventions are:

- Intervention 1 - Topic: Professional skipper qualifications - A European core curriculum with national top-up modules, through a new EU directive[117];
- Intervention 2 – Topic: Private skipper qualifications - Enhanced ICC private skipper qualification;
- Intervention 3 – Topic: On-board safety equipment - Minimum EU standards (underpinned by comparison tool);
- Intervention 4 – Topic: Marinas and boating - Innovation funding and support for collaboration, regional integration and adoption of new ISO standards;
- Intervention 5 – Topic: Combined products - Virtual platform and micro-funding support;
- Intervention 6 – Topic: ELB management - Direct support and non-legislative direction through the use of financial instruments.

Intervention 1 on professional skipper qualifications is a regulatory measure through a new directive. The other interventions proposed are non-regulatory. The interventions put forward can be readily delivered over the short-to-medium term and present a good overall balance of benefits to costs. The strongest impact is expected on the performance and competitiveness of the sector, thereby supporting the creation of additional jobs and growth.

Addressing barriers to the internal market: Member States have adopted national maritime regulations that are influenced by national maritime history, societal preferences/attitudes (e.g. to safety), local meteorological and oceanographic conditions, etc. The resulting mosaic of national rules and regulations can inhibit free movement. Interventions 1, 2 and 3 focus on removing barriers to the single market to increase the mobility of tourists, workers and boats, and in turn increase cross-border tourism and enable more efficient delivery of certain nautical tourism services e.g. charter boat services. Intervention 1, focussed on mutual recognition of professional skipper qualifications, is expected to have the largest economic impact of the three – potentially facilitating increases in revenue and decreases in costs for charter business and skippers amounting to close to €135m/year. However, there are strong synergies between Interventions 1 and 3 and 2 and 3 in terms of enabling cross-border movement and hence securing the potential benefits.

[116] One topic area reviewed as part of the study – satellite applications – was not deemed to justify EU intervention.

[117] The concept of national top-up modules is not compatible with the principles of Directive 2005/36/EC (revised by Directive 2013/55/EU).

Facilitating innovation and investment: A fragmented marketplace, access to funding and a lack of information are three of a number of issues that present barriers to innovation and investment in the nautical tourism sector. Interventions 4 and 5 focus on a combination of:

- information provision (e.g. dissemination of best practices, creation of standards and guides);
- collaboration facilitation (e.g. a virtual platform); and
- direct investment support (i.e. funding).

These seek to promote collaboration, innovation and investment across critical areas of boating and marinas as well as the specific area of combined nautical and coastal products. They are expected to improve the competitive position of the nautical tourism sector and hence drive increased and improved participation nautical tourism. It has not been possible to establish quantitative estimate of the impact on business performance, but these interventions could provide the largest impact of the options proposed. Interventions 4 and 5 are mutually reinforcing, both internally (i.e. between them) and externally (i.e. by facilitating increase tourism flows driven by Interventions 1, 2 and 3. Intervention 6 enables funding to be made available, and increased competition between boat dismantling facilities, to drive innovation in boat eco-design and ELB dismantling and recycling processes and technologies, and hence the circular economy.

Preventing pollution: The economics of ELB management do not currently favour sound environmental management of this waste stream. There are currently no MS (France is in the process of implementing one and has not yet entered into force) or EU regulations that establish requirements on ELB disposal. As a result a large number of the 80,000 ELBs generated per year are not dismantled and their parts are not recycled. Instead, they are sent to landfill, incinerated or abandoned in ports and marinas, private premises, yards, etc., or sunk, which lead to missed market opportunities, environmental impacts and health and safety impacts, which can in turn lead to economic impacts (damage costs from collisions).

Intervention 6 proposes an ELB management fund, which would be paid for by boat owners or manufacturers. The fund would cover the currently high cost of ELB disposal (approximately €1,000/per ELB or 80m€/year at the EU level assuming around 80000 ELBs need to be treated and disposed of.)

Further, intervention 6 would encourage investment in technological developments to bring down costs and drive up recycling revenue opportunities to improve the economics of ELB management. This is expected to support an increase in sound ELB management and a reduction in boat abandonment, reducing the associated environmental, social and economic externalities.

Annex 1 Professional Skipper Licences

A1.1 Introduction

Professional skippers are here defined as, "boat drivers that are paid to skipper a vessel which is classified as a small vessel (typically under 24 or 25 metres or weighing less than 200GT) with or without passengers". This definition covers people conducting a large variety of different activities, examples being:

- Professional skippers on commercial small charter vessels;
- Professional skippers on small excursion boats;
- Professional skippers on private small vessels;
- Delivery skippers;
- Boat service staff moving boats between moorings or to and from travel lifts;
- Boat brokers on sea trials with potential customers;
- Skippers of diving boats.

Professional skipper **licences** are the certificates issued to confirm that the holder has acquired a national qualification that entitles him or her to professionally (i.e. for payment) skipper small vessels flagged by the same state.

A1.2 Topic and situation analysis

Professional skippers are most commonly engaged to skipper charter vessels. Many non-charter recreational boats are also regularly professionally skippered for commercial purposes, for example:

- Marine service staff move boats between moorings or to travel lifts or conduct sea trials after repairs;
- Boat brokers regularly take potential customers out on sea trials;
- Diving schools and angling charters ferry their customers to dive/angling locations;
- Delivery skippers move boats on behalf of customers or brokers between ports, including between countries.

A1.2.1 Market dynamics, size and scale

A1.2.1.1 The number of professional skippers

There is a data gap in Eurostat for the yachting and marina sector. The EC Blue Growth reports say, "sector not visible in Eurostat"[118] (Figure 7). The only EU-wide reference source is ICOMIA (an international trade association representing the global marine industry) whose data are still fairly general. Some national industry publications are also available. None of these data sources identify the number of qualified skippers or of the number of people employed as skippers.

[118] Study On Deepening Understanding Of Potential Blue Growth In The EU Member States On Europe's Atlantic Arc, FWC MARE/2012/06 – SC C1/2013/02, Country Paper – Final, Spain

Figure 8. Illustration of the lack of data sources for yachting and marina GVA (€ m) and employment (abs.nrs)

4. Leisure and tourism					
4.a	Coastal tourism (accommodation)	Eurostat	7 981	274 668	data for 55.30 and 55.90 missing for 2010
		National statistics		**329 591**	ONS
		Alternative	2 644	90 000	The Crown Estate (2008)
		Alternative	**4 087**	210 000	Beatty et al
4.b	Yachting and marinas	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	220	14 200	The Crown Estate (2008)
		Alternative	**28**	**1 400**	British Marine Fededation

Source: Ecorys (2014). Study on deepening understanding of potential blue growth in the EU member states on Europe's Atlantic arc, Country Paper – Final - United Kingdom, March 2014

This lack of detailed data on the size of the yachting and marina market in general, and of professional skippers in particular, makes it necessary to develop estimates of the scale of professional skipper activity through assumptions based on other information and sources.

Two methods have been employed to estimate the scale of professional skipper activity:

Method A: Estimate based on the number of professional qualifications issued

- According to the UK's Royal Yachting Association (RYA) there are in excess of 25,000 skippers using RYA commercially endorsed qualifications. The RYA estimates that 80 per cent of these, around 20,000, live and work in Europe[119]. This includes only commercial endorsements that are new or have been renewed according to RYA rules every 5 years i.e. these qualifications are all currently valid.
- The Spanish National Association of professional skippers for recreational craft, the Asociación Nacional Patrones Profesionales Embarcaciones Recreo (ANPPER) estimates around 3,000 professional skippers in Spain hold the title of Patrón Profesional de Embarcaciones de Recreo (PPER), which is the minimum qualification level for professional skippers in Spain.[120] The PPER was introduced in 2010. On average every year about 500 skippers qualify as PPERs. Additionally, many Spanish professional skippers on smaller vessels hold higher qualifications that pre-date the PPER. These other qualifications remain valid but are difficult to quantify as they are merchant marine qualifications and valid for other occupations as well. Based on the data for the PPER, and assuming that qualifications gained within the last 10 years are still being used, the number of professional skippers on small vessels with Spanish qualifications can be conservatively assumed to be around 5,000.
- The French national association for the nautical industry, the Fédération des Industries de Nautiques (FIN) reports that more than 3,500 seafarers have passed the examination for the French "Capitain 200" qualification since 2009[121]; it can be assumed that currently about 5,000 skippers are holding French professional qualifications[122].

[119] Richard Falk (RYA Training Manager), email to Sea Teach in April 2016

[120] Claudio Loscertales (Secretary of ANPPER), email to Sea Teach in January 2016. Because the commercial endorsements require renewal every 5 years it can be assumed that most of these professional skippers are active.

[121] Catherine LeGoff (FIN), email to Sea Teach in March 2016.

[122] Calculated up to a 10 year timeframe, which is an acceptable period to assume that those qualifications are still valid and used.

It is difficult to determine equivalent numbers for other Member States. For example, Germany does not issue commercial endorsements or specific professional qualifications, but uses its higher private qualifications for commercial use. Of the 600 new Sportseeschifferschein (SSS) and Sporthochseeschifferschein (SHS)[123] qualification issued each year, it is estimated that 75 per cent are used for commercial purposes. Based on an assumption that licences remain actively used for a period of 10 years, it is estimated that around 4,000 skippers use their German qualification for commercial purposes.

These numbers from four EU Member States indicate that the total number of professionally qualified skippers in the EU is quite substantial. The data for the four Member States set out above provide for approximately 34,000 professionally qualified skippers. Even if the remaining 24 Member States have an average number of professional skippers below these national figures the total of qualified professional skippers across Europe could be between 58,000 and 106,000 (based on assumptions respectively of 1,000 and 3,000 professional skippers in each of the remaining 24 Member States).

Method B: Estimate based on ratio of skippers to marina berths

Marinas containing recreational boats of an average size[124] can require the services of professional skippers to sail and move boats for a variety of reasons.

The Spanish marina Cala D'or Marina has a ratio of people potentially required to move boats professionally to and from berths as part of their job (and hence requiring a professional skipper qualification) of about 1:14[125] (i.e. one workers with a professional skipper licence per 14 berths). The total number of berths in Spain up to September 2015 is 134,725[126]. Applying the ratio of 1:14 to the total number of berths in Spain suggests that about 9,600 people skipper recreational boats professionally in Spain alone, more than half those directly employed in the Spanish recreational boating sector[127].

This ratio is not transferable to all Member States. Member State which see less activity, including those with a more seasonal pattern of boating demand, may have significantly higher ratios (i.e. many more berths per skipper). As many EU berths are allocated to very small vessels that have little need for professional services, an indicative ratio of 1.35 is adopted as an alternative assumption. This would imply that a marina of 100 berths would have up to 3 workers who require a skipper qualification.

There are an estimated[128] 1.75m coastal and inland berths in Europe, of which 1.1m are coastal berths[129]. The number of professional skippers estimated under method B is:

- 31,000 professional skippers – based on a ratio of 1:35 and 1.1m coastal marina berths.

[123] Holger Wetzel, Prüfungsamt Bremen, Bremen

[124] Very small vessels up to about 5 metres in length are generally in private use and care, whereas vessels over 24m are regulated by the IMO.

[125] Cala D'or Marina in Mallorca has 563 berths and about 40 skippers that drive boats professionally (including about 20 professional skippers of charter vessels, excursion boats and private vessels, 8 mechanical staff that are regularly moving and delivering boats, 4 boat brokers and about 8 diving boat skippers)

[126] Fira Barcelona (2015): El sector náutico en Espana (http://www.firabarcelona.com/news/-/pressnews/6179797/El-sector-nautico-en-Espana)

[127] 16,000 according to Spanish Ministry of Industry, Energy and Tourism (2012), *Industrial economy: The sea industries*, "Situation and Future of the Recreational Maritime sector in Spain", No. 386, p.69-78

[128] ICOMIA (2010). Statistic Book 2010.

[129] See topic paper annex on marinas and boating for fuller detail of the data.

- 61,000 professional skippers – based on a ratio of 1:18 and 1.1m coastal marina berths.

The issue of licencing also applies to inland skippers. If all inland marina berths are included in the calculation then the estimate under Method B increases to between 50,000 and 100,000 professional skippers.

These calculations support an estimate of 30,000 to 100,000 professionally qualified skippers being active in the EU. A best estimate towards the lower end of this range is most likely given that total nautical sector employment is estimated at between 200,000 and 234,000.

Ecorys (2015)[130] estimated that charter activities supported 22,000 jobs, with around 20 per cent as boat staff (including skippers but also crew). This implies fewer than 4,400 professional skippers in Europe, significantly below the 30,000-100,000 range developed here. The Ecorys figure is considered to be an underestimate of overall professional skippering because it:

- Only includes skippers who work directly for or are employed by yacht charter companies (i.e. full time skippers), not those working in other professions that also require skipper qualifications in order to do their job (i.e. the other professions listed in the introduction)[131].
- Is derived from 14 survey respondents of which most are sail charter companies who have a low requirement for skippers compared to motorboat charter.
- Only counts people who are in employment, not self-employed professionals that make up a significant proportion of the EU charter fleet.
- Omits the "blue collar workers" that are staff of charter companies who also have to move boats between moorings, to travel lifts on sea trials, etc., and hence require professional skipper qualifications.

A1.2.1.2 Economic output

Estimating the economic output of this sector from current data is very difficult and therefore the following is therefore only an indicative estimate of economic output.

To calculate the economic impact of professional skippers in Europe, their overall income has to be estimated. As the majority of official professional skippers currently work as charter boat skippers, the number of charter vessels and their use for skippered charter activities can be used as an indicator to the income of professional skippers. The number of charter boats in Europe was estimated by the European Boating Industry and the partner consortium of the TCC-SCV project at up to 60,000 charter boats[132]. The income of professional skippers out of work on this charter fleet is estimated at €600m per year[133].

These figures have to be handled carefully for following reasons:

- The sector is extremely diverse, has never been statistically examined and needs an in-depth survey to gather reliable data.

[130] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[131] There are over 150 angling charter vessels (not all operating full time) in South West England alone. Nautical Consultants (2005). The Motivation, Demographics and Views of South West Recreational Sea Anglers and their Socio-economic Impact on the Region.

[132] This differs quite significantly from the data used by Ecorys which estimates there to be between 5,000 and 15,000 charter boats, but is calculated on the base of some known official numbers of registered charter boats which are in Germany 7,500, in Croatia 3,300, in Slovenia 560, in France 6,500 and in Spain 550.

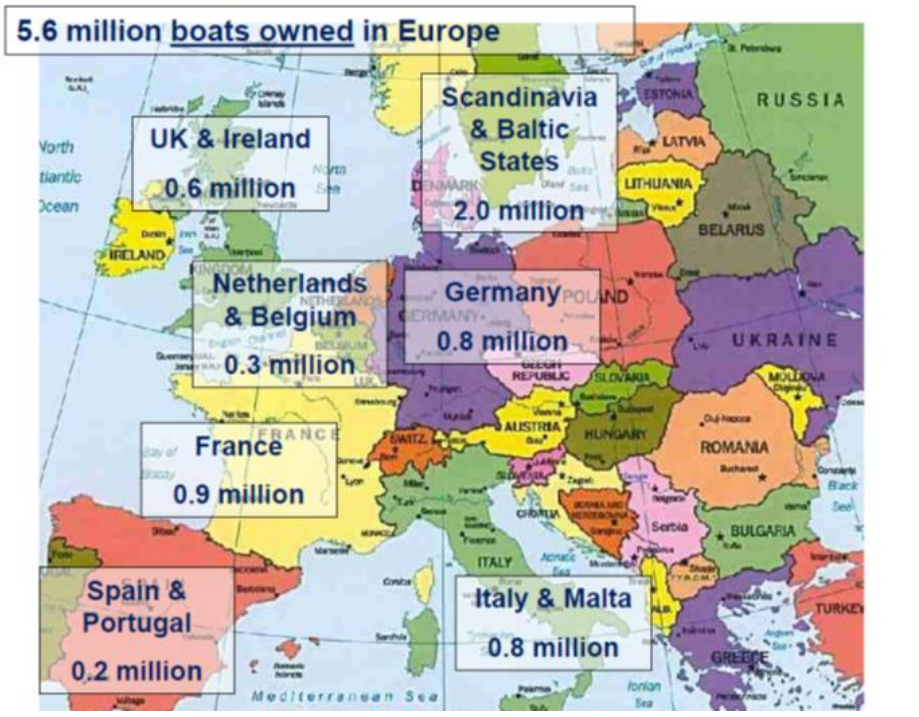
[133] The Ecorys survey reveals that 36 per cent of all types of activities offered are crewed charter (Ecorys 2015, p60). 60,000 boats providing 36 per cent of skippered charter, each boat being chartered on average for 20 weeks per year and a skipper earning around €1,500 per week.

- Many professional skippers work freelance at day rates that vary widely across Europe (an indicative range is €100 to €300 per day). The estimate of the number of qualified skippers does not provide an indication of the number of days work per year.
- Professional skippering is often only part of an occupation and daily rates differ greatly between countries and occupations (i.e. boat broker and marine service personnel). The diverse professional skipper activities are not possible to quantify without further data collection.
- There is a lack of data on the range of other activities, outside of charter businesses, which are also reliant on professional skippers and to what degree their ability to operate is dependent on the successful employment of individuals with professional skipper qualifications.

A1.2.2 Geographical and regional characteristics

The following map, created by the project "Waterways for Growths"[134], shows the distribution of boat ownership across Europe.

Figure 9. Boat ownership in Europe



This map does not include smaller and inland boating communities and excludes Greece and Croatia, two major boating countries. It shows that there are significant boating communities in the UK, the Netherlands, and the Scandinavian countries that require professional skippers for their commercial activities.

The EU's fleet of small vessels in commercial use is concentrated in the Mediterranean Sea. 'Hotspots' of such activity include the Balearic Islands, the French and Italian Riviera, the Croatian coast and the Greek Islands. As a top charter destination for sail charters, Croatia leads with 33 per cent, ahead of Greece (19 per cent), Italy (15 per cent), Turkey (11 per cent) and Spain (11 per cent)[135]. It is also in these hotspots where the highest numbers of foreign flagged vessels (commercially or privately operating) are found. In such locations boats flagged by different Member States are moored in most marinas side by side.

[134] Based on data from the British Marine Federation.

[135] YachtSys (2013). What is good to know about bareboat yacht charters.

A1.2.3 Policy situation

The International Maritime Organisation (IMO) has set international standards for qualifications professional skippers of vessels over 24m in length (typically merchant vessels), but no international, European or multilateral agreement is in place for the harmonization, recognition or regulation of professional skipper licences for vessels of less than 24m.

The current policy situation dictates that each Member State regulates its own qualification systems in different ways. Member States may, for example:

- Enable some commercial activities to be undertaken under the national private pleasure vessel qualifications (e.g. Germany);
- Base their professional skipper licences on their private pleasure licences and require additional courses to be added for commercial endorsement (e.g. Spain and U.K.);
- Require their professional skipper on small commercial vessels to obtain a qualification of a merchant mariner (e.g. Italy);
- Not provide any professional skipper qualification (e.g. Czech Republic).

Member States each regulate the recognition of other Member State qualifications for use in their own waters and also on vessels flagged to their state. There are no known instances of a Member States recognising a professional skipper qualification awarded by another Member State.

Directive 2005/36/EC[136] applies only to regulated professions in the host Member State. That is, professions to which access or practise in the host Member State is, by law or regulation or administrative provision, conditional upon the possession of certain fixed professional qualifications[137].

No Member State can refuse to compare qualifications given the terms of the Treaty on the functioning of the European Union to enable the internal market. The host Member State cannot require a full re-qualification by the applicant but only demand compensation measures from the applicant. In absence of regulation, these compensation measures can be quite extensive.

The Directive 2013/55/EU amending Directive 2005/36/EC introduces new measures including the Common Training Framework (CTF) and the Common Training Test (CTT). These new provisions enable skippers that are qualified in compliance with the CTF or CTT to practice their profession in any other participating Member State on the same conditions as its own nationals. Such a CTF or CTT does not currently exist for professional skippers.

In order to be legally eligible to move a small vessel (with or without passenger), a professional skipper has to match his licence to the requirements of the vessel's Flag State which is also enforced by the Coastal State, even if it differs from the Flag State.[138]

This leads to the following situations:

- A professional skipper, qualified by holding a licence from one country, is not permitted to commercially skipper a small vessel flagged by another country

[136] Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.

[137] Directive 2005/36/EC User Guide

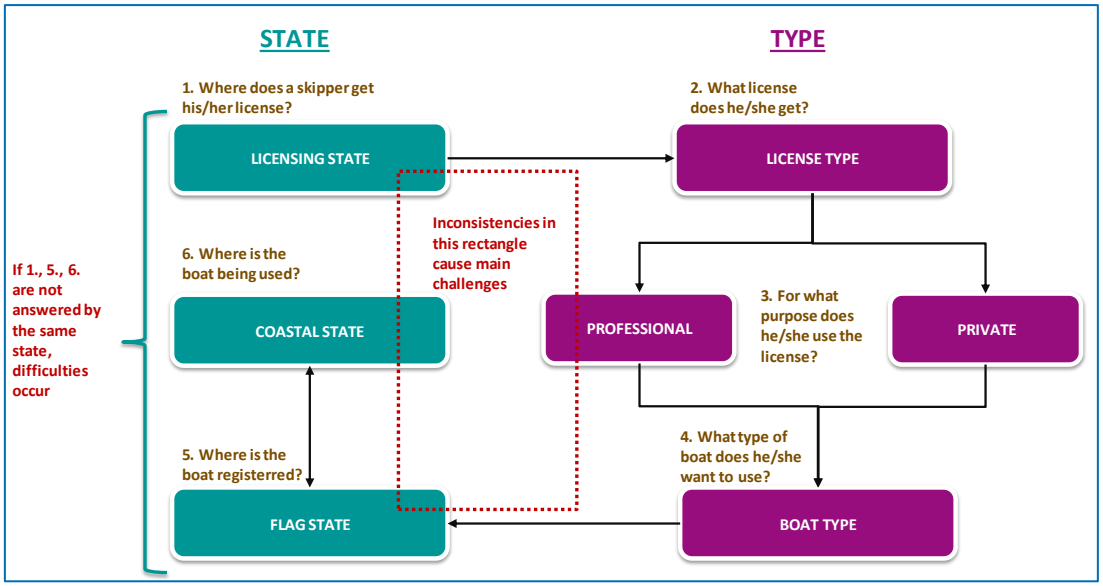
[138] The Licencing State is the country that issues the professional skipper qualification. The Flag State is the country to which the vessel is registered. The Coastal State is the country in whose territorial coastal waters the activity takes place. The Home State is the country of nationality or residence.

e.g. a UK qualified skipper cannot work on a Spanish flagged boat; only a Spanish qualified skipper can do so.

- A professional skipper can work on a vessel that has the same Flag State as his Licensing State even in foreign waters (e.g. a UK qualified skipper on a UK registered vessel in Spanish waters) but cannot work on the identical vessel if the Flag State and the Qualification State differ (e.g. a UK qualified skipper on a Spanish registered vessel in Spanish waters).
- A professional skipper in his Home State (i.e. the Coastal State where he lives and the Licensing State from which he received his qualification) can only skipper vessels flagged by this State, not vessels flagged by other EU Member States (i.e. a Spanish skipper holding a Spanish professional qualification cannot skipper German or UK flagged vessels in Spanish waters).

Given the range of situations where any given professional skipper licence is likely to be invalid, it is thought that the vast majority of professional skippers are likely to be affected by the lack of mutual recognition to some degree. Figure 9 visualises the interaction of the different factors and the problem area for professional skippers.

Figure 10. The issue of non-harmonisation of skipper licences across the EU



Source: ECSIP Consortium (2015): Study on the competitiveness of the recreational boating sector

A1.3 Problem definition

A1.3.1 Problem statement

Qualifications for professional skippers of small vessels (under 24m) differ between Member States and are not mutually recognised between Member States. There are no systems in place to facilitate recognition and/or mobility, and existing regulations[139] are not being applied. A majority of the professional skippers in the EU are likely to be affected by the lack of mutual recognition of qualifications to some degree.

A1.3.2 Causes of the problem

There are a number of causes of the current divergences between, and lack of recognition of, professional skipper qualifications across Member States:

[139] i.e. Directive 2005/36/EC on recognition of professional qualifications.

- **Differing opinions on the optimal requirements of qualifications –** Member States have each developed their own qualification system. Factors that influence the differences between these systems include: cultural attitudes towards safety and the need for qualifications; national nautical history; institutional capacity to develop and administer a qualifications system; country-specific oceanographic conditions; and market characteristics, problems and needs.
- **Lack of trust in the qualification standards of other Member States –** Lack of detailed information about other Member State's training systems and qualification standards, and difficulties in comparing systems among Member States lead to national authorities being wary of trusting each other's qualifications. Opinions and decisions not to recognise qualifications from other Member States tend to be driven by assumptions rather than based on objective comparison of their own qualifications to those of others.
- **Protection of national qualifications –** Interviews with representatives of national authorities suggest that some do not see mutual recognition as being in their national interest and they prefer to promote their own standards instead.
- **Responsibility to own country nationals and boats –** national authorities concentrate on their local market. Interviews suggest they see their responsibility as being limited to catering for their own nationals within their national waters / on their nationally flagged vessels. As the national skipper qualifications regulate this very clearly, authorities do not see any themselves as having responsibility for taking further action, or need for further measures.
- **Lack of awareness of the problems caused by the current situation –** There is little awareness of the professional skipper licence recognition issue outside of affected groups of professional skippers and charter companies. The EU-funded projects GETAFIX[140] and TRECVET[141] started a dialogue and raised awareness by demonstrating the comparability of professional skipper qualifications. Many national administrations are still not aware of the problem as they have limited experience of cross-border issues.
- **Administrative costs of changing the existing system –** All training systems aim at the same learning outcomes - a skipper being able to safely navigate small vessels up to 24m - but there are extensive differences in the specifics of the content of qualifications and how they are applied. As such, it is not easy to map across and compare qualifications from different Member States. There would be administrative costs involved in a Member State creating such a comparison system. Because of this, and the other causes already identified, there is a lack of interest in changing the current situation. Hence national authorities have maintained the status quo rather than finding or applying options to ameliorate the problem.

A1.3.3 Consequences of the problem

The situation of non-recognition of professional skipper qualifications has undermined the principle of freedom of movement for EU workers and limited the scope of operations for nautical enterprises reliant on skippering activities.

The licensing issue impacts most heavily on **professional skippers** working in the boat charter segment. Such skippers are typically self-employed and in order to maintain income in a seasonal market they need to be flexible between locations, boat types and boat flags. Their functional mobility is severely restricted by the lack of

[140] http://www.getafix.eu/

[141] https://www.trecvet.eu/

mutual recognition of their qualifications among Member States. When skippering professionally, they are restricted to skippering boats that are flagged by the same state that issued their licence. This leads to the following consequences:

Lack of inter EU mobility for skippers

Normally a skipper will hold the qualification of his/her Home State. This means that usually s/he can only work on vessels with his/her Home State's flag, of which most will be based in that Home State. Working in another Member State will only be possible if s/he can work on boats flagged by his/her Home State. Work mobility is therefore severely restricted.

Other common barriers to mobility – language and insurance – are not thought to directly affect skipper mobility. The language requirements for the skipper are most often required to match those of the customer (who may be from a different MS) rather than the language of the host state. Insurance requirements are linked to the legal requirement that the skipper qualification has to match the flag of a vessel, hence it is the lack of qualification recognition that affects insurance needs.

Access to work inequality between skippers of different Member States

The lack of intra-EU mobility affects skippers to different degrees. For example, there are many charter boats in the Mediterranean operating under British or German flags. This means that British and German skippers with home qualifications have an advantage over skippers from other countries.

Skippers from Member States with few or no flagged boats working outside of their Home State either waive their right to mobility and do not work in another Member State, or have to re-qualify with a qualification that is either of the host state or which matches the boat fleet flag of the potential employer.

Access to and costs of requalification

Requalification is time consuming and costly. The French qualification costs around €8,000[142] and the British qualification between €2,000 and €4,000[143]. A Spanish qualification or German qualification costs between €1,000 and €4,000[144], depending on the previous qualification. In addition, specific practical experience might be required before the skipper is eligible for an examination. This can cost several thousand euros and can take up to three months[145].

Language barriers can also affect skippers' ability to requalify. Professional skipper licences are typically taught and examined in the native language of the flag state. For example, in the UK it is stipulated that RYA recognised training centres only instruct in English. Even for skippers who wish to re-qualify in a different Member State's system and who are competent in communicating in that language, it is a significant challenge to relearn nautical terminology.

The requirement that professional skippers have to requalify for a profession for which they have previously qualified is an unfair burden and contravenes the Directive 2005/36/EC[146] on the recognition of professional qualifications.

In economic terms the costs for re-qualification can be calculated by taking into account:

[142] Estimate by FIN.

[143] Estimate by Sea Teach.

[144] Estimate by Holger Wetzel.

[145] i.e. the French qualification requires 3 months practical experience as a mariner; the British qualification requires certain mileage experience, night time experience, etc.

[146] Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.

- Reduced job security – A professional skipper employed by a charter company relies on that company not changing their vessels to a different flag state. This practice is, however, quite common among smaller charter companies that work with privately owned boats that change from season to season. This diminishes security of ongoing employment with companies during any given year.
- Incidence of illegal working – The current situation leads to many professional skippers occasionally working "illegally" or operating in 'grey areas' without the correct certification, claiming to be a friend or associate of the owner or, if they are skipper of a charter, they register as part of the private charter group to avoid compliance rules as professional. This might stay undetected but should an accident occur, it can have serious consequences for the skipper, the boat owner and the guests as the conditions of insurance cover may have been broken.

Other occupational groups which utilise skipper licences

- Service personnel, boat brokers and marina employees deal regularly with vessels flagged to many different Member States. Current conditions, fully applied, would require them to hold multiple qualifications from different countries. This makes them vulnerable and also hampers their career opportunities. Compliance with the letter of the law limits their employment options.

For **charter companies and other service companies** the need to match a skippers' qualification to the boat flag restricts their choice of who to employ or subcontract. There is a high demand for transnationally qualified skippers but due to cost (and language) barriers in obtaining multiple national qualifications, there is a limited supply of such skippers. This means that the demand for skippers cannot always be fully met. This has several consequences:

- Reduced quality of service – Charter companies aim to offer skippered boats with the most suitable, well qualified crew but, more importantly, the best available candidate. The crew need to be able to communicate with the client in a shared language. The fact that employers first have to match the licence and flag state reduces their choice of candidates and thereby their ability to offer the most suitable staff. Hence the quality of service is diminished.
- Loss of charter business – In peak season, when skippers are in high demand, there may be instances where commercial activity cannot be undertaken because a charter company cannot match skipper qualification and boat flag.

Charter companies may have to turn down offers to take a vessel into its charter fleet because they cannot match an appropriate qualified skipper to the vessels. For example, a small charter company in Spain that is offered a Finnish flagged vessel for its charter fleet for skippered charter will most likely have to decline, as it will be difficult to find a Finnish qualified skipper.

Charter companies therefore have to turn down potential business. This results in a loss of income and can lead to reputational damage as is can be difficult for charter customers to accept that the charter request has been rejected due to a mismatch of skipper qualification and boat flag.

- Charter and service companies want to be flexible in their services and are often restricted by having to match skipper qualification and flag state.
- Suboptimal utilisation of fleets – Larger charter companies that hold several charter bases want to be able to move boats between countries, e.g. from Croatia to Greece or from France to Italy. This leads to problems where staff qualifications and boat flags do not match.

- Loss of ancillary business / increased contracting out of ancillary activities – Marine service companies have to turn business down or employ/ subcontract additional staff to carry out certain tasks, such as delivery of a boat flagged by a country that does not match their skippers' licences. Commercial activity is negatively affected as a result of policy inefficiency.
- Incidence of illegal practices – Non-compliance with the correct qualifications triggers sanctions such as fines (e.g. up to €6,000 in Spain) but can lead to insurers denying payment in case of a claim.

Small and micro businesses are affected by the costs of statutory qualifications. This can affect the viability of their business model.

- Small charter businesses using one boat that is skippered by the owner are often owned by expatriates. When the owner starts the charter business in his or her host state, this boat will have to be flagged to the host state and their qualification has to match this flag. In most cases this will require the owner to requalify, at a cost in time and money, and with additional language barriers to contend with. The alternative is to employ a skipper matching the flag of the boat, though this may not be financially viable.
- Dive schools share the same problem. Many small dive schools in the Mediterranean are owned by expatriates. To adhere to local regulations the dive boat used to ferry customers to dive spots must be registered in the host country and so the skipper must hold the professional skipper qualification of that country. The alternative of employing a suitably qualified skipper is, in most cases, too costly.

A1.4 Baseline scenario

Without an additional EU intervention national authorities will continue to protect their own national markets without regard to the Single Market issues identified above. Whilst recent projects[147] have highlighted the problems facing the sector and offered a number of potential remedies, e.g. a comparison tool for national qualifications, they have not been effective on their own in addressing the problem.

Professional skippers are expected to continue to suffer constraints on employment within the EU. Charter companies, and other firms reliant on jobs requiring professional skipper qualifications, will continue to suffer the loss of business and trade and be subject to higher costs. Small firms will continue to suffer from disproportionately higher costs.

Robust forecasts of changing demand for charter and other company services, and hence the demand for professional skippers, are not available. Prior to 2008 boat numbers in the EU were increasing, but since the financial crisis boat ownership levels have stagnated. Demand for charter has increased due to a preference for boat rental rather than ownership amongst younger boaters[148]. A moderate level of growth in demand for charter and for services from other companies that utilise professional skipper licenced professions can be expected over the medium term. The costs and loss of business opportunities are therefore expected to grow accordingly.

Without intervention, the situation of non-recognition of professional skipper qualifications will not improve. With increased nautical tourism and increased mobility of professional skippers between Member States the need to find a solution will become stronger as the mismatch between work opportunities and available qualified professional skippers is likely to increase.

[147] i.e. GETAFIX and TRECVET

[148] Ecorys (2016). Study on specific challenges for a sustainable development of coastal and maritime tourism in Europe. EASME

A1.5 Justification for EU intervention

The proposal is a direct response to the EU's Marine and Coastal Tourism Strategy, Action 5, which requires consideration of the need for EU action on qualifications for professional skippers.

The EU's right to act in this area is established through Article 3 of the Treaty on the European Union with regard to the free movement of labour, the free movement of capital and the creation of an internal market.

EU intervention in the regulation of professional skipper licences can be justified on the basis that regulatory differences between MS and lack of mutual recognition (and, to a lesser extent, imperfect information on the differences between MS systems) limit free movement of professional skippers and the efficiency with which capital (boats) can be used. This results in labour market inequality and increased costs.

Each Member State is free to make access to a particular profession legally conditional upon the possession of a specific professional qualification. Where these qualifications are different across Member States (as is the case for professional skipper qualifications) an obstacle to the free movement of professionals in the EU is created. Directive 2005/36/EC established rules to facilitate the mutual recognition of professional qualifications between the Member States. There are no known instances of a Member States recognising a professional skipper qualification awarded by another Member State. However, whilst the Directive dictates that the host Member State cannot require a full re-qualification by the applicant but only demand compensation measures in the cases of substantial differences, in reality these compensation measures are quite extensive and akin to full re-qualification.

The issue also creates barriers to free movement of capital (boats) in so far as appropriately qualified skippers may not be available to redeploy boats to different Member State waters.

Both of these obstacles can affect market access and hence the functioning of the internal market. Evidence suggests that without an EU-wide initiative to deliver harmonisation or mutual recognition of professional skipper licences, effective action to tackle the problem is unlikely.

A1.6 Intervention options

A1.6.1 Objectives

The specific objective is to enable mutual recognition of professional skipper licences across the EU through:

- Providing national authorities with the information necessary for them to understand the training systems and standards of other Member States, and the compatibility of qualifications obtained from different Member States.
- Supporting the development and application of procedures that enable mutual recognition of professional skipper licences to take place.

A1.6.2 Long list of options

The following options were identified:

- Option 1: EU recommendation to recognise national professional skipper qualifications
- Option 2: EU legislation to recognise national professional skipper qualifications
- Option 3: European core curriculum with national-top-up modules, through a new Directive
- Option 4: European Common Training Framework (CTF) for professional skipper qualifications through Directive 2005/36/EC

Policy option 1	EU recommendation to recognise professional skipper qualifications
Nature of the measure	Voluntary: EU recommendation to recognise professional skipper qualifications.
Relevant objectives & problems	To encourage national authorities to start a process of mutual recognition of professional skipper qualifications.
Implementation procedures	A detailed qualification comparison framework, as started by the GETAFIX and TRECVET projects[149], would be the best means of providing national authorities with the data needed for them to understand each other's qualifications and thereby overcome trust issues and be able to implement procedures for mutual recognition. An EU recommendation on professional skipper qualification recognition - this policy option would have to be implemented by the European Commission and distributed to all national authorities.
Complementary actions	Monitoring by the European Commission, accompanied by messaging that if this recommendation is not acted upon then other policy options might need to be implemented.
Intervention logic	Outputs: a complete qualification comparison framework, enabling national authorities and other stakeholders to objectively compare qualifications, compare standards and identify differences. Outcomes: • Increased understanding and trust between national authorities in relation to each other's qualification systems leading to the implementation of recognition procedures. • Increased, but not comprehensive, mutual recognition of professional skipper qualifications – the effect is constrained because of two factors: • MS are not obliged to utilise the framework • The framework is an information tool – it does not provide MS with an answer for which / how they should recognise other MS qualifications. Impacts: • Improved mobility and hence aces to income and employment opportunities for professional skippers. • Reduced costs and more business for charter and service companies. • Less cost pressure on small and micro enterprises.

[149] www.getafix.eu and www.trecvet.eu

Policy option 2	EU legislation on mutual recognition of national qualifications
Nature of the measure	Mandatory: EU directive to recognize professional skipper licences with support from a qualification comparison framework.
Relevant objectives & problems	As for option 1
Implementation procedures	As for option 1
Complementary actions	As for option 1
Intervention logic	As for option 1

Policy option 3	European Core Curriculum with national top-up modules
Nature of the measure	Implementation of a European common core curriculum with top-up modules through a new EU Directive.
Relevant objectives & problems	Provide a streamlined system for enabling professional skippers to gain accepted qualifications across multiple Member States.
Implementation procedures	Implemented via a new Directive, applicable to all MS. The form of national top-up modules proposed is not compatible with the concept of a CTF or CTT as provided for under Directive 2005/36/EC (amended Directive 2013/55/EU) as this does not provide for the possibility of having to pass further examinations after having complied a qualification complying to a CTF or CTT. All Member States' current qualifications would be compared. Their common elements would be codified in an EU Common Core qualification. To satisfy country-specific differences, where these are justified, National Specific Modules (i.e. top-up modules to the core curriculum) would be formulated and included alongside the common curriculum. The Erasmus+ funded project TCC-SCV[150] has developed a transparent process of qualification comparison, extracted a common set of knowledge, skills and competences for professional skipper qualifications in seven Member States and built a common core curriculum from these data. Further development of this framework is required to establish an agreed EU wide common curriculum, acceptable to all MS. Top-up modules need to be further developed and their content justified.
Complementary actions	-
Intervention logic	Outputs: A European Common Core qualification and national top-up modules.

[150] www.tcc-scv.eu

Policy option 3	European Core Curriculum with national top-up modules
	Outcomes: • Increased understanding and trust between national authorities regarding each other's qualification systems, leading to the implementation of recognition procedures • Whilst each Member State keeps its current qualification system and standard, the achievement of this standard is much simplified and re-qualification is made easier and achievable; • Mutual recognition of skipper qualifications directly via the core curriculum and national modules Impacts: • Improved mobility and hence access to income and employment opportunities for professional skippers; • Reduced costs and more business for charter and service companies; • Reduced burdens on small and micro enterprises.

Policy option 4	European Common Training Framework (CTF) for professional skipper qualifications
Nature of the measure	Implementation of a European Common Training Framework (CTF) for professional skipper qualifications through Directive 2005/36/EC.
Relevant objectives & problems	Implement the regulations and principles in Directive 2005/36/EC, as amended by Directive 2013/55/EU, for enabling professional skippers to gain accepted qualifications and automatic recognition across all Member States that are part of the CTF.
Implementation procedures	Implemented under Directive 2005/36/EC, as amended by Directive 2013/55/EU, which introduces the opportunity for 'common training frameworks' (CTFs). These allow a group of Member State to agree common training standards based on 'common sets of knowledge, skills and competences'. The CFT may be suggested by representative professional bodies operating at EU or national level, or by Competent Authorities (CAs) which are normally ministries or statutory regulatory bodies)[151]. Notably, Member States may opt out from the CTF e.g. on safety grounds. All Member States' current qualifications would be compared. Their common elements would be codified in an EU Common Training Framework. The Erasmus+ funded project TCC-SCV[152] has developed a transparent process of qualification comparison and extracted all knowledge, skills and competences for

[151] EUA Briefing Note on Directive 2013/55/EU, containing the amendments to Directive 2005/36/EC on the Recognition of Professional Qualifications

[152] www.tcc-scv.eu

Policy option 4	European Common Training Framework (CTF) for professional skipper qualifications
	professional skipper qualifications in seven Member States. This process would need to be expanded to include at least 10 MS, but ideally all relevant MS. Given the relatively high degree of theoretical knowledge required for skipper qualification[153], CTFs are expected to be preferred to a Common Training Test (CTT), which is also provided for under the Directive.
Complementary actions	.
Intervention logic	Outputs: A European Common Training Framework for professional skipper qualifications Outcomes: • Increased understanding and trust between national authorities regarding each other's qualification systems • Whilst each Member State keeps its national training programme, the agreed common set of knowledge, skills and competences will be formulated into a common training framework that is aligned to the highest level of requirements; • Automatic recognition of skipper qualifications directly via the common training framework Impacts: • Improved mobility and hence access to income and employment opportunities for professional skippers; • Reduced costs and more business for charter and service companies; • Reduced burdens on small and micro enterprises.

[153] Unlike more practical professions such as ski instructor.

A1.6.3 Screening of options

Table 3. Screening exercise for the long list of policy options relating to professional skipper licences

Policy option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
1. EU recommendation to recognize professional skipper licences 2. EU legislation on mutual recognition of national skipper qualifications	Some additional funding to finalise existing tool and promote mutual acceptance. Development of Directive for Option 2.	**Low**: MS resistance anticipated as it requires MS to accept qualifications that they regard as substandard.	**Mod**: mutual recognition enabled; a number of MS may opt out if voluntary, undermining the effectiveness;	**High:** requires EU-wide engagement	**Low-Mod**: proportionate yet likely to be insufficient	Excluded
3. A European core curriculum with national top-up modules, through a new EU directive	Support further development of the curriculum and top-up modules and facilitate negotiations and agreement. Implementation through new directive.	**Mod-high**: limited MS resistance as it allows MS to retain their own qualification systems and ensure 'top-ups' for skippers from other MS where the need is justified	**Mod-high:** National differences remain where justified, but only training top-ups for skippers working under other MS conditions are required rather than full qualifications for the relevant MS	**High:** requires EU-wide engagement and negotiation	**Mod-high:** moderately targeted to the issue and limits need for new legislation	***Take forward***
4. A European Common Training Framework for professional skippers through Directive 2005/36/EC (Amended 2013)	Support further development of a common set of knowledge, skills and competences and draft the	**Low-mod**: achievement of a common training framework is likely to require trade-offs /	**Mod:** where national differences cannot be adequately incorporated, MS are likely to opt	**High:** requires EU-wide engagement and negotiation	**Low-Mod:** moderately targeted to the issue and limits need for new legislation	***Take forward***

Policy option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
	delegated act. Facilitate negotiations and agreement. Implementation through existing directive.	omissions of certain aspects which MS may be unwilling to make	out. If MS with high levels of boating activity (which also often have the high qualification standards) opt out this will significantly undermine effectiveness.			

A1.6.4 Short-list of options taken forward for assessment

The options selected for detailed appraisal are:

- Option 3: A European core curriculum with national top-up modules, through a new EU Directive.
- Option 4: A European common training framework, through Directive 2005/36/EC (Amended 2013).

A1.7 Assessment of impacts

6.1.1 Option 3: Core Curriculum and National Top-up Modules under a new EU Directive

6.1.1.1 Implementation and Effectiveness

A core curriculum implemented through a new EU Directive that specifically addresses the situation of professional skippers and implements a European core curriculum with top-up modules.

To implement this measure, the Commission would need to agree a draft Directive, in cooperation with national authorities and experts, that defines the exact details of a core curriculum for professional skippers and how this would be implemented by the Member States.

A new Directive would also allow for the joint regulation of additional licensing parameters, e.g. age restrictions, medical requirements and licence validity in terms of numbers of persons on board, distances offshore, insurance requirements, association membship, etc[154].

This Directive would then have to be presented to the Parliament and the Council, initially for evaluation and comment, then subsequently for approval or rejection. When and if adopted, that Directive would give Member States a timetable for the implementation of the core curriculum for professional skippers and to make changes to their own laws, and to develop justified national top-up modules.

The Erasmus+ funded project TCC-SCV[155] has developed a transparent process of qualification comparison, extracted a common set of knowledge, skills and competences for professional skipper qualifications in seven Member States and formulated out of this data a Common Core Curriculum. To achieve an EU-wide regulation, the remaining Member State qualifications will have to be analysed and added to the knowledge, skill and competence data.

The TCC-SCV project consortium involves the European Boating Industry (EBI), an EU-level representative body as well as four national professional organisations. It is therefore in a position to expand on this work and provide the necessary data for a new Directive.

Direct and indirect effects of the intervention

The intervention, in the form of a common core curriculum with national top-up modules, would improve intra-EU mobility of professional skippers, remove barriers to the efficient operation of the single market and would benefit a wide variety of stakeholders

[154] Which cannot be addressed through the existing Directive 2005/36/EC, as amended by Directive 2013/55/EU

[155] www.tcc-scv.eu

Stakeholders directly affected:

- **National Authorities:**

  In case of the implementation of the proposed common core curriculum through a new EU Directive, the national authorities in charge of regulating professional skipper qualifications would be actively included in the consultation process during the draft of the Directive and then would later have to comply with the agreed measures.

- **Professional Skippers:** The implementation of a common core curriculum with top-up modules would benefit professional skippers as it would enable them to obtain other national qualifications more easily and thereby increase their mobility, job flexibility and income possibilities. Professional skippers would still need to obtain an initial professional skipper qualification from their home (or other) state. To allow them to work on boats sailing under different flags to their home state they would need to complete the new national top-up modules (instead of completing the entire professional skipper qualification process for that flag state, which is the current situation).

- **Other occupational groups which utilise skipper licences:** These groups would in the midterm also profit from increased mobility, job flexibility and income possibilities but would in the first place be incentivised to legalise their activities and gain the necessary professional skippers qualifications from one or more Member States. This would operate in the same way as described for professional skippers under point b) above.

- **Charter companies and other service companies:** The increased ease with which professional skippers and other occupational groups could obtain skipper qualifications applicable to different Member States is expected to increase the number of skippers holding such qualifications. As a result, charter companies and other service companies are expected to be able to be more flexible, economical and responsive in their services as they would be able to choose from a much wider pool of professional skippers with multiple qualifications.

Stakeholders indirectly affected:

- **Nautical Tourists:** An easier way for re-qualification of professional skippers in the form of the common core with top-up modules will lead to better legal compliance and therefore better services and greater safety for all nautical tourists. Charter customers can be assured of the correct qualification of their skippers and boat owners can rely on correctly qualified service personnel moving their boats.

- **Sea Schools:** Sea schools will be able to instruct a wider variety of students with different nationalities, as the common core qualification of their own Member State is identical to that of all other EU Member States.

- **Marinas:** Marinas with a variety of different flag vessels would be able to improve their services by better legal compliance of their staff and improved safety.

- **Public Sector / European Commission:** The implementation of a core curriculum with top-up modules would be received by most stakeholders as a positive measure that eases cross-border exchange and would therefore be positive publicity for Commission activities and the single market.

Conclusion on the effectiveness of the intervention

The successful implementation of the option of implementation of a core curriculum with top-up modules through a new Directive is expected to be very effective in tackling the problem of non-recognition of skipper licences. MS will be legally obliged to adopt the new system.

6.1.1.2 Detailed assessment of impacts

The detailed assessment of impacts for those impact categories where an effect is anticipated is shown in the summary Table 4 below.

Economic Impacts

Performance and Competitiveness

Implementing a core curriculum with top-up modules through a new Directive would have a positive impact on the performance and competitiveness of the individual professional skippers (see section on 'employment') and on charter businesses.

The amount of business that charter companies lose to miss-matches of skippers and boat flags would reduce. The scale of the change is difficult to estimate as no reliable data exist. Ecorys estimates the turnover of the European charter sector at €6bn based on the assumption of a European charter boat fleet of 5-15,000 boats and the skippered charter market to be around 36 per cent of the entire charter activity[156]. The TCC-SCV project, by contrast, estimates the charter boat fleet in Europe to be around 60,000 boats and the share of skippered charter around 15 to 20 per cent, i.e. 5,400 to 12,000 vessels. Skippered charter will predominately take place on vessels from about 40ft to 80ft and thereby affect the costlier charter vessels, which would charter at an average of €10,000 per week (the range being €1,500 for a 40ft sail boat in off season to €35,000 for an 80ft motor boat in peak season). If these vessels only lose 5 per cent of their 20 weeks of charter (i.e. a single 1 week charter) due to not being able to provide the skipper with a matching qualification, the loss of income would be between €54m and €120m per year.

The suggested option of a core curriculum with top-up modules would simplify re-qualification and multiple qualification of professional skippers and thereby lower the associated administrative costs for business (as detailed in the section on performance and competitiveness) which in the current situation has to match skipper qualifications to boat flag states. The facilitated process would benefit larger charter companies, who experience currently restrictions in the flexibility of their staff and have to manage this situation.

Administrative burdens on business

Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[157]. Such obligations may be imposed on qualification providers to enable Member States and the Commission to monitor the uptake of the new top-up modules by professional skippers. The cost of providing such information is likely to be minimal.

Public Authorities

At national level: The implementation of a core curriculum with top-up modules would require national authorities to review their syllabi and to formulate (in agreement with other national authorities) their necessary top-up modules. They would also have to find ways of offering and testing the corresponding module courses in a centralised form or through their network of sea schools. This would need to be planned and implemented and would therefore initially require a certain amount of administrative costs. Once the new system is set up, there will be no extra costs for the administration, as additional examinations are in most cases covered by examination fees to be paid by the student.

At EU level: Funding is necessary to add the data of the remaining MS qualifications to the existing database of the TCC-SCV project. The Commission would have to act to

[156] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector (pages 7 and 60)

[157] European Commission (2015), Better Regulation Toolbox

implement the core curriculum with top-up modules in a new Directive, at some administrative cost.

Position of SMEs

For small and micro businesses that are negatively affected by the non-recognition of professional skipper licences, the intervention would deliver benefits in the form of lower costs for re-qualifications and the ability to employ a smaller number of staff for boat skippering. This would lead to such firms being more competitive with other companies that operate in their own home country and do not face recognition problems. This would encourage and support more cross border mobility.

Functioning of the internal market and competition

The functioning of the internal market would be improved as the measure would lower the barriers to cross-border mobility, facilitate re-qualification and encourage mobility. Benefits would accrue mainly to the target group of professional stakeholders, but charter companies would also benefit from added flexibility in moving their staff and boats in their fleet between Member States.

Innovation and Research

No impact on scientific innovation and research is expected. The change could prompt more product innovation in the charter market as barriers to trade across Member States are taken down.

Consumers and households

Lower costs for professional skippers, charter companies and other service companies would benefit consumers in form of lower prices, if such savings are passed on. The change should provide consumers with greater choice of skipper.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention will have a minor impact on the overall macroeconomic environment.

Social Impacts

Employment and labour market

The option would facilitate skippers to secure more consistent employment during a year and hence enhance skipper incomes.

The distribution of jobs could possibly change slightly as it would be easier to re-qualify. Professional skippers from Mediterranean countries, who are often restricted to skippering locally registered vessels would, find it easier to work on vessels flagged by a different Member State. But also skippers from any other Member State, whose qualification currently does not match the vessels flag in a cross-border situation (i.e. there are very few eastern European flagged boats in the Med) would have greater opportunities to work.

In the baseline scenario the training and exam can only be done in the national language. The core curriculum option offers the possibility to access top-up modules of other countries' qualifications also in the skippers own language, thereby overcoming the language barrier and offering more access to training and jobs.

Professional skippers: The costs of re-qualification for professional skippers would be considerably lower than in the baseline scenario. Baseline re-qualification costs vary between €1,000 and €8,000 and the process takes up to 3 months. Under the Common curriculum with top-up modules regime, it is envisaged that completion of

top-up modules would be conducted as one to three day courses which each would cost around €200 per day[158].

Of the 30,000 to 100,000 skippers it is estimated that at least 50 per cent are involved in cross-border situations (i.e. working in a different country to their home state, or working on boats flagged differently to their home state)[159]. Of these 15,000 to 50,000 professional skippers working in cross-border situations, it is assumed that 75 per cent experience problems regarding the recognition of their qualifications and restrictions in their mobility[160]. Therefore between 11,250 and 37,500 professional skippers face mobility restrictions and would need to re-qualify in at least one other qualification to take advantage of work opportunities.

- Requalification cost savings: Based on an average of 25,000 professional skippers in this situation and current average cost of €5,000 for re-qualification, the potential cost of re-qualification for these skippers would be about €125m. Under the common curriculum system, such costs would be reduced to around €10m, offering a saving of around €115m. Assuming a five-year turnover of skippers, and hence qualification cycle, an annual cost saving of €23m is estimated.
- Loss of income: Additionally, these skippers would experience a downtime and period with loss of earnings of up to 3 months due to the length of the requalification process. Skippers not seeking multiple qualifications would experience downtime due to inflexibility to work on boats of differing flags. It is assumed that many skippers may undertake such qualifications outside of the main season, when there work is less regular. It is therefore conservatively estimated that, on average, skippers may experience at least one month of lost income due to requalification (estimated at €2,000/month). Based on 25,000 professional skippers, forgoing €2,000 of income for one month for the purposes of qualification, it is estimated that total lost earnings could equate to €150m. Under the common curriculum system, requalification downtime is expected to be between 1 and 3 days and hence lost income is expected to be around €250 per skipper; hence €6.3m overall. Assuming a five-year turnover of skippers, and hence qualification cycle, current costs of €30m per year would be reduced to €1.3m per year, reflecting an annual reduction in lost income (i.e. an increase in actual income) of approximately €29m.

Working conditions

A core curriculum with top-up modules would lead to more competition and higher quality of service. This could have a short term negative effect on wages, which should level out over time.

It would lead to better access to more vocational training opportunities, as sea schools could offer multiple national qualifications and also a system to qualify in national top-up modules.

The option would also lead to avoidance of illegal working and hence potential safety benefits for workers because they are more likely to have done the right training.

Effects on social inclusion

Through facilitating an increased mix of nationalities working together, social inclusion into the society of the host state would be made easier and inequalities would be

[158] This price is based on current modular course prices for higher crew qualifications, see example of prices at http://www.bluewateryachting.com/crew-training/courses/prices

[159] This figure of 50 per cent is conservatively based on the German situation, where of 7,500 professional skippers 3,500 work in Germany and the rest outside Germany.

[160] This assumption is based on the fact that in all cross-border working situations professional skippers are confronted with different flagged boats, only a minority will be able to always match their qualification to the potential boat flag and .

reduced e.g. a British skipper who can work on a Spanish vessel with Spanish colleagues is likely to be much better integrated into local society than if he is only permitted to only wok on British flagged vessels

Public health and safety

Overall the option should improve the safety standards of consumers and all other marine users due to fewer instances of inappropriately qualified skippers being used and skippers acting illegally without the right qualifications.

Some national authorities may argue that their national standards are higher than those of other Member States and that the core curriculum therefore would pose a risk to the safety of the professional skippers' operation. To address this issue, the proposal is to implement top-up modules that cater for those special national conditions and requirements.

Environmental Impacts

It could be argued that improved services of professional skippers, in combination with the foreseen rise in charter activities,[161] could lead to more boating activity. This could result in some negative effects on the environment, such as higher use of fossil fuels and greater production of waste. However these impacts are expected to be minor.

A1.7.1 Option 4: A European Common Training Framework for professional skippers, through Directive 2005/36/EC (Amended 2013)

A1.7.1.1 Implementation and effectiveness

Implementation

Directive 2013/55/EU, which came into force in January 2016, is a revision of the Professional Qualifications Directive (2005/36/EC). Its aim of "giving professionals the opportunity to work permanently or temporarily in other EU countries"[162] is aligned with the objective of intervention in the professional skipper market i.e. intra-EU movement of professional skippers.

Articles 49a and 49b of revised Directive 2005/36/EC introduce two new forms of automatic recognition on the basis of common training principles:

- Common Training Framework (CTF)
- Common Training Tests (CTT).

For a profession to be eligible under this Directive to a CTF, it has to be regulated and/or its education & training has to be regulated, in at least one-third of the Member States i.e. 10 with the current number of 28 EU Member States. This is the case for Professional Skipper qualifications, which are regulated in most MS. As a first step the Directive requires the preparation of a Common Training Framework that is based on a common set of knowledge, skills and competences applicable in at least one third of Member States (Article 49a 2.(c) & (f)).

The European Core Curriculum suggested in option 3 is the intersection of professional skipper qualifications that represents their common set of knowledge, skills and competences and is thereby similar to a CTF. However, the option of combining a Common Core Curriculum with nationally specific requirements in the form of national top-up modules (as specified in Option 3) is not compatible with the concept of a CTF when reading article 49a of the revised 2005/36/EC Directive. A CTF does not provide for the possibility of having to pass further examinations after having completed a qualification complying with a CTF.

[161] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[162] European Commission (2016). A new professional qualifications regime for Europe. The EU for growth and jobs.

As such, the CTF for professional skipper qualifications would provide a comprehensive level of qualification acceptable to all MS. The Erasmus+ funded project TCC-SCV[163] has developed a transparent process of qualification comparison, extracted the knowledge, skills and competences for professional skipper qualifications in seven Member States and formulated out of this data a common core curriculum. As there are justifiable differences between MS qualifications, this process would need to be enhanced to establish a Common Training Framework that is based not only on already common elements but includes also all justified MS requirements. It would also need to be expanded to cover at least 10 MS.

The Common Training Test: The CTF is preferred to the CTT. In a practically orientated profession such as ski instruction the CTT is an effective option; the instructors can pass the CTT based on their practical experience. In the case of professional skippers, a lot of theoretical knowledge is involved in the examination. A skipper would have to re-train this knowledge to a large extent and would be tested again in what he was already been examined in originally. This may also include learning new elements that may not be relevant to their chosen sailing locations.

Direct and indirect effects of the intervention

The intervention, in the form of a Common Training Framework, would improve intra-EU mobility of professional skippers between those MS which do not opt-out, remove barriers to the efficient operation of the single market and would benefit a wide variety of stakeholders.

Stakeholders directly affected:

- **National authorities:** All national authorities in charge of regulating professional skipper qualifications would have to take measures to comply by:
  - Ensuring their national curriculum reaches the minimum standard required, or
  - Justifying their basis for opting out of the CTF.
- **Professional Skippers:** The implementation of a CTF would benefit professional skippers as it would enable them to obtain other national qualifications more easily and thereby increase their mobility, job flexibility and income possibilities. However the costs of doing so may be prohibitively high if the CTF is set at too high a level; or the benefits of doing so may be limited if significant MS opt out due to the level being set too low.
- **Other occupational groups which utilise skipper licences:** The immediate effect would be to incentivise them to legalise their activities and gain the necessary professional skippers CTF qualification. These groups would also benefit from increased mobility, job flexibility and income possibilities, but also drawbacks, as per professional skippers.
- **Charter companies and other service companies:** The increased ease with which professional skippers and other occupational groups could obtain skipper qualifications applicable to different Member States is expected to increase the number of skippers holding such qualifications. Charter companies and other service companies are expected to be able to be more flexible, economical and responsive in their services as they would be able to choose from a much wider pool of professional skippers with multiple qualifications.

Stakeholders indirectly affected:

- **Nautical Tourists:** Nautical tourists should benefit from better services and safety that should flow from the improved compliance that is expected to flow

[163] www.tcc-scv.eu

from lowering the barriers to skippers requalifying. Charter customers can have greater confidence that their skipper will have the correct qualification and boat owners can rely that those moving their boats are correctly qualified.

- **Sea Schools:** Sea schools will be able to instruct a wider variety of students with different nationalities, as the CTF of their own Member State will be identical to that of all other EU Member States.
- **Marinas:** Marinas with a variety of different flag vessels will be able to improve their services by better legal compliance of their staff and improved safety.

Conclusion on the effectiveness of the intervention

A single CTF would be more comprehensive than national tests as its standard would have to include all national specifics (e.g. include all MS local laws, aspects of theory that may only be relevant in a small number of MS). Qualification under a CTF would hence require a significant effort in terms of time and resources that may not be justified i.e. a skipper would have to learn all MS-specific justified differences, resulting an unnecessarily high level of qualification (unless the skipper intended to work in all MS) and low take up of the CTF.

If efforts are made to reduce the requirements of the CTF to a more moderate level, this may risk a number of MS choosing to request opt-outs, which would be permitted given the justifiable differences between MS. A high degree of opt-outs would undermine the effectiveness of the option, particularly if these were taken up my MS which have high demand for professional skippers. These MS also typically have the highest qualification standards.

A1.7.1.2 Detailed assessment of impacts

The detailed assessment of impacts is set out for those impact categories where an effect is anticipated. The scale of impacts will be significantly affected by the extent to which MS opt in or opt out from the CTF and the standard at which the CTF is set.

Economic Impacts

Performance and Competitiveness

Implementing a CTF for professional skippers would have an overall positive impact on the performance and competitiveness of the individual professional skippers (see section on 'employment') and on charter businesses.

Charter companies would benefit from less loss of business due to miss-matches of skippers and boat flags. The amount is difficult to estimate as no reliable data exist. Given the anticipated reduction in effectiveness of Option 4 compared to Option 3, an arbitrary 50% reduction in benefits (from that estimated for Option 3) is assumed i.e. €25-60m/per year of avoided lost income.

A CTF would lead to automatic recognition of professional skippers qualifications (in Member States which have not opted out) and thereby in a number of instances lower the associated administrative costs for business (as detailed in the section on performance and competitiveness) which in the current situation has to match the skipper's qualifications to the boat's Flag State.

Administrative burdens on business

Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[164]. Such obligations may be imposed on qualification providers to adjust their training programmes to the agreed CTF. The cost of providing such information is likely to be minimal.

[164] European Commission (2015), Better Regulation Toolbox

Public Authorities

At national level: The implementation of a CTF would require national authorities to review their syllabi and to formulate (in agreement with other national authorities) the CTF. Once the new system is set up, there will be no extra costs for the administration, as additional examinations are in most cases covered by examination fees to be paid by the student.

At EU level: To comply with the requirements of Directive 2005/36/EC (Amended by Directive 2013/55/EU), funding is necessary to develop the common training framework for professional skippers.

Position of SMEs

For small and micro businesses that are negatively affected by the non-recognition of professional skipper licences, the intervention would deliver benefits in the form of lower costs for re-qualifications and the ability to employ fewer staff for boat skippering. This would lead to such firms being more competitive with other companies that operate in their own home country and do not face recognition problems. This would encourage and support more cross border mobility.

Functioning of the internal market and competition

The functioning of the internal market would be improved as the measure would lower the barriers to cross-border mobility, facilitate recognition and encourage mobility. However some barriers would remain where MS chose to opt out from the CTF. Benefits would accrue mainly to the target group of professional stakeholders, but charter companies would also benefit from added flexibility in moving their staff and boats in their fleet between Member States.

Innovation and Research

No impact on scientific innovation and research is expected. The change could prompt more product innovation in the charter market as barriers to trade across Member States are taken down.

Consumers and households

Lower costs for professional skippers, charter companies and other service companies would benefit consumers in form of lower prices, if such savings are passed on. The change should provide consumers with greater choice of skipper.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention will have a minor impact on the EU economy as a whole.

Social Impacts

Employment and labour market

The option would enable skippers to secure more consistent employment throughout the year and hence enhance their incomes.

The distribution of jobs could change slightly. Professional skippers from Mediterranean countries, who are often restricted to skippering locally registered vessels would, find it easier to work on vessels flagged by a different Member State. Skippers from any other Member State, whose qualification currently does not match the vessels flag in a cross-border situation (e.g. there are very few eastern European flagged boats in the Med) would have more opportunities to work, providing both their Home State and the Flag State had not opted out of the CTF.

Professional skippers: Due to the potentially high level of qualification to be achieved under the CTF, it is not expected that the cost of qualification would be greatly affected (compared to the baseline scenario), and it may even increase. Re-qualification costs currently vary between €1,000 and €8,000 and the process takes

up to three months. However skippers would no longer need to obtain multiple MS qualifications (unless those to work in a country or on a boat whose Flag State had opted out of the CTF).

Between 11,250 and 37,500 professional skippers face mobility restrictions[165] and would need to obtain at least one other qualification to take advantage of work opportunities. As the number of opting out MS cannot be robustly determined, and the cost of undertaking a CTF is not known

- Requalification cost savings: Dependent on the extent of MS opt outs and cost of obtaining a CTF (which may be aligned with the standard at which it is set i.e. higher standard equals higher cost). Illustratively assumed to be 50% of the saving achieved under option 3: €11.5m/year.
- Loss of income: Skippers seeking requalification would currently experience a period without earnings of up to three months due to the length of the process. Skippers who do not seek multiple qualifications would experience periods without work due to their inability to work on boats of differing flags. Benefits through avoidance of non-earning periods will be dependent on the extent of MS opt outs and the standard at which the CTF is set. Illustratively estimated to be half the annual reduction in lost income (i.e. an increase in actual income) estimated under option 3: reduction of approximately €15m / year.

Working conditions

A CTF for skipper qualifications would, depending on the extent of MS opt outs and the standard at which the CTF is set, lead to more competition and possibly higher quality of service. This could have a short term negative effect on wages, which should level out over time.

It would lead to better access to more vocational training opportunities, as sea schools could offer their national qualifications to all nationalities.

The option would also lead to reduced illegal working and hence potential safety benefits for workers because they are more likely to have done the right training.

Effects on social inclusion

Through facilitating an increased mix of nationalities working together, social inclusion into the society of the host state would be made easier and inequalities would be reduced e.g. a German skipper who can work on a Spanish vessel with Spanish colleagues is likely to be better integrated into local society than if he is only permitted to only work on German flagged vessels

Public health and safety

Overall the option should improve the safety standards of consumers and all other marine users due to fewer instances of inappropriately qualified skippers being used and skippers acting illegally without the right qualifications.

Some national authorities may argue that their national standards are higher than those of other Member States and that the common training framework therefore would pose a risk to the safety of the professional skippers' operation. This is likely to be addressed by MS opting out of the CTF or the CTF standard being raised to incorporate such MS variations.

Environmental Impacts

It could be argued that improved services of professional skippers, in combination with the foreseen rise in charter activities,[166] could lead to more boating activity. This could

[165] See Option 3 analysis for assumptions.

[166] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

result in some negative effects on the environment, such as higher use of fossil fuels and greater production of waste. However these impacts are expected to be minor.

A1.7.2 Summary level assessment

This section sets out a summary level assessment of the likely scale of the impacts of each intervention option.

Table 4. Summary of impact scores

Impact type	Option 3: Core curriculum with top-up Modules via a new Directive	Option 4: European Common Training Framework under Directive 2005/36/EC (Amended by Directive 2013/55/EU)
Performance and competitiveness	++	+
Administrative burdens on businesses	-	-
Public authorities	-	--
Position of SMEs	++	+
Functioning of the internal market and competition	+++	++
Innovation and research	0	0
Consumers and households	+	+
Macroeconomic environment	+	+
Employment and labour markets	+++	++
Working Conditions	++	+
Effects on social inclusion	+	+
Public health and safety	+	+
Culture	0	0
Resource use and waste	-	-
Water quality and resources	-	-
Biodiversity, flora, fauna and landscapes	-	-
Sustainable consumption and production	-	-
Transport and the use of energy	-	-
Land use	-	-

Key: a -/+ 7 point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact and, 0 = no impact

A1.8 Conclusions and recommendations

A1.8.1 Effectiveness

Option 3, an EU common curriculum with national top-up modules, would achieve the specific objective of improving intra-EU movement of professional skippers and thereby accomplish the desired change. The effects on improved mobility, higher quality of service and greater competition should generate positive economic impacts on stakeholders in the nautical economy, including professional skippers, charter companies and other connected service companies, and SMEs. These are tentatively estimated to be in range of €52m per year of increased income for professional skippers (as a result of improved access to jobs and reduced costs of requalification) and €50-€120m per year of increased revenue to charter companies (due to a reduction in instances of lost charters due to inaccessibility of appropriately qualified skippers). Total benefits are therefore estimated at between €100m and €170m.

Under option 4, effectiveness is expected to be diminished. A CTF that satisfied all justified MS differences in qualification requirements would likely be too high a standard and complex a test. A lower standard would risk multiple MS opting out from the CTF, thus undermining its effect on the internal market. For illustrative purposes, the quantitative estimates of impact are arbitrarily estimated to be 50% of those under option 3.

A1.8.2 Efficiency

The expected benefits of Option 3 outweigh the costs. Professional skippers would have the opportunity to achieve cross-border mobility and therefore job flexibility at a lower cost than under the baseline scenario. Businesses in the sector, such as charter companies, would benefit from reduced costs and lower administrative burdens. Such benefits would also occur under Option 4, but at a reduced level.

Creating a new EU Directive under Option 3 that specifically addresses the situation of professional skippers and implements a European core curriculum with top-up modules would be less cost efficient than Option 4 which uses existing legislation. Under Option 3 a draft Directive would need to be presented to the Parliament and the Council, initially for evaluation and comment, then subsequently for approval or rejection. When and if adopted, that Directive would give Member States a timetable for the implementation of the intended outcome to make changes to their laws. This would normally imply a delay of two years before the measures come into force. The administrative costs would therefore be higher than with use of Directive 2005/36/EU and the positive impacts delayed.

Overall Option 3 is expected to be more efficient than Option 4.

A1.8.3 Uncertainties

There are significant data gaps which limit the robustness of the description of the scale of the problem and the analysis of the potential impacts of intervention. Estimates presented in this paper are based on a series of assumptions and scenarios, using the evidence that is available, in order to derive rough estimates of the likely magnitude of impacts. The uncertainty around these estimates is high and the results should be treated with commensurate caution.

A1.8.4 Recommendations

The option of a European core curriculum with top-up modules is recommended. It should build and expand on the data and outputs of the TCC-SCV project. Implementation through a new EU directive.

A1.9 Annex: Evidence sources

A1.9.1 List of stakeholders

- Mirna Cieniewicz, European Boating Industry (EBI), Brussels, BE
- Ewa Tomczuk, European Boating Industry (EBI), Brussels, BE
- Jürgen Tracht, Bundesverband Wassersportwirtschaft(BVWW), Cologne, DE
- Claudio Loscertales, Asociación Nacional Patrones Profesionales Embarcaciones Recreo (ANPPER), Barcelona, ES
- Richard Falk, Royal Yachting Association (RYA), Southampton, UK
- Andy Petty, AP Marine Surveys and RYA Examiner, Alicante, ES

A1.9.2 References

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Annex 2 Private Skipper Licences

A2.1 Introduction

Private pleasure boat licences are issued by national authorities and are required in 24 EU Member States. This means that each of these countries has a mandatory requirement for its citizens or residents to provide evidence of their competence by holding a boat driving licence when pleasure boating in their country's own waters or on boats flagged to their country. In the four remaining EU Member States compulsory licences are not required or issued.

Pleasure boating licences are required for boats under private ownership, used for sport and recreation purposes, and also for (non-professional) skippering of chartered boats (i.e. chartering a boat for private use).

A2.2 Topic and situation analysis

A2.2.1 The policy and licencing situation

To legally sail a private boat, or to charter a boat for private purposes, the skipper of that boat is required (in 24 of the 28 Member States) to hold a valid private skipper's licence. The licence should be from the licensing state whose flag the boat is being sailed under. In order to sail in the coastal waters of a different country to that in which the skipper is qualified, the national or international qualification must be accepted by that country.

A2.2.1.1 National private skipper licences

Each Member State regulates its own national qualification system for private recreational skippers. Private skipper licences that are issued to citizens by their national authority are valid in their nation's waters, on their nation's flagged vessels.

The private licences issued by Member States vary significantly in the permissions provided to, and restrictions imposed on, the licence holder. There are differences regarding:

- The type of boat that can be used (e.g. its length, whether it is a motor or sail boat, its speed and its engine power).
- How and where the licence holder can use boats (e.g. restrictions on the minimum age of a licence holder and the distance from the coast, the weather conditions and time of the day / night that the licence holder can use boats).

National authorities vary in how they issue licences:

- The licence syllabus varies. This can be due to local oceanographic conditions (e.g. some countries in non-tidal areas do not teach 'tidal theory').
- Approaches to licence assessment vary. Some countries require only a classroom-style theoretical assessment, whilst others combine both theoretical and practical assessments.
- Some countries require licence applicants to demonstrate pre-licence experience, such as a minimum number of sea miles or days at sea.
- Some countries require other pre-exam qualifications, such as first aid certificates or VHF radio certificates.

There are four EU countries where there is no requirement to hold a licence when boating in home waters. In the UK, for example, no licence is required when skippering a privately-owned vessel of up to 24 metres.

A2.2.1.2 Licences for sailing outside the private skippers' own state waters

Despite all of the above stated variations and differences, most EU private licences issued by the 24 Member States are accepted in each other's countries.

The United Nations Economic Commission for Europe Inland Water Committee (UNECE) Resolution 40 International Certificate of Competence (ICC) offers a system that entitles citizens from those Member States that accept it to apply for an international certificate. Resolution 40 states that "a government that has adopted the resolution may nominate competent authorities and/or approved bodies to issue certificates on its behalf to its nationals and residents for use on its registered craft."[167] The ICC is a complementary certificate, similar to an international car driving licence, but does **not** provide in itself an automatic means for mutual recognition. The ICC must be presented upon request when using one's own boat, or wishing to charter a boat, in foreign waters.

Citizens of EU Member States that do not offer national licences can still obtain an ICC. For example, where a UK citizen wishes to leave his/her own waters and go boating in the waters of a different country where a boat licence is required, the ICC is offered as a solution. UK citizens can be assessed and gain the ICC.

The predecessor of Resolution 40 was UNECE Resolution 14. This also provided a degree of recognition based on an international certificate. Member States that are not signatories to Resolution 40 but were signatories to Resolution 14 are: France, Italy and Poland. These Member States accept the ICC[168].

Table 5 sets out the status of EU Member States with regard to Resolutions 14 and 40. Member States that are not signatories to either resolution are: Cyprus, Denmark, Estonia, Greece, Malta, Portugal, Slovenia, Spain and Sweden. The main reason for Member States not being signatories to the ICC is because it was originally a product of the inland water committee and it was only subsequently extended to coastal areas. This led to some Member States considering it to be insufficient for coastal and ocean sailing[169].

However, some countries which have not applied the ICC do accept it as a certificate of competence for visitors from countries without a national licence system. For example, Spain accepts the ICC as a pleasure boating licence for UK visitors despite not having formally recognised Resolutions 40 or 14; Sweden does not require evidence of competence.

Despite the apparent extent of acceptance of national licences and the ICC, there are a number of occasions when Member States may not accept either – even between two Member States that are both signatories to Resolution 40. These instances and issues are further explored in Section A2.3 (Problem Definition).

Table 5. Status of the application of resolutions 40 and 14 by European Member States

Member State	Acceptance of Resolution 40 (and 14)
Austria	Applied
Belgium	Applied
Bulgaria	Applied

[167] UNECE (2014), International Certificate for Operators of Pleasure Craft Resolution No. 40 Revision 4 ECE/TRANS/SC.3/147/Rev.4

[168] UNECE, Application of the United Nations Economic Commission for Europe Resolutions on inland navigation, ECE/TRANS/SC.3/2015/14

[169] ECSIP Consortium (2015): Study on the competitiveness of the recreational boating sector

Member State	Acceptance of Resolution 40 (and 14)
Croatia	Applied
Cyprus	-
Czech Republic	Applied
Denmark	-
Estonia	-
Finland	Applied
France	Under consideration; (14 applied)
Germany	Applied
Greece	Applied
Hungary	Applied
Ireland	Applied
Italy	(14 applied)
Latvia	Applied
Lithuania	Applied
Luxemburg	Applied
Malta	-
Netherlands	Applied
Poland	Applied; (14 applied)
Portugal	-
Slovakia	Applied
Slovenia	-
Spain	Neither 40 nor 14 applied
Sweden	-
UK	Applied

Sources: UNECE, Application of the United Nations Economic Commission for Europe Resolutions on inland navigation, ECE/TRANS/SC.3/2015/14

A2.2.2 Market dynamics, size and scale

There are an estimated 6 to 6.5 million recreational craft in the EU. The large majority of these boats are privately used. Apart from boats that have less than 15HP of engine power and those which are used in the four Member States without mandatory private skipper licences, the skippers of these vessels are required to hold a private skipper's licence. The number of boats is not a direct indication of the number of private skippers as many private boaters do not own a vessel: ICOMIA estimates the total number of people participating in boating activities in Europe to be 36m.[170]

Boat ownership is decreasing over time, while the average age of boaters is increasing, rising from 45 to 55 over the last ten years. As a result, there are relatively few young boat owners entering the market (i.e. purchasing boats).[171]

[170] ICOMIA (2010). Statistic Book 2010

[171] Forschungsvereinigung für die Sport- und Freizeitschifffahrt e.V. (FVSF) (2008), Structures in the German Boat Market.

Alternative approaches to single ownership of boats have been increasing in popularity (due in part to broader economic trends and the emergence of the 'sharing economy'[172]), including multiple-person ownership and formal and informal chartering.

Boat ownership patterns across Europe are rather diverse. Ownership rates are highest in Northern countries (Finland, Sweden, and Norway)[173]. Data for the UK shows that 9 per cent and 19 per cent of UK participants in yacht-cruising and motorboat-cruising activities respectively normally use charter boats[174].

Private pleasure boating (on own boats or charter boats) takes place in all EU Member States and is gaining in popularity as a holiday choice.[175] The issues of recognition of private skipper qualifications arise mainly as a result of tourist activity (i.e. when citizens from one Member States use their boats, or charter boats, in another Member State's waters whilst on holiday) and are therefore most significant in the most popular destinations. For example, there is a concentration of boating activities in the Mediterranean Sea and the most prominent destinations for recreational boating holidays are Spain, France, Italy, Croatia and Greece. There is also a strong geographical bias, with relatively large numbers of citizens from northern Europe travelling to Member States with a Mediterranean coast.

There are few data indicating the scale of **inter-EU charter tourism** in general and of bareboat charters (i.e. charters for private use without a skipper or crew) in particular. The total EU boat charter market is estimated to have a turnover of up to €6bn and directly employ 22,000 people[176]. However, it has been necessary to use assumptions to produce disaggregated estimates for bareboat charters (excluding skippered / crewed charters). The European Boating Industry (EBI) and the partner consortium of the TCC-SCV project have estimated there to be up to 60,000 charter boats in Europe[177], of which between 5,400 and 12,000 are skippered/crewed charter boats[178]. This leaves between 48,000 and 55,000 vessels for bareboat charter with private skippers. Assuming that these vessels are chartered for an average of 20 weeks per year at an average rate of €2,500 per week[179], the **annual turnover is €2.4bn to €2.75bn**. This suggests that bareboat charters currently account for around 40-45 per cent of the total EU charter market. The majority of these bareboat charters take place across the Mediterranean and are likely to be booked by customers from northern Europe.

Private skippers also participate in tourism activities associated with **inter-EU private boating on their own vessels stationed abroad**. Research in the UK suggests that around 20,000 sail, power and motor boats are kept abroad, which equates to 12 per cent of all boats owned by UK residents[180]. There is a lack of similar data for other Member States. A conservative estimate can be produced by applying the UK findings to the 3.7m boats owned by residents of northern Europe (0.6m in the UK and Ireland, 2.0m in Scandinavia and Baltic States, 0.8m in Germany and 0.3m in the

[172] Interview with ICOMIA, conducted 16.03.2016

[173] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[174] Arkenford (2013). Watersports Participation Survey. British Marine Federation

[175] ECSIP Consortium (2015): Study on the competitiveness of the recreational boating sector

[176] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

[177] This is calculated on the base of some known official numbers of registered charter boats which are in Germany 7.500, in Croatia 3.300, in Slovenia 560, in France 6.500 and in Spain 550.

[178] See topic on Professional Skipper Licences (Section A1.7.3.1) for further details.

[179] Bareboat charter boats are typically at the lower size and price end of the market, ranging from 3m ribs to 15m sail or motor yachts (larger sail or motor yachts tend to be crewed charter boats). Prices range from €700 to €10,000 per week with the majority being sail boats between 10 and 15m and costing between €1,500 and €4,000 per week. An average spend of €2,500 per week is assumed in line with the data provided by YachtSys (2013) What is good to know about bareboat yacht charters.

[180] Arkenford (2013). Watersports Participation Survey. British Marine Federation

Netherlands and Belgium)[181], based on an assumption that it is mainly northern European nationals who keep their boat in other countries. This suggests that around 450,000 privately skippered boats are kept outside their home countries. Each boat is likely to have at least two people on board, suggesting that there are likely to be around 1m nautical tourists visiting privately owned boats kept in other Member States.

Ecorys has estimated the daily expenditures of coastal tourists to be approximately €70 per person/night[182]. Boaters are estimated to spend more than other coastal tourists although there is a lack of data relating to boater expenditures and it is difficult to estimate as this group covers owners of small powerboats and large motor yachts. For the purposes of this analysis, it is estimated that spend per boat (not per person) is twice as much as the average coastal tourist spend per person i.e. up to €140 per boat/night. It is also assumed that these boat owners spend between 10 and 20 nights visiting the Member State where their boat is kept, which suggests associated tourism expenditures of **between €1.4bn and €2.8bn per annum**.

Additionally, **private skippers take their own boats for short visits** to neighbouring Member States (typically for weekend trips or one to three week holidays). Unfortunately there are no data on these activities, which makes it very difficult to produce reliable estimates. Research by the British Marine Federation (BMF) with coastal marinas in the UK found significant variance in the number of boats visiting marinas that were not their 'home' marina. For some marinas (typically the smaller ones), visiting boats accounted for less than 10 per cent of boating activity at the marina, while at others (particularly large marinas in popular tourist destinations) visiting boats accounted for the majority of boating activity[183]. However, it is not clear how many of the visiting boats were from other Member States. An estimate of the expenditure of private skippers taking their own boats to other Member States has been produced based on the assumption that 1 per cent of the 6 to 6.5 million boats in Europe (see above) might visit other EU Member States with an average of two people on board for a long weekend of 3 days per year. Assuming the same expenditure of €140 per person/night would suggest an associated **economic value of around €80m per year**. It is important to acknowledge the low level of confidence in this figure.

The **total economic output of cross-border private boating and EU bareboat charter activities can therefore be estimated at between €3.9bn and €5.6bn.** This suggests that these combined activities represent a relatively small proportion of total boating activity in the EU.

A2.3 Problem definition

A2.3.1 Problem statement

Private skipper licences are issued to citizens by their national authority and are valid in that nation's waters, on that nation's flagged vessels. This national legislation can lead to cross-border problems relating to: a) recognition issues, and b) qualification standards.

A2.3.1.1 Recognition issues

In many cases, private skipper licences are recognised by other Member States for pleasure boating purposes, such as chartering a boat for self-drive whilst on holiday, but specific problems can arise when:

[181] Data based on British Marine Federation data from 5th Waterways for Growth Partner Meeting & Workshops - West Flanders, March 2011

[182] Ecorys (2013). Study in support of policy measures for maritime and coastal tourism at EU level, page 27.

[183] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

- A national private skipper licence is not recognised in another country. There is a lack of information, or any standard or common system in place, to regulate or monitor how any Member State determines which licence from another Member State is identified, compared and ultimately recognised or not.
- A private skipper is holding a private licence from his home Member State and buys a boat in a different Member State and wishes to register and flag that boat there.
- A Member State does not have a mandatory licence system (such as the UK or Finland) and their citizens travel abroad without a licence.
- A citizen of one Member State becomes the holder of a private skipper licence from another Member State and then intends to go boating back in his/her home country. The home country will generally not recognise this foreign licence as a certificate of competence in its own waters for its own citizens.
- The pleasure boating licences issued by other Member States are seen to be inferior to those issued by the Member State whose waters the skipper plans to use.

The ICC is put forward as a solution to the above problems. However:

- In a cross-border situation, the ICC is only applicable where the visited country has adopted or recognises the ICC as a valid standard of competency. Not all Member States (nine are identified in Section A2.2.1) are signatories to Resolution 40 (and/or 14) (under which the ICC is governed) and only some (but not all) of those non-signatory Member States will accept the ICC as proof of competence.
- Even amongst Member States that are signatories of Resolution 40, there are situations where the ICC will not be recognised. An ICC issued by one country is not always accepted as valid by another country. For example, whilst both the UK and Germany have accepted Resolution 40 and are issuing ICCs, a German citizen cannot use an ICC issued in the UK to go pleasure boating in German waters or on a German flagged vessel.

A2.3.1.2 Problems relating to qualification standards

Each Member State has developed its own training and qualification systems for private boating, which have led to varying standards. This is especially problematic for charter companies that rent boats for private bareboat charter as they cannot expect the same standards of ability from customers with different national pleasure boat licences.

Some licences, for example the German Sportbootführerschein (SBF-SEE), have a strong theory focus and do not require the applicant to demonstrate much boat handling ability in the examination.

It is even harder to judge a qualification standard where the national licence results in automatic issuance of an ICC. For example a German holder of a SBF-SEE can use this qualification to receive an ICC from the German authorities without any further examination, even though the ICC requires a much higher practical standard.

Additionally, the ICC can in some countries (e.g. the UK) be acquired directly, meaning it is not necessarily based on a national qualification, but is assessed directly according to the syllabus established by Resolution 40. This syllabus contains relatively high practical standards but only defines its requirements very generally, so that the resulting standard is highly dependent on the examiner's own interpretation of the assessment guidelines.

In reality, it is thought that there are relatively few instances where problems occur due to a lack of recognition of national licences or the ICC between Member States. Issues are more prevalent in relation to boat charter than the navigation of owned boats.

A2.3.2 Causes of the problem

The origin of the current situation with regard to recognition of private skipper licences lies in the long maritime tradition of most Member States, each of which developed their own qualification and training systems. This may reflect maritime experience, national oceanographic and meteorological conditions and cultural attitudes. The regulation of these licences underlies fully national law.

This has led to diversity in the standards, syllabus scope and application of private skipper licence systems across Member States. The variability of licence systems across Member States is not clearly comparable. There is no verified database that correctly lists all Member States' qualifications and translates this information into all Member States' languages to aid transparency, understanding and mutual recognition. This can result in mistakes due to misinterpretation or wrong translations, as demonstrated by the incorrect recognition of the German inland licence for coastal waters in Spain.

No international or European regulation is in place. The ICC provides an alternative and possible solution to facilitate the establishment of an agreed common standard but has been hindered by its very simplified, and in parts unclear, approach. Neither the syllabus nor the scope have been defined clearly and in detail, nor has a common assessment procedure been established. This has led to many Member States deciding not to accept the ICC. Hence it currently serves only as a complementary international certificate, mainly for those countries that do not have a national licensing system.

A2.3.3 Consequences of the problem

Different training methods and variations in the syllabi offered by each Member State result in different licence standards, inconsistencies and uncertainties. These can lead to decreased safety, increased legal uncertainties and requirements for additional 'competence tests'.

Decreased safety: individual boaters have different levels of qualified competence. Their training may not have included all the issues necessary to enable safe navigation within any given Member State (e.g. they may not have undertaken 'Tidal Theory' but may wish to navigate tidal waters in another Member State). In theory, and according to some stakeholders, in locations where many licence holders are boating at close proximity to each other, the potential for accidents due to variability in knowledge and understanding of the rules and how to apply them may result in an increased incidence of accidents.

Increased legal uncertainties: Uncertainty over the competence of a qualified boater, the lack of tools by which to compare qualification standards and the variance in acceptance of national licences and the ICC can lead to legal uncertainties about whether an individual is permitted to sail their own boat or charter a boat in another country. It can also result in more stringent insurance conditions and higher insurance premiums.

Requirement for additional 'competence test': Many charter companies operate in 'hot spot' areas where skippers of many different nationalities (with many different licences and ICCs) seek to charter boats. Their experience has shown that if a skipper presents a licence from, say, Germany (where little or no practical skill is examined) the charter company may insist that he undergoes a 'competence test' to demonstrate he can handle the boat safely in a variety of situations before allowing the charter.

This procedure is costly and time consuming (e.g. taking 2-3 hours). If the skippers fails the competence test this investment is lost as the charter cannot proceed.[184]

For the **private skipper** the situation means that:

- His safety might be at risk.
- His licence might not be accepted in another Member State.
- His mobility is reduced.
- Insurance premiums are higher.

For the **charter business** it means:

- Costs for insurances are higher.
- Loss of charter business due to potential customers with licences that are not recognised, or that fail additional competence tests.
- Higher risk of boat damage due to variable qualification standards and hence competence of the licence holder.

For **authorities** it means:

- Higher costs for rescue services in instances of increased accidents.
- Legal uncertainties for maritime authorities (i.e. the coast guard) regarding the enforcement of licences.

For the **nautical tourism** sector it means:

- Possible loss of business due to lower levels of charter and private boat tourism.
- Image problems due to higher accident rates and reduced numbers of charter tourists.

A2.4 Baseline scenario

If no EU intervention takes place, national authorities will continue to set their own, and different, qualification standards for private skipper licence qualifications.

The UNECE Resolution 40 could be improved. The national ICC syllabi could become more consistent and the ICC could become more widely accepted. However, there are no known UN actions or plans currently driving such an improvement. As such, it is unlikely that the current situation will change significantly. Inconsistencies and uncertainties will remain and the negative consequences of the current situation are likely to increase as the EU boating population and charter participants continue to grow.

The impacts are most likely to be felt in relation to charter activities rather than own-boat navigation, where the issue is more manifest, although both types of activity will be affected.

A2.5 Justification for EU intervention

The proposal is a direct response to the EU's Marine and Coastal Tourism Strategy. The EU's right to act in this area is established through Article 26 of the Treaty on the European Union with regard to the free movement of goods, persons, services and capital and the creation of an internal market.

EU intervention in the regulation of private skipper licences can be justified on the basis that regulatory differences between Member States and lack of mutual

[184] Confirmed in interview with cruise operator.

recognition (and, to a lesser extent, imperfect information on the differences between Member States' systems) limit free movement of private skippers and the efficiency with which capital (boats) can be used. This results in labour market inequality and increased costs.

Recognition of private skipper licences is common between Member States, although there are a few examples where this is not the case (see earlier sections). Hence the problem is thought to be relatively small.

However, the situation does remain problematic because national authorities each regulate their own national training and qualification systems and this leads to different standards of the private skipper licence systems. Any attempt to use regulation to create a base standard, harmonisation or an EU licence is most likely to be achieved through an EU-wide approach. This would be coherent with other EU policies removing barriers to the EU internal market. EU intervention would also improve mobility, alleviate economic disadvantages and support nautical tourism and Blue Growth.

A2.6 Intervention options

A2.6.1 Objectives

The specific objectives of an EU intervention would be to enable mutual recognition of private skipper licences across the EU through:

- Improved consistency in the standards of qualifications obtained by private boaters.
- Reduced uncertainty in the standards of qualification provided by different licencing systems.
- Reduced uncertainty in the licence requirements for inter-country private boating and chartering activities.

A2.6.2 Long list of options

Potential intervention options have been identified and are presented below:

- Option 1: Voluntary reference framework for private skipper licences.
- Option 2: Enhanced ICC.
- Option 3: Directive on private skipper licence recognition.
- Option 4: European pleasure boat licence.

Policy option 1	Voluntary reference framework for private skipper licences
Nature of the measure	A voluntary reference framework for private skippers licence recognition
Relevant objectives & problems	• Reduce uncertainty in the standards of qualification obtained through difference licencing systems. • Reduce uncertainty in the licence requirements for inter-country private boating and chartering.
Implementation procedures	EU initiative to design a voluntary framework that establishes a verified and correct database of all Member States qualifications and qualification requirements/acceptance, translated into all Member States languages.
Complementary actions	To set up a group of national experts who define the information necessary to be gathered and identify national qualifications and their validity scopes.

Intervention logic	• Outputs: a verified and reliable database and overview of all EU Member State qualifications • Outcomes: - Reduced uncertainty about the standards of qualifications provided by different licencing systems - Improved recognition of private skipper licences between Member States - Greater certainty on when additional competence tests are required - Greater certainty on what licences Member States will accept • Impacts: - Reduced incidence of incorrect acceptance of inappropriate licences, resulting in improved safety - Reduced incidence of additional competence tests; greater demand for inter-EU private boat and charter tourism - More appropriate insurance premiums

Policy option 2	**Enhanced ICC**
Nature of the measure	Enhanced ICC as international (European) pleasure boating licence for skippers sailing outside their Home State.
Relevant objectives & problems	• Improve consistency in the standards of qualifications that private boaters obtain. • Reduce uncertainty in the standards of qualification provided by different licencing systems. • Reduce uncertainty in the licence requirements for inter-country private boating and chartering activities.
Implementation procedures	The implementation would be through national authorities by accepting / ratifying the UN Resolution 40. The formulation of an improved ICC would be in the responsibility of UNECE and its committees. The role of the EU could be to initiate and support this process and recommend the acceptance of the ICC as an EU-wide licence.
Complementary actions	Forming an EU team to initiate the improvement of the ICC and to cooperate/ liaise with UNECE. National authorities to ensure their own licence is not inferior to the ICC standard.
Intervention logic	• Outputs: an enhanced ICC international and European qualification for pleasure boating • Outcomes: – Equalisation of qualification standards are obtained with an ICC qualification regardless of the place of issuance – Broad mutual recognition of the enhanced ICC by EU Member States – No recognition problems for pleasure boating licences in Europe, an international certificate for Europeans boating outside Europe • Impacts: – Reduced incidence of incorrect acceptance of inappropriate

Policy option 2	Enhanced ICC
	licences, resulting in improved safety – Reduced incidence of additional competence tests; greater demand for inter-EU private boat and charter tourism – More appropriate insurance premium

Policy option 3	Directive on private skipper licence recognition
Nature of the measure	A directive on private skipper licence recognition
Relevant objectives & problems	• Reduce uncertainty in the standards of qualification obtained through difference licencing systems. • Reduce uncertainty in the licence requirements for inter-country private boating and chartering.
Implementation procedures	For the EU to formulate a directive for recognition of private skipper licences based on a verified database of existing qualifications
Complementary actions	A verified database of all existing national pleasure boating licences would need to be set up as a base for the directive
Intervention logic	• Outputs: a procedure and base for mutual recognition of private skipper licences • Outcomes – the Directive would ensure mutual recognition and reduce uncertainty, but would not address the existing difference in standards of qualification: – Reduced uncertainty in the standards of qualifications obtained through different licencing systems – Improved recognition of private skipper licences between Member States, – Greater certainty on when additional competence tests are required. – Greater certainty on what licences Member States will accept. • Impacts: – Reduced incidence of incorrect acceptance of inappropriate licences, resulting in improved safety – Reduced incidence of additional competence tests – Greater demand for inter-EU private boat and charter tourism – More appropriate insurance premiums

Policy option 4	European Pleasure Boating Licence
Nature of the measure	Mandatory (directive or regulation) European pleasure boating licence
Relevant	• Improve consistency in the standards of qualifications that

Policy option 4	European Pleasure Boating Licence
objectives & problems	private boaters obtain. • Reduce uncertainty in the standards of qualification obtained through difference licencing systems. • Reduce uncertainty in the licence requirements for inter-country private boating and chartering.
Implementation procedures	A European pleasure boating licence would only be effective if it was implemented by an EU Directive or EU regulation. As a recommendation it would risk being another unaccepted alternative qualification. National implementation would need to be monitored and enforced where necessary. Gaining acceptance for a comprehensive licence may be difficult.
Complementary actions	Detailed consultations with national authorities would be necessary to ensure their support and to avoid antagonism.
Intervention logic	• Outputs: A harmonised EU-wide qualification for pleasure boating • Outcomes: – Equal standards of qualification are obtained across all Member States – Full recognition of the boating licence – No uncertainty on inter-country licence requirements • Impacts: – No incidence of incorrect acceptance of inappropriate licences, resulting in improved safety – No incidence of additional competence tests – Greater demand for inter-EU private boat and charter tourism – More appropriate insurance premiums.

6.1.2 Screening of options

Table 6. Screening exercise for the long list of policy options relating to private skipper licences

Policy option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
Voluntary reference framework for private skipper licences.	Funding to develop framework and promote its use	**High:** limited cost; no requirement for MS to change their existing standards	**Mod**: there is limited non-recognition currently. Would principally address 'uncertainty' but may not have a significant effect on mutual recognition.	**Mod**: EU-wide framework required to be useful	**Mod**: proportionate but only addresses uncertainty; not recognition	***Take forward***
Enhanced ICC	Work with UNECE to encourage revision. Role limited as ICC is already administered by UNECE	**Mod-high**: Majority of MS already signed up to existing ICC; UNECE responsible for the ICC and industry stakeholders indicate UNECE openness to improving the ICC.	**High**: confirmation of recognition (assuming all MS sign up to it); eliminates uncertainty for inter-EU boating tourism	**Mod**: EU-wide acceptance necessary; efforts required to get additional MS included who aren't currently signatories to the ICC (which an increase in the standard of the ICC is expected to facilitate)	**High**: uses channels already available, with process administered through UNECE committee. Focussed on the specifics of the problem i.e. recognition for international sailing	***Take forward***
Directive on mutual recognition of private skipper licence	Design and implement legislation	**Low:** low acceptance due to some MS not accepting that some other MS	**Mod-High:** would ensure recognition, but doesn't address underlying	**High:** EU-wide framework and adoption required	**Low**: there is limited non-recognition currently	Excluded

Policy option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
		qualifications are of sufficiently high standard	differences.			
European pleasure boat licence	Design and implement legislation	**Low**: requires overhaul of all MS licence structures, for which there is known MS resistance.	**High**: effective in resolving the problem.	**High:** EU-wide framework and adoption required	**Low**: there is limited non-recognition currently; full harmonisation not required as issue is only on inter-MS sailing.	Excluded

A2.6.3 Short-list of options taken forward for assessment

On the basis of the screening exercise, the short-listed options taken forward for assessment were:

- Option 1: Voluntary reference framework for private skipper licences.
- Option 2: Enhanced ICC as International (European) pleasure boating licence.

A2.7 Assessment of impacts

The assessment of the impacts of the selected policy options is described in the following sections. Impacts are assessed against the baseline scenario, as described in section A2.4. Each option is assessed in terms of its implementation, effectiveness and its economic, social and environmental impacts.

A2.7.1 Option 1: Voluntary reference framework for private skipper licences

A2.7.1.1 Implementation and effectiveness of the option

The European Commission would need to create a group of experts from all EU Member States. They would need to agree on the information to be gathered and then contribute their own national private skipper qualification requirements. The necessary information foreseen includes:

- Name of the qualification.
- Pre-qualification requirements (e.g. age, experience, other qualifications, medical certificates).
- Course duration.
- Exam conditions.
- Post exam validities (e.g. distance from the coast, number of passengers, size of vessel).
- Recognition status in other EU countries.

These data then have to be translated into all official Member State languages, gathered in a database, presented online in a user friendly way and made available and known to the public.

National authorities would then have to be responsible for informing the Commission about any changes to these data and the Commission would need to update data regularly.

A2.7.1.2 Direct and indirect effects of the intervention

The implementation of this option would reduce legal uncertainties with regard to licence requirements and licence standards between EU Member States. It would thereby facilitate cross-border tourism. However it would not address issues of differing standards and therefore would not be effective in delivering mutual recognition.

Stakeholders directly affected:

- **Private Skippers / Nautical Tourists**: Improved visibility of Member State requirements would assure many private boaters of their legal position and their options. It would inform their decisions about cross-border nautical tourism (i.e. whether they are able to charter a particular boat in a particular country with their licence, or whether their private licence is recognised in their country of destination when using their own boat). The effect on private skipper behaviour is less clear. Uncertainty was identified as having a detrimental effect on decisions to use boats outside their own Member States. Improved certainty may therefore result in an increase in the movement of boaters across the EU.

If the reference framework confirms that skippers do not hold an accepted licence, this may result in an increase in the number of private skippers gaining multiple licences to enable inter-EU sailing (on the other hand it may also result in increased lobbying pressure to recognise qualifications).

- **Charter companies and SMEs**: A database of the legal situation of all EU Member States' private skipper qualifications would help charter businesses (many of which are SMEs). It would provide a simple means of obtaining the necessary information about a customer's qualification and checking whether they possess the necessary competence required for the specific boat he/she wishes to charter.

Stakeholders indirectly affected:

- **Public Sector / European Commission**: The implementation of a verified and reliable database setting out legal requirements and standards would be received as a positive measure that facilitates cross-border tourism and would therefore be aligned with the Commission's Blue Growth objectives.

A2.7.1.3 Conclusion on the effectiveness of the intervention

Implemented successfully, this action would resolve the problem of legal uncertainty about the requirements for inter-country boating and the uncertainty in the standards of each Member State. It will not be address the inconsistency of standards or the problems in recognition of qualifications unless it results in an increase in private boaters acquiring multiple qualifications. It is therefore judged to have moderate effectiveness.

A2.7.1.4 Economic Impacts

Performance and Competitiveness

The implementation of a voluntary framework for private skipper licences is expected to have a minor positive impact on the performance and competitiveness of the nautical tourism industry. The main stakeholders affected would be:

Charter Businesses: A reliable and verified framework would provide assurance to charter companies when checking whether private skipper qualifications are compatible with legal boat driving requirements. It would eliminate the risk of potential charter customers having to be rejected due to their qualification not being recognised or having to pass unexpected additional competence tests.

Therefore charter companies could be expected to benefit from reduced losses and increased revenues. Although most private skipper qualifications are already recognised between Member States, new interpretations and uncertainties arise constantly and a regularly updated database with reliable data would be of great help to most charter businesses. Only a low proportion of charter activity is thought to be affected by legal uncertainties regarding private skipper qualifications.

There are no data indicating the extent of this issue. Indicatively, if one in 100 bareboat charters were previously lost but could be saved by the intervention, this would equate to €24m to €27m per year (i.e. one per cent of the revenue estimated in Section A2.2.2). However, the issue could be greater, or significantly less than this. If only one in 1,000 charters were affected in this way, the benefit would be between €2.4m and €2.7m.

Furthermore, improved legal certainty could, in the long term, result in lower insurance premiums as fewer misinterpretations of qualifications would lead to less risk of damage and accidents during boat charters.

For charter businesses the suggested measure would result in reduced operating costs associate with administrative processes such as checking with different local and foreign authorities about the legal situation of a specific qualification which can be very time consuming and costly. In some cases, when charter customers have

qualifications from Member States that the charter company is not familiar with, the charter companies have to check the qualification thoroughly, which can take up to a day of work. It was assumed in Section A2.2.2 that an average of one million bareboat charter weeks take place each year with around one million private skippers[185]. If only one per cent require an in-depth check by the charter company, at a day rate of €100, and if it is assumed that the reference framework reduces by 75% the time taken to undertake the check, then this intervention could deliver potential cost savings of €0.75m per year. The administrative efforts of charter companies, in trying to clarify and explain the legal position to their customers, could also be reduced as a result of the intervention. A freely available database of private skipper qualifications and their validities would provide a useful source of information for all stakeholders and could be used as a universal reference point

Connected businesses: businesses in the charter supply chain or linked to the wider nautical and tourism sector could benefit indirectly from increased charter activity and increased boat movements.

Administrative burdens on business

Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[186]. No such obligations are anticipated as a result of the intervention.

Public Authorities

At National level: National authorities would have to cooperate in the set-up and maintenance of the database, which would entail some administrative costs. On the other hand, greater legal certainty would also be advantageous to national maritime authorities (such as coast guards) when checking and enforcing private skipper licence requirements and here administrative costs could be saved.

At EU level: Funding will be needed to set up a reliable database of private skipper qualifications and support recognition across Member States. This will also entail ongoing costs to regularly check the database and update all legal changes regarding these qualifications across the Member States.

Position of SMEs

SMEs would benefit from the impacts described above, in so far as the majority of charter companies are SMEs, as are many of the connected businesses.

Functioning of the internal market and competition

The functioning of the internal market would be improved. The verified database would provide transparency of regulations and facilitate cross-border mobility (although it would not in itself directly enable full mobility), and encourage increased nautical tourism.

Consumers and households

Private skippers (including charter customers and those using private boats in a cross-border situation) would benefit strongly from a database that provides reliable information about the validity and recognition of their skipper qualification.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention will have a limited impact on the overall macroeconomic environment.

[185] See calculations in section A2.2.2 of this topic. Some charter might be over several weeks, other charters are day charters.

[186] European Commission (2015), Better Regulation Toolbox

A2.7.1.5 Social Impacts

Employment and labour market

The expected increases in charter and own boat tourism, although minor, would be likely to have a commensurate minor positive impact on employment.

Public health and safety

Higher legal certainty due to a verified database would in some cases lead to a higher level of safety as charter companies would be better able to provide the correct recognition of private skipper licences and thereby avoid incorrect qualification of charter customers and reduce the risks of accidents.

A2.7.1.6 Environmental Impacts

No significant environmental impacts are expected as a result of the intervention.

A2.7.2 Option 2: Enhanced ICC as an international (European) pleasure boating licence

A2.7.2.1 Implementation and effectiveness

The European Commission would have to:

- Cooperate with the responsible committees in UNECE to agree on the enhancement of the ICC and it becoming *a de facto* EU-wide boating licence for skippers undertaking boating tourism outside their Home State.
- Support the UNECE to, or directly itself, initiate a group of experts and representatives from national maritime authorities to formulate a joint approach to improve the ICC in a way that it is acceptable to all Member States.

The enhancement of the ICC would cover aspects such as a more detailed syllabus description, clear exam regulations, agreed validities (e.g. length of vessel, distance from coastline, age).

All Member States would have to:

- Ratify the Resolution and thereby agree to its recognition and status as an EU-wide pleasure boating licence for skippers undertaking boating tourism outside their Home State.
- Ensure that their own national pleasure boat licence is at least up to an equivalent level of the ICC.

A2.7.2.2 Direct and indirect effects of the intervention

The implementation of an enhanced ICC as an international and European pleasure boating licence would lead to the elimination of recognition problems for pleasure boating licences in Europe and a harmonisation of qualification standards within the EU for skippers sailing outside of their own waters. This would enhance cross-border nautical tourism, remove barriers in the single market and would benefit a wide variety of stakeholders.

Stakeholders directly affected:

- **National authorities:** As a result of the enhanced ICC, national authorities would:
  - Lose some of their regulatory rights after agreeing to recognise the enhanced ICC.
  - Have to adjust their own qualification standards up to those of the ICC if and where necessary.
  - Have to cooperate with the national authorities from all other Member States.

- Have to cooperate with the European Commission and UNECE to ensure the correct implementation and execution of the ICC regulations.

- **Private Skippers:** The implementation of an enhanced ICC would benefit private skippers in all cross-border situations. It would protect them by providing complete legal certainty that the enhanced ICC is recognised in any EU Member State. It would avoid the need for ad-hoc additional qualifications and would facilitate increased mobility for tourism purposes across the EU.
- **Charter companies and SMEs:** For charter companies the implementation of an enhanced ICC would provide clarity on the legal status of their customer's qualifications, thereby simplifying (or removing) processes for checking standards and acceptance and the need to implement additional training.

Stakeholders indirectly affected:

- **Sea Schools:** An enhanced ICC, as an international (European) pleasure boating licence, would benefit sea schools across Europe because they could widen their customer base.
- **Other (nautical) tourism businesses:** An increase in cross-border boating would provide indirect benefits for other nautical tourism industries, such as marinas and other boat service companies, as well as the wider tourism industry.
- **Public Sector/ European Commission:** The implementation of an enhanced ICC would be perceived by the public sector and private boaters as a positive measure that delivers long-awaited harmonisation, eases cross-border exchanges and contributes to the Commission's blue growth objectives.

A2.7.2.3 Conclusion on the effectiveness of the intervention

The successful implementation of an enhanced ICC would not only remove the legal uncertainties, but would also provide a solution to the problem of mutual recognition of different licence standards between Member States. It is therefore judged to be highly effective in resolving the problem.

A2.7.2.4 Economic Impacts

Performance and Competitiveness

The implementation of an enhanced ICC would have a minor positive impact on performance and competitiveness for charter businesses and other connected nautical tourism businesses.

- **Charter Businesses:** Legal uncertainties regarding their customers' private skipper qualifications would be eliminated, which would result in a lower risk of loss of business and lower administrative costs for charter companies. The ICC, by establishing an agreed minimum level of competence, would reduce risk for charter companies as they can better judge the abilities and limitations of their customers. This would not only resolve cases of lost revenue, as in Option A, but would also provide charter companies with greater confidence to provide bareboat charters. There is no evidence on which to generate quantitative estimates of this impact but it is expected that impacts would be greater than those generated under Option A.

  In addition, the intervention would have an impact on the operating costs of charter businesses by reducing the cost of checking customer qualifications. Building on the assumptions set out in Section A2.7.1.4, the use of an ICC could effectively remove the need for background qualification checks, resulting in a possible cost saving to charter businesses of around €1m per year.

- **Other nautical tourism businesses:** An enhanced ICC would provide private boat owners with full legal certainty, enable increased cross-border mobility and

create greater demand for inter-EU private boat and charter tourism. This would have positive economic effects on a wide variety of businesses in the nautical tourism industry, including boat transport companies, boat service companies, boat brokers, marinas and the wider tourism sector.

Administrative burdens on business

It is not envisaged that any additional administrative burdens will be imposed on businesses as a result of the intervention.

Public Authorities

At National level: National authorities would incur some administrative costs in communicating with other Member States and the UNECE in negotiation of the enhanced ICC and checking the fit off their national standards to the ICC. It will be much easier for national coast guards to check and enforce private skipper licence requirements, providing potential savings in administration costs. An enhanced ICC is likely to lower the risk for accidents stemming from inadequate sailing knowledge and thereby reduce pressures on rescue services.

At EU level: The implementation of an enhanced ICC would result in administrative costs at the EU level to coordinate the national authorities and UNECE. As the ICC is based on a UN resolution and its administration is undertaken at UNECE, a cooperation using existing structures would limit the costs borne by the Commission.

Position of SMEs

The majority of charter companies are SMEs, as are many of the connected businesses. A share of the benefits described above will therefore accrue to SMEs.

Functioning of the internal market and competition

The implementation of an enhanced ICC will enhance the functioning of the internal market. A common qualification for skipper tourism qualification standards would remove the qualification-related barriers to full mobility of EU skippers.

Consumers and households

Private skippers on charter boats or on privately owned boats will benefit from an enhanced ICC for cross-border tourism. Their legal status would be clearer and their credentials as skippers would be assured.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention will not have a measurable impact on the overall macroeconomic environment.

A2.7.2.5 Social Impacts

Employment and labour market

The expected increases in charter and own boat tourism, although minor, would be likely to have a commensurate positive impact on employment.

Public health and safety

A common and accepted minimum standard of qualification would lead to improved standards for travelling skippers and reduce the risk of accidents, resulting in higher levels of public safety. This would benefit private boaters, charter companies, the general public and the image of the nautical tourism industry as a whole.

A2.7.2.6 Environmental Impacts

No significant environmental impacts are expected as a result of the intervention.

A2.7.3 Summary level assessment

Table 7. Summary table of impact scores

Impact type	Option 1: Voluntary reference framework	Option 2: Enhanced ICC
Performance and competitiveness	+	+
Administrative burdens on businesses	0	0
Public authorities	-/+	-/+
Position of SMEs	+	+
Functioning of the internal market and competition	+	++
Innovation and research	0	0
Consumers and households	+	+
Macroeconomic environment	0	0
Employment and labour markets	+	+
Working Conditions	0	0
Effects on social inclusion	0	0
Public health and safety	+	+
Culture	0	0
Resource use and waste	0	0
Water quality and resources	0	0
Biodiversity, flora, fauna and landscapes	0	0
Sustainable consumption and production	0	0
Transport and the use of energy	0	0
Land use	0	0

Key: a -/+ 7 point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact and, 0 = no impact

A2.8 Conclusions and recommendations

A2.8.1 Effectiveness

Option 1: Voluntary reference framework

A voluntary reference framework would be expected to achieve the objective of reducing uncertainty in the licence requirements for inter-country private boating and chartering and uncertainty in the standards of each Member State. However it would not in itself guarantee full mobility of skippers within the EU.

The higher legal certainty would lead to some economic and social benefits for charter businesses, connected nautical businesses and private boaters. An indicative estimate suggests that the benefits for charter businesses could be between €25m and €28m per year, although the lack of reliable data on which to base estimates means that actual impacts could be greater or lower than this.

The overall impacts are expected to be relatively modest due to the extent of de facto recognition under baseline conditions, and the limitations that remain, given that the option does not in itself guarantee full EU mobility of skippers.

Option 2: Enhanced ICC as International (European) pleasure boating licence

An enhanced ICC is expected to achieve all direct objectives including: improving consistency in the standards of qualifications that private boaters obtain; reducing the uncertainty in the standards of qualifications used in cross-border situations; and reducing uncertainty in the licence requirements for inter-country boating and chartering activities. It would also be expected to achieve the specific objective of increasing intra-EU movement of private skippers.

It is expected that an enhanced ICC would provide EU-wide minimum standards of qualification and support broad mutual recognition of qualifications between Member States. The benefits are therefore expected to be greater than under Option 2: Option 1 would enhance skipper mobility across the EU and is therefore more likely to have a greater positive effect on the extent of cross-border boating tourism. Private boaters and a wide variety of nautical tourism businesses are expected to be the main beneficiaries.

A2.8.2 Efficiency

The costs associated with the development and maintenance of the voluntary framework (Option A) are expected to be small and hence, despite the modest scale of positive impacts, the benefits are likely to outweigh the costs of implementation. The measure can be implemented easily and that provides a partial solution to the problem at low cost and within a relatively short timeframe.

The costs associated with an enhanced ICC (Option 2) will be greater than Option 1 and the timeframe required for implementation will be longer. Implementation via the ICC's administering body, UNECE, will limit the extent to which costs are borne by the European Commission. Over the medium term, benefits are expected to outweigh the costs.

A2.8.3 Uncertainties

Uncertainties associated with Option 1 are considered minimal as long as the expert team collecting the data on qualifications and standards is chosen carefully.

There is greater uncertainty associated with Option 2 because the UN resolution would have to be accepted by the Member States. This uncertainty can be countered by involving all national authorities in the process of enhancing and reformulating the ICC. By limiting the application of the ICC to skippers' activities outside their Home State, Member States will be able to retain their own qualifications for their own citizens boating on Home State waters, as long as they meet the standards of the ICC.

However, as described above, a lack of quantitative data makes it difficult to estimate the economic benefits. The estimates provided should therefore be treated as indicative. The most significant gaps in the data and information relate to:

- The current scale of cross-border boat movements and associated expenditures (for charter customers and private boat-owners).
- The number of boaters who are put off cross-border boating tourism and those that would participate under each option.
- The potential cost savings for charter businesses associated with each option.

A2.8.4 Recommendations

The voluntary framework (Option 1) would not solve the problems completely, but is an easier and less costly measure to implement than Option 2. It is therefore recommended that the voluntary framework is implemented first to provide legal certainty in the short term. This can then be used as an evidence base to aid the

design of ICC enhancements and achievement of consensus, which could be implemented at a later date.

A2.9 Annex: Evidence sources

A2.9.1 List of stakeholders

- Barry Lawrence, Mallorca Cruising, Spain
- Gus Lewis, European Boating Association (EBA), Southampton, UK
- Holger Wetzel, Prüfungsamt Bremen, Bremen, DE
- Jürgen Tracht, Bundesverband Wassersportwirtschaft (BVWW), Cologne, DE
- Udo Kleinitz, ICOMIA, UK

A2.9.2 References

- Arkenford (2013), Watersports Participation Survey. British Marine Federation
- British Marine Federation (March 2011), 5th Waterways for Growth Partner Meeting & Workshops - West Flanders
- British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands
- Ecorys (2014), Study on Deepening Understanding of Potential Blue Growth in the EU Member States on Europe's Atlantic Arc
- Ecorys (2013). Study in support of policy measures for maritime and coastal tourism at EU level
- ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector
- Forschungsvereinigung für die Sport- und Freizeitschifffahrt e.V. (FVSF) (2008), Structures in the German Boat Market.
- ICOMIA (2010), Statistic Book 2010
- Marcel·la Castells i Sanabra/ Jordi Torralbo Gavilán (2012), Study on the license requirements for pleasure boats in the European Union, UPC Barcelona
- UNECE (2015), Application of the United Nations Economic Commission for Europe Resolutions on inland navigation, ECE/TRANS/SC.3/2015/14
- UNECE (2014), International Certificate for Operators of Pleasure Craft Resolution No. 40 Revision 4 ECE/TRANS/SC.3/147/Rev.4

Annex 3 On-board Safety Equipment

A3.1 Introduction

'On-board safety equipment' is safety equipment that is either built-in or is otherwise carried on recreational craft. Its purpose is to help secure the safety at sea of the vessel and its passengers. Equipment requirements depend on factors that include the number of passengers on board, the distance from the coast and the size of the vessel. Requirements are set by international, European and national law. There is variability in the regulations dictating requirements, based on whether the vessel is used for private or commercial (i.e. charter) purposes. Lack of consistency in regulatory requirements within the EU creates problems for the internal market.

This topic considers on-board safety equipment for recreational craft. These are defined in the EU Directive on Recreational Craft 2013/53/EU as "means any watercraft of any type, excluding personal watercraft, intended for sports and leisure purposes of hull length from 2.5 metres to 24 metres, regardless of the means of propulsion" [187].

A3.2 Topic and situation analysis

A3.2.1 Relevant current practices and regulation

The EU Directive on Recreational Craft 2013/53/EU[188] came into effect on 18th January 2016 and specifies the essential safety and environmental requirements linked to the design and construction of recreational boats (stability, flotation, electric systems, etc.), engines and certain components (steering wheels, hatches, etc.).

However, the Directive does not include requirements for safety equipment that needs to be carried on board the boat (VHF radio, life rafts, etc.). These requirements are typically defined in the Flag State rules and differ across Member States, for both private and commercial vessels.

International law is an important driver for the regulation of safety equipment, notably the International Convention for the Safety of Life at Sea[189] (SOLAS) and the International Regulations for Preventing Collisions at Sea 1972 (COLREGs)[190].

- SOLAS: On 1 July 2002, new regulations came into force that directly affect recreational craft. These regulations are part of SOLAS Chapter V. Most of the SOLAS convention only applies to large commercial ships[191], but parts of Chapter V apply to small, privately owned and commercially used recreational craft. These regulations require all vessels, as a minimum, to have a radar reflector device and a lifesaving signals table.
- COLREGs: The regulation requires that all vessels, including recreational craft used for private purposes and those used commercially, must carry the correct lights and shapes, (i.e. horns, whistles, day shapes) for anchoring, not-under-command situations, identifying as sail vessel, lights as required by the respective length and type of vessel.
- Marine Equipment Directive (MED) (2014/90/EU): The Directive's objective is to enhance safety at sea and prevent marine pollution. It provides for testing and

[187] Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on Recreational Craft and Personal Watercraft and Repealing Directive 94/25/EC
[188] Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on Recreational Craft and Personal Watercraft and Repealing Directive 94/25/EC
[189] IMO: International Convention for the Safety of Life at Sea 1974 (SOLAS).

[190] IMO: Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)

[191] A SOLAS ship (as defined in Maritime Rule Part 21) is any ship to which the International Convention for the Safety of Life at Sea 1974 applies; namely: a passenger ship engaged on an international voyage, or a non-passenger ship of 500 tons gross tonnage or more engaged on an international voyage.

conformity assessment to ensure that the design, construction and performance of equipment meets the requirements laid down by the international instruments (i.e. conventions). Satisfactory equipment receives a 'wheelmark' stamp of approval. Whilst the MED is focussed on ships, wheelmarked equipment may also be used on board recreational boats.

- European Directive 89/686/EEC[192] sets out requirements for personal protective equipment and specifies the necessary buoyancy levels for lifejackets.

According to international law, it is a Flag State's responsibility to enforce international conventions. As the EU is not a Flag State, it is the responsibility of each of the 28 Member States to ensure that they apply the relevant international and EU requirements. As the international and EU requirements only cover very basic/specific aspects of boat safety equipment, there is both room and a need for Member States to set further rules and regulations. Member States' own Flag State requirements are usually published by means of Merchant Shipping Acts, Laws and Regulations.[193]

At the national level, each Member State sets regulations governing the amount and specification of safety equipment to be carried on board by recreational craft that are cruising under its flag or in its coastal waters (regardless of what flag they are sailing under). These requirements differ in many aspects between Member States. Common differences include:

- The number and specification of flares to be carried.
- The buoyancy of life jackets[194].
- The number, form and size of life rings.
- The requirement and specification of life rafts.
- The specification of first aid packs.
- The requirements for different types of compass.
- Any additional equipment, including barometer, binocular, logbooks, and flag tables.

There is variation in the scope of application of these Member State regulation, as referenced to parameters such as the size of the vessel, the number of passengers, navigation limits offshore and vessel activities. When recreational vessels are used for commercial purposes (mainly for charter, but also as sea school or dive school boats) there are, in most cases, many additional safety equipment requirements to be fulfilled. These also differ from country to country.

For example, the UK has different regulations for private vessels over and under 13.7m in length. Requirements placed on commercial vessels vary according to their area of operation offshore. In Spain, compulsory safety equipment is determined by the sea area in which the boat is being used, regardless of whether it is being used for private or commercial purposes.

The national requirements of a given Member State apply to vessels sailing under the flag of that state and to all other vessels navigating in their coastal waters, regardless of what flag they are sailing under. As such, recreational craft navigating outside their home waters are subject to both the regulations of their flag state and the regulation of the Member State whose coastal waters they are navigating in.

[192] Directive 89/686/EEC of 21 December 1989 on the approximation of the laws of the Member States relating to personal protective equipment.

[193] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[194] Directive 89/686/EEC sets minimum requirements only.

For private vessels, the requirement to adhere to the regulations of the Member State whose coastal waters the vessel is in are not normally enforced – only the flag state regulations are applied.

For commercial vessels both sets of regulations are enforced as part of their licensing process (commercial vessels need a licence from both their flag state and their host state in order to operate – where the flag and host state differ, they must comply with both sets of regulations). For example, a French flagged commercial charter vessel in Spanish waters has to fulfil the French safety equipment requirements and pass a coding inspection to UK standards. In order to receive a charter licence from the Spanish authorities, it then has to also undergo a safety inspection by a Spanish surveyor and conform to Spanish safety equipment standards. The French and Spanish standards differ with regard to several requirements (e.g. number of flares, additional equipment).

There is no comprehensive source which enables comparison of Member State requirements, and developing such a source is not a straightforward task. An initial review of a number of the national regulations[195] is set out in Appendix 5 of Ecorys (2015)[196]. There are a number of errors and simplifications in this list that demonstrate the challenges in accurately comparing Member State requirements; further, it draws on unofficial sources for some Member States. For example, there are a number of incorrect translations and omissions in the lists for Germany and Austria, and oversimplification (and hence loss of important specific details) of the requirements for Spain and for (commercial use) the UK.

Even those requirements that appear to be common across Member States actually differ in terms of the detailed requirements. A good example is the life raft, one of the main items of on board safety equipment. The catalogue of the European manufacturer ARIMAR[197] offers five different types of life raft for five European countries, plus an international and an offshore version, neither of which is accepted in all five countries.

These differences are further accentuated when vessels are used for commercial purposes. The UK, for example, requires only a minimum safety standard for private vessels, mainly orientated on IMO SOLAS requirements but UK MCA safety standards for commercial vessels exceed the standards applied by many other European countries.

Even the line between private and commercial use cannot be drawn easily and equally in all Member States. France considers that a charter boat is a pleasure boat and constitutes a private use, while other countries (e.g. Greece and Croatia) consider a charter boat to be in commercial use and apply stricter regulations than if it were in private use.[198] The UK allows private use on a commercial vessel (but no commercial use on a private vessel) while Spain allows no private use on commercial charter vessels.

A3.2.2 Market dynamics, size and scale

There are an estimated 6 to 6.5 million recreational boats in the EU. A proportion of these are very small vessels which would only need to carry an absolute minimum of safety equipment (e.g. oars and some source of light and sound), the rest would be subject to on-board safety equipment rules (international and national regulations). Figure 10 shows the distribution of boats across EU Member States.

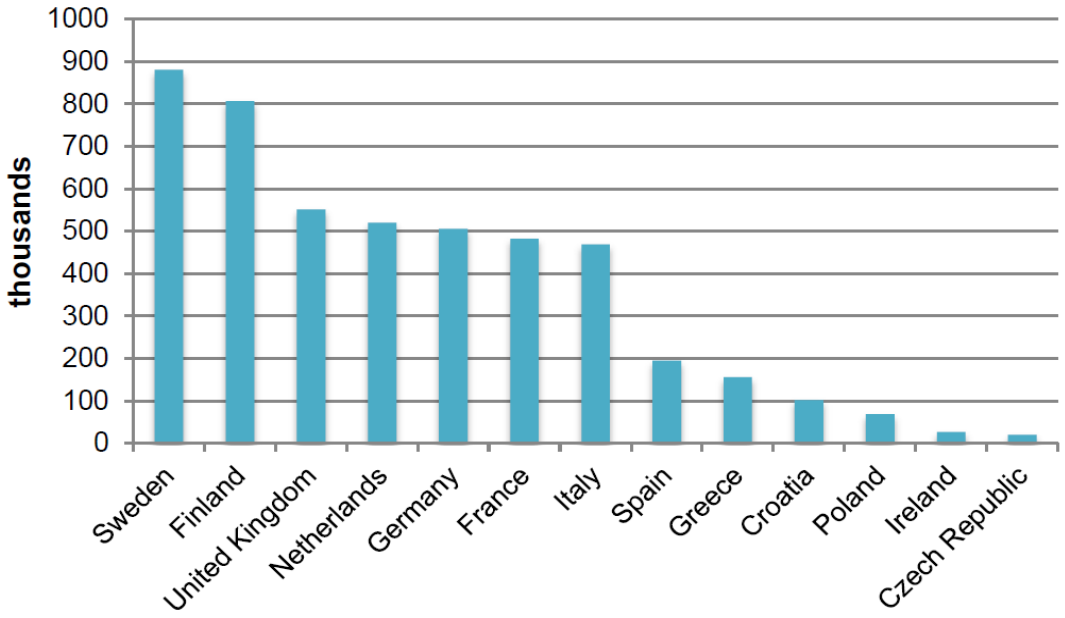
[195] The source is not comprehensive and does contain some errors.

[196] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[197] Arimar: Radeaux de Sauvetage et Annexes 2015, page 7

[198] Interview with Patrice Haegelin, Logistic Manager for Navigare Yachting

Figure 11. Number of boats by Member State (2013)



Source: ICOMIA 2014

The national requirements of a given Member State are applicable to vessels sailing under the flag of that state. They are also applicable to all other vessels navigating in their coastal waters, regardless of what flag they are sailing under. As such, recreational crafts navigating outside their home waters are subject to both the regulations of their flag state and the regulations of the Member State whose coastal waters they are navigating in. Boats that are classified as vessels for commercial use (i.e. the charter boat sector) therefore need to adhere to the on-board safety equipment rules of more than one Member State.

It is estimated that there are around 60,000 charter vessels in the EU. This estimate is based on robust data from some Member States (7,500 charter boats in Germany, 6,500 in France 3,300 in Croatia, 550 in Slovenia and 550 in Spain), combined with estimates for the UK, Italy, Greece and other Member States that are strongly engaged in nautical tourism[199]. Other estimates appear to be too low:

- Ecorys (2015)[200] states that "the chartering sector is dominated by five companies (Sunsail, Le boat and Footloose which are owned by TUI Marine, Dream Yacht Charter, Kiriakoulis), which cover about 80 per cent of the European market. The TUI Marine brands alone (about 1,500 boats) already cover about half the market. The remaining market is characterised by a large number of very small (1-2 persons) companies". It further indicates that the UK has the most charter boats, but recognises that the survey on which the data is based is potentially skewed by the survey sample. Ecorys estimates there to be between 5,000 and 15,000 charter boats. This appears to greatly underestimate the number of boats associated with small charter companies, around the Mediterranean coast in particular.
- A datasheet by Yachtsys[201] indicates that there are around 11,000 bareboat (i.e. non-skippered) charters located in six EU Member States (including the most popular destinations of Croatia and Greece). This does not include charter

[199] See Section A1.2.1.2.

[200] ECSIP Consortium (2015). Study on the competitiveness of the recreational boating sector

[201] http://www.yachtsys.com/images/yacht-charter-infographic.aspx

vessels in the UK and estimates the number of charter boats in Germany to be fewer than 1,000, which contradicts the official numbers.

This study has estimated that around 1.5m privately used boats navigate across multiple Member State waters and would therefore be subject to more than one set of national safety equipment regulations. This includes around 450,000 boats that are permanently kept outside their flag state and a further one million boats that cross into other Member States waters for short term visits[202].

In addition, charter boats are used intensively across the coastal waters of different Member States. The EBI considers that the five large charter companies account for the majority of cross-border vessel movements. However, smaller charter companies are also affected by the dual regulation issue when they operate private vessels flagged to a different EU Member State than the host state. Given the lack of data relating to the movements of charter boats, an indicative estimate is that around 12,000 charter boats may be affected by the current situation of dual compliance (based on an assumption that 20 per cent of the EU charter boat fleet is likely to be affected[203]).

A3.3 Problem definition

A3.3.1 Problem statement

Despite international EU regulations on aspects of boat safety equipment, it is the responsibility of individual Flag States (Member States) to implement these regulations. Each Member State applies its own regulations for on-board safety equipment and can sometimes have different and conflicting requirements for private and charter vessels. A boat must comply with the safety equipment regulations of the country whose flag it sails under (the Flag State) as well as the host country whose coastal waters it sails in (the Coastal State).

This presents challenges – in terms of understanding the relevant responsibilities and costs of equipment – for owners, skippers and charter companies who wish to use their boat(s) in the coastal waters of a Member State that is different to the boat's flag state, as they must comply with both sets of regulations.

The issue is more prominent for commercially used charter boats, where the dual regulation is fully applied, than for private used boats, where it is typical for only the flag state rules to be applied in practice.

A3.3.2 Causes of the problem

The main causes of the problem are described below.

- **Existing international and EU regulations do not provide comprehensive coverage for all safety equipment**. The international conventions SOLAS and COLREGs and EU Directive 89/686/EEC only stipulate certain basic safety requirements for small recreational vessels. The Marine Equipment Directive 96/98/EC *(*MED) is focussed on product design and construction quality and lists authorized equipment in its database; but does not apply to recreational boats and does not provide direction on how such equipment is implemented in different situations relevant to recreational boating. This situation provides a requirement and an opportunity for each individual country to set their own rules and standards at higher levels and for aspects that are not covered the international conventions. Independent

[202] See Section A2.2.2 for a more detailed description of these estimates.

[203] The picture is very diverse: of the German charter fleet of 7,500 about 6,000 vessels (about 80 per cent) operate outside their flag state; of the Slovenian fleet over 90 per cent operate outside their home waters (primarily in Italy and Croatia); but most of the Croatian fleet operates within Croatia. Therefore an indicative estimate of 20 per cent of the EU's charter boat fleet of 60,000 boats seems appropriate in the absence of robust data.

national authorities have developed different safety equipment standards for recreational craft in Member States which have led to differing and often incompatible rules. These may be influenced by individual maritime traditions, national oceanographic conditions, and cultural attitudes to safety, etc. Although there are many similarities in the requirements of all Member States, there are also significant differences. Even where the requirements appear similar, there are substantive differences in the detailed specifications of similar items of equipment (e.g. specifications for life rafts, numbers of flares, Newton of life jackets, soft or hard life buoys).

- **Safety equipment requirements are influenced by differences in sailing conditions between Member States.** Some of the variation in rules can be explained by the different environments in each Member State (e.g. air temperature, water temperature, tides, wind patterns). These factors can lead to special requirements that are essential for these circumstances (requirements for tide tables in tidal waters, life rafts for close shore navigation, immersion suits or thermal blankets in the cold waters of northern Europe, etc.).
- **Differences in cultural attitudes between Member States.** Differences in cultural attitudes to both safety and regulation result in Member States prescribing different regulations in terms of both detail and level of standard.
- **Inaccessible information.** Clear, understandable descriptions of national on-board equipment regulations are not always readily available and are not typically available in multiple languages. This can hinder efforts to compare regulations between Member States and for boaters, and charter companies, to understand what their responsibilities are and what additional equipment they may require for cross-EU navigation.

A3.3.3 Consequences of the problem

Private boaters

In reality, the regulations of the Coastal State are rarely enforced for vessels of different Flag States. However, uncertainties about the legal status of regulations and the requirements for on-board safety equipment can affect private boaters' decisions on where to sail. The EBA is regularly contacted by private boaters concerned about what safety equipment they need to make cross-border voyages[204]. Potential consequences are:

- Private boaters choosing not to make cross-border trips. This reduces their mobility and hence may affect their enjoyment. It also reduces the volume of tourist visits by private boaters, and therefore reduces cross-border tourist expenditures. Estimating the overall economic consequence of this is very difficult due to a lack of existing data. It can be assumed that it affects only a minority of recreational boaters. In Section A2.2.2, it is estimated that 1 per cent of private boats in Europe might visit other EU Member States with an associated economic value of around €80m per year. For illustration, if this figure is one per cent lower than its potential due to some private boaters deciding not to make a cross-border voyage because of the safety regulations, then about €0.8m of economic output is lost each year.[205]
- Uncertainty may lead to private boaters overinvesting or underinvesting in on-board safety equipment. This could be intentional (to overcome uncertainty) or unintentional (due to lack of understanding of what is required).

[204] Interview with EBA, 14.04.2016

[205] This estimate is based on the assumptions in Section A2.2.2, calculating an economic volume of €80 million for short-term cross border visits.

Overinvestment means that boaters incur higher costs than are necessary. It could occur intentionally if owners seek to respond to the legal uncertainties by complying with all requirements and equipping their boat(s) beyond the required standards. Underinvestment or incorrect investment in safety equipment can be unintentional (due to a lack of understanding of what is required[206]) and may affect the safety of private boaters (and leave them open to prosecution, although this is rare). The amount of over-compensation is extremely difficult to estimate. It can provide additional safety protection for consumers.

- Individuals could register their boat under a Flag State with less onerous safety equipment regulations to save costs. This may have a detrimental effect on their safety, particularly if those safety equipment requirements are not well suited to waters in which they regularly operate. Although these cases do exist, they are thought to be a very small minority and their economic impact can be disregarded.

Legal Authorities

The variation in Member States' laws can cause confusion and legal uncertainties when vessels move across European waters. Port authorities and coast guards have to understand not only their own country's requirements but also the requirements of the visitors' Flag States. Authorities, such as the coast guard, in charge of controlling safety equipment compliance are therefore likely to have difficulties where their own regulations differ from those of the visiting vessel's Flag State. This can lead to legal uncertainties and, potentially, to the incorrect application of rules.

Charter Companies

When a vessel is operating commercially in a Member State that is not its Flag State, the charter company can incur higher costs due to a need to retain additional equipment on board, and to undertake additional equipment inspections (to satisfy the Flag State and Host State authorities). For charter companies and charter boat owners the additional administrative costs can be substantial and can present a barrier to exploiting the single market.

In smaller charter companies the charter boats tend to be privately owned and the charter company acts as an agent. The higher costs of preparing a charter vessel are shared between the owner and the agent. This results in additional costs and reduced profit for both parties. It may result in the owner deciding not to charter his boat, leading to a smaller charter fleet with reduced revenues and employment for the charter companies and reduced choice for the charter customers.

In large charter companies the boats of the fleet can be owned by private investors of all nationalities. The charter company often equips the boats in its fleet before it knows the nationality of the investor or the definitive flag of the vessel. Large charter companies may also redeploy boats across Member States in response to market conditions. Both situations mean that companies may be required to make multiple adjustments to the on-board safety equipment. Each time the charter company changes the flag or the country where the boat operates it needs to review the safety gear which entails further administrative burden and cost. The costs of purchasing additional safety equipment and undertaking additional inspections can be considerable. For example, it is estimated that the average cost of ensuring that a UK flagged vessel situated in Croatia or Greece is compliant with the UK regulations can be around €3,000 (for a UK MCA survey and the purchase of additional equipment)[207]. Using the earlier estimate that around 12,000 charter vessels may be involved in

[206] E.g. increased floor insulation for life rafts in colder climates (e.g. the UK), than in warmer areas such as the Mediterranean.
[207] Interview with Patrice Haegelin, Logistic Manager for Navigare Yachting

some form of cross-border activity, the total cost to the sector is indicatively estimated to be up to €36m, equivalent to an annual cost of €7.2m, assuming costs of this magnitude are incurred on a five-yearly basis[208].

The need to purchase additional safety equipment and to be able to access that gear and change the equipment on board a boat when it changes location can affect the efficiency with which charter boats can be redeployed. If each boat involved in cross-border activities loses one charter per season due to down time required to access and change on board equipment, this would equate to approximately €30m per year of lost revenue.[209]

Boat builders

The fragmentation of safety equipment rules does not create extra costs for boat builders because all of the design and construction requirements are harmonised with the new Recreational Craft Directive (2013/53/EU). The Directive lays down essential safety and environmental requirements for the design and construction of recreational boats (e.g. stability, flotation, electric systems), engines and certain components (e.g. steering wheels, hatches) and thereby covers the aspects that need to be considered by boat builders. Safety equipment, such as life rafts or life jackets, is regulated under national rules but is not part of the delivery package of boat builders.

Boat distributors

Differences in national requirements can create more work (and hence cost) for distributors because the same boat will have to be equipped with different safety equipment depending on the flag state under which it will be registered[210].

Safety equipment manufacturers

Safety equipment manufacturers need to ensure that their products conform to national standards for safety equipment. The current situation has two principal effects:

- Manufacturers need to create multiple variants of the same product to cater for different Member States, which restricts their ability to benefit from economies of scale in production processes.
- Manufacturers' products will not conform to the needs of all Member States and hence they cannot access all EU markets, resulting in missed economic opportunities.

Charter boat customers

The current situation means less choice and higher costs for charter customers. It can be cheaper for charter companies to select a Flag State with less onerous regulations than the coastal state in which they operate, which can also affect the safety of charter customers[211].

[208] The number of inspections differs between Member States. In Spain it is every 2.5 years, in the UK it is every 5 years for full inspections with a small inspection after 3 years, in Germany every 5 years. Inspections are for the vessel itself and for safety equipment, but this also differs from country to country.

[209] Based on 12,000 charter boats and average charter costs for one week of €2,500. Bareboat charter boats are typically at the lower size and price end of the market, ranging from 3m ribs to 15m sail or motor yachts (larger sail or motor yachts tend to be crewed charter boats). Prices range from €700 to €10,000 per week with the majority being sail boats between 10 and 15m and costing between €1,500 and €4,000 per week. An average spend of €2,500 per week is assumed in line with the data provided by YachtSys (2013) What is good to know about bareboat yacht charters.

[210] Interview with Mirna Cieniewicz, General Secretary for European Boating Industry.

[211] Interview with Mirna Cieniewicz, General Secretary for European Boating Industry

A3.4 Baseline scenario

If there is little or no EU intervention, Member States will continue to have different rules and standards for safety equipment. There are no indications that harmonisation or reconsideration of the dual application of rules for flag and host states will occur in the absence of intervention. As a consequence, under the baseline:

- The situation for charter companies will remain difficult and costly, causing them loss of income and additional administrative burdens. Annualised costs of adhering to multiple on-board safety equipment requirements are illustratively estimated to be in the region of €7.2m. This cost is expected to rise over time as the overall size of the EU charter fleet expands.
- For safety equipment manufacturers there will be continued opportunity costs associated with the foregone economies of scale.
- For private boat users, legal uncertainties will persist and continue to have a negative effect on the extent of inter-EU private boat tourism. This will affect the utility of private boat users and have an impact on the scale of nautical tourism in the EU.

A3.5 Justification for EU intervention

The proposal is a direct response to the EU's Marine and Coastal Tourism Strategy. The current situation affects the functioning of the EU market and results in variable levels of safety for boaters.

The EU's right to act in this area is established through Article 3 of the Treaty on the European Union with regard to the free movement of capital, freedom to provide services and the creation of an internal market. This relates to restrictions / additional costs effectively imposed on charter companies and safety equipment manufacturers.

Without an EU-wide initiative to enable harmonisation or recognition safety equipment requirements, effective action to tackle the problem is unlikely to occur.

A3.6 Intervention options

A3.6.1 Objectives

The specific objective of the intervention is to reduce costs of non-harmonised safety equipment regulations by:

- Providing all stakeholders with the necessary information to understand the diverse legal situation in all Member States and to equip them with the means to avoid uncertainty and the incorrect application of rules.
- Establishing a mechanism that enables the mutual recognition of national standards or some commonly accepted set of standards for cross-border activities.

A3.6.2 Long list of options

The following options were identified:

- Option 1: Comparison tool of national safety equipment regulation (including navigation rules).
- Option 2: Reference list of EU minimum safety equipment.
- Option 3: Harmonisation of safety equipment standards across Europe.

The Marine Equipment Directive 96/98/EC *(*MED) is focussed on product design and construction quality and lists authorized equipment in its database. The problem identified in the recreational boating sector is that requirements for how this authorised equipment is implemented differ between MS. The use of wheelmarked

equipment is not uncommon on recreational boats but it does not in itself imply conformity with a MS's regulations. Therefore, some form of extension of the MED to address the on-board safety equipment issue for recreational boats is considered inappropriate and does not form part of the long list of options.

Policy option 1	Comparison tool of national safety equipment regulations (incl. navigation rules)
Nature of the measure	Voluntary
Relevant objectives & problems	Provide all stakeholders with the information necessary for them to understand the diverse legal situation in all Member States and to equip them with the means to avoid uncertainty and the incorrect application of rules.
Implementation procedures	On behalf of the European Commission a team of European experts gathers and collects a complete inventory of all national safety equipment regulations (including where these are based on international law or EU directives). This inventory will pay special attention to details of safety equipment requirements. These data should be available online. It would need to be decided whether MARATLAS or an independent tool would be most appropriate. Well organised dissemination and ongoing review to ensure that the objective of combatting uncertainties is achieved
Complementary actions	n/a
Intervention logic	• Outputs: an online comparison tool providing detailed information about safety equipment regulations in all Member States. • Outcomes: enhanced legal certainty for boaters, national authorities and charter companies with regard to safety equipment standards in all Member States. • Impacts: avoidance of costs of uncertainty (e.g. more cross-border tourism and simplified administration for national authorities and charter companies).

Policy option 2	Reference lists of EU minimum safety equipment
Nature of the measure	Voluntary / mandatory
Relevant objectives & problems	• Provide all stakeholders with the information necessary for them to understand the diverse legal situation in all Member States and equip them with the means to avoid uncertainty and the incorrect application of rules. • Establish a mechanism for mutual recognition of commonly accepted minimum standards for privately used boats and charter boats (with options for justifiable national additions).
Implementation procedures	A team of experts to define packages of safety measures for private use and charter use that would be required by all craft in EU waters as lists of reference for vessels being checked when outside their home waters, building on what is already covered by SOLAS and COLREGs. Negotiation with Member States to refine and agree the minimum safety measures.

	These lists could be implemented through an EU recommendation or as a directive or regulation. The Marine Equipment Directive
Complementary actions	Well organised dissemination of the reference list and use of this list to incentivise national authorities to adjust their own standards to this list and work towards harmonisation of standards. Monitoring to ensure that countries do not add too many additional requirements that undermine the objective of the policy measure.
Intervention logic	• Outputs: agreed reference lists of minimum standards. • Outcomes: - Enhanced legal certainty for boaters, national authorities and charter companies with regard to safety equipment standards in all Member States. - Less diverse Member State safety equipment requirements. - A starting point for further standardisation or harmonisation talks between stakeholders. • Impacts: - Avoidance of the costs of uncertainty (e.g. more cross-border tourism, simplified administration for national authorities and charter companies). - Reduced costs of compliance with national regulations.

Policy option 3	**Harmonisation of safety equipment standards across Europe**
Nature of the measure	Mandatory
Relevant objectives & problems	• Provide all stakeholders with the necessary information to understand the diverse legal situation in all Member States and to equip them with the means to avoid uncertainty and the incorrect application of rules. • Establish a mechanism that enables the mutual recognition of national standards or some commonly accepted set of standards for cross-border activities.
Implementation procedures	EU-wide negotiations for a harmonised safety equipment standard. An expert team in conjunction with national authorities to provide an agreed safety equipment standard which is implemented through an EU directive or EU regulation.
Complementary actions	N/A
Intervention logic	• Outputs: an EU-wide safety equipment standard. • Outcomes: - Absolute legal certainty for all stakeholders. - No requirements to alter safety equipment to comply with national regulations. • Impacts: - Avoidance of the costs of uncertainty (e.g. more cross-border tourism, simplified administration for national

Policy option 3	Harmonisation of safety equipment standards across Europe
	authorities and charter companies). - Reduced costs of compliance with national regulations (although regional differences may still remain where necessary given differences in regional conditions).

A3.6.3 Screening of options

Table 8. Screening exercise for the long list of policy options relating to on-board safety equipment

Intervention option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
Comparison tool of national safety equipment regulation (including navigation rules).	Tool development funding and promotion.	**High**: simple compilation of available information and tool development and promotion.	**Low**: reduces uncertainty. Potential complexities in check and verification likely; does not resolve issue of differing MS requirements.	**Low:** inventory could be easily developed by industry; may benefit from some EU funding.	**Mod**: proportionate yet insufficient.	***Take forward*** (could be combined with Option 2 as can be quickly implemented and act as a 1st step in building the necessary evidence for implementing option 2.)
2a. Agreed reference lists of EU minimum safety equipment for private and charter boats (for inter-EU sailing) (EU recommendation).	Lead or support negotiations to agree and promote a reference list.	**Mod-high:** no significant resistance anticipated, although negotiation required to establish agreed standards.	**Mod-high**: addresses uncertainty and costs relating to inter-EU movements; does not address internal market issue (but this recognises that in some instances differences between MS are necessary).	**High:** Requires EU-wide input & negotiation to develop & agree standards. MS level action unlikely to resolve the issue.	**High**: well targeted to the issue and implemented on a voluntary basis.	***Take forward***
2b. Agreed reference list of EU minimum safety equipment (for inter-EU sailing) (EU legislation).	As above.	**Low-mod:** more resistance anticipated for a legislative approach.	**Mod-high:** as above.	**High:** as above.	**Low-mod:** well targeted to the issue; legislative approach unlikely to be necessary.	*Excluded*
Legislate for harmonisation of safety equipment standards across	Lead negotiations to agree legislation and	**Low**: resistance expected from MS; in some instances differences are appropriate given	**Mod-high:** Resolves issues of uncertainty and cost. Unintended	**High:** Requires EU-wide input & negotiation.	**Low-mod:** full harmonisation may be both undesirable and disproportionate	Excluded

Intervention option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
Europe.	standards.	different metocean[212] conditions across MS. Legislative approach likely required to get adequate (full) MS adoption.	consequence of eroded safety where divergences existing for important reasons.		to the scale of the problem.	

[212] Meteorological and oceanographic

A3.6.4 Short-list of options taken forward for assessment

The options selected for detailed appraisal are:

- Option 1: Comparison tool of national safety equipment regulation (including navigation rules).
- Option 2a: Agreed reference lists of EU minimum safety equipment for private and charter boats (for inter-EU sailing) (non-mandatory EU recommendation).

A3.7 Assessment of impacts

A3.7.1 Option 1: Comparison tool of national safety equipment regulation (including navigation rules)

A3.7.1.1 Implementation and effectiveness

The European Commission would have to initiate a group of experts from all EU Member States, who would gather a complete list of all national safety regulations in all Member States. This list would include:

- All safety equipment regulations included in national law.
- All safety equipment regulations included in International law (e.g. SOLAS, COLREGs).
- All relevant EU Regulations and Directives.
- A very detailed description of all requirements, as some regulations differ in terms of their detail, or interpret international law in different ways.
- Evaluation of the data by a second line of experts to ensure the correct data are gathered.

These data then have to be translated into the languages of all Member States, gathered in a database and presented online in a suitable and user friendly tool that is made available to the public and promoted to the key user groups.

The national authorities would then have to be responsible for informing the Commission about any changes to these data. The Commission would need to update the data and communicate with user groups on an *ad hoc* basis when regulations change.

Direct and indirect effects of the intervention

The implementation of this option would reduce uncertainty about safety equipment standards in all EU Member States.

Stakeholders directly affected:

- **Private boaters** – A list of safety equipment standards and requirements in all EU Member States will provide greater legal certainty for private boaters involved in cross-border movements. It will help them to decide what additional equipment they need if visiting another Member State and check whether they already comply with the regulations in that country, potentially saving boaters time and costs. It may also address the problem of private boaters being deterred from cross-border navigation due to uncertainty about safety equipment.
- **Legal Authorities –** Port authorities and coast guards would be better able to judge whether a foreign vessel is complying with their own national rules as a result of using the reference list to understand and compare the home regulations of visiting boats.
- **Charter companies and SMEs –** A database of the safety equipment requirements in all EU Member States would facilitate the work and

administration of charter businesses as they could more easily obtain the correct information on requirements and avoid making incorrect equipment purchases.

Stakeholders indirectly affected:

- **Boat distributors** – Distributors would benefit from a database of EU Member State regulations as it would facilitate their work when equipping boats to the required standard.
- **Public sector / European Commission** – A comprehensive, detailed and reliable database of safety equipment standards in all EU Member States is expected to be positively received by public stakeholders. It would facilitate cross-border tourism and support tourism businesses and have a positive impact on Blue Growth objectives.

Conclusion on the effectiveness of the intervention

The tool will provide clarity on the legal requirements for safety equipment regulations in Member States but will not be effective in harmonising the divergent and multiple requirements, and hence the need to hold different sets of safety equipment on board, when boats operate in Member State waters that are different to their flag state. The intervention is therefore judged to have moderate effectiveness.

A3.7.1.2 Economic Impacts

Performance and Competitiveness

The comparison tool is expected to have a small, positive impact on the performance and competitiveness of certain businesses within the nautical tourism industry. The main stakeholders that would experience economic benefits will be charter businesses (both large companies and SMEs) that would avoid costly misinterpretations of the rules when equipping charter vessels, and could calculate their expenses with more certainty. Large charter companies are more likely to redeploy boats across Member States than smaller companies, in order to react to market conditions, and would therefore be better able to calculate the costs this incurs and react in a more efficient and competitive way as a result of the intervention.

It is estimated that the intervention could reduce the baseline costs of charter companies adhering to multiple on-board safety equipment requirements by 10 per cent. This would reduce these costs by €4m over a five year cycle, equivalent to €0.8m per year. Further cost savings would occur due to less time being spent on researching information on safety equipment regulations.

It is unlikely that the intervention would have a significant impact on tourism expenditures and other nautical tourism businesses.

Administrative burdens on business

Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[213]. No such obligations are anticipated as a result of the intervention.

[213] European Commission (2015), Better Regulation Toolbox

Public Authorities

At National level: National authorities will have to support the expert team during the set-up and assist with the future up-keep of the database, which would entail some administrative costs. On the other hand, the database would provide improved legal certainty which would aid the coast guards and other national maritime authorities when checking and enforcing safety equipment compliance of visiting foreign vessels.

At EU level: The Commission will have to provide some administrative and possibly financial support to initiate the data gathering. There would be some costs involved in keep the online tool updated and functioning at a high standard. In time it may be possible to move to an alternative financing model.

Position of SMEs

SMEs engaged in charter activities will benefit from cost savings and more efficient deployment of boats as described above.

Functioning of the internal market and competition

The functioning of the internal market will be improved through the enhanced legal certainty about on-board safety equipment requirements. This will facilitate the free movement of people (on private and charter boats) and the free movement of goods and services (i.e. charter boats).

Consumers and households

The implementation of an online tool that is accessible to the public would provide consumers (principally private boaters) with improved information and increased certainty regarding on-boat safety equipment. It would protect private boaters from making incorrect and unnecessary purchases of equipment or risking fines for carrying incorrect equipment.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention is not expected to have measurable impact on the overall macroeconomic environment.

A3.7.1.3 Social Impacts

Employment and labour market

Any positive economic impacts, through reduced charter operating costs and increased private boat tourism, may have knock-on effects for job creation.

Working conditions

Any positive economic impact, through reduced charter operating costs and increased private boat tourism, may have knock-on effects for wages in the charter and wider nautical tourism sectors.

Public health and safety

Better information on on-board safety equipment requirements would help to ensure that boats have the correct equipment. Overall this is expected to result in a higher level of safety across the boating sector.

A3.7.1.4 Environmental Impacts

No significant environmental impacts are anticipated as a result of this intervention.

A3.7.2 Option 2a: "Reference list of EU minimum safety equipment"

A3.7.2.1 Implementation and effectiveness

The European Commission would have to:

- Initiate the set-up of a group of experts from all Member States who come together to establish and agree two reference lists of minimum standards of on-

board safety equipment for recreational craft visiting other EU Member States. These lists would build on the existing international SOLAS and COLREG regulations as well as existing EU regulations (e.g. the Recreational Craft Directive) as appropriate and would provide different lists of safety requirements for private boats and charter boats.

- Ensure that these reference lists are as clear and simple as possible with limited exceptions and additional requirements by national authorities.
- Ensure that the minimum standards harmonise the different versions of individual equipment.
- Ensure that the minimum standards do not compromise safety.
- Implement these reference lists through an EU recommendation or other measure.
- Disseminate the reference lists of minimum standards to all relevant authorities, representative bodies, boating groups and other stakeholders.

Direct and indirect effects of the intervention

The creation and implementation of reference lists of EU minimum safety equipment would provide a reference and certainty for private boaters, national authorities and charter companies in cross-border situations. It will enhance cross-border nautical tourism and facilitate the administration of national authorities and charter companies.

Stakeholders directly affected:

- **National authorities:** The reference lists will provide national authorities with greater legal certainty and details of what the on-board safety equipment requirements are for visiting vessels. Equipment checks could be made more efficient, and the costs associated with misunderstandings and incorrect interpretations could be avoided.
- **Private boaters:** The implementation of a reference list of EU minimum safety equipment for private boats would provide increased clarity and legal certainty to private skippers and reduce the extent of equipment that they may need to purchase and carry on board vessels in instances of cross-EU navigation. This may encourage more cross-border navigation by private boaters.
- **Charter companies:** The implementation of a reference list of EU minimum safety equipment for charter boats would increase clarity and legal certainty for all charter vessels in cross-border situations. In the case of charter vessels crossing into Member States outside their flag state (in either short term visits or long-term deployments), this list would provide a harmonised standard of safety equipment to an agreed minimum level. It would eliminate the need for charter companies to deploy different versions of the same safety equipment (i.e. a joint standard of life-rafts, life-jackets or life-rings), save on safety equipment inspections for the agreed list and only require additional equipment in some well-justified cases. This would aid charter companies in ensuring that the correct on-board equipment is provided, thereby reducing costs and enabling them to utilise their vessels more efficiently. In the longer term, charter companies would be able to use this list as a first step towards full harmonisation of safety equipment standards within the EU.

Stakeholders indirectly affected:

- **Other (nautical) tourism businesses** – Increases in cross-border boating would provide indirect benefits for other nautical tourism industries such as marinas, boat service companies, and the wider tourism industry.
- **Public sector / European Commission** – The reference lists would be perceived by private boaters and charter companies as a first step towards

harmonisation and are expected to be regarded as a positive measure that facilitates cross-border exchange and provides legal certainty. It would therefore provide positive publicity for the Commission's activities and the single market.

Conclusion on the effectiveness of the intervention

Reference lists of EU minimum safety equipment for private boats and charter boats will not only provide full legal certainty when visiting other EU Member States, but also harmonise the equipment required in cross-border situations. They are therefore considered likely to be highly effective in providing a solution to this problem.

A3.7.2.2 Economic Impacts

Performance and Competitiveness

The reference lists would have positive performance and competitiveness impacts for the nautical tourism industry.

Charter businesses: Where charter boats operate across multiple Member States, the costs to charter businesses of meeting on-board safety equipment rules in different Member States would be reduced, thereby enabling them to operate more efficiently and improving competitiveness. The costs of adhering to multiple regulations could be reduced to a minimum under this intervention. Assuming a cost reduction of 90 per cent[214] the previously estimated total costs of €36m could be reduced by €32m, equivalent to an annual cost reduction of €6.4m, assuming that these costs are incurred on a five-yearly basis. Where this aids the more efficient deployment of charter boats across Member States, this could have a further positive effect on charter revenues. Based on the indicative estimate of the economic cost of downtime due to accesses alternative safety equipment when changing charter locations (see Section A3.3.3), a benefit of €30m per year is of increased charter revenue is assumed.

Nautical Tourism businesses: Increased cross-border mobility of private boaters is expected to result in increased tourism expenditures, as well as more efficient charter company operation, which would deliver indirect benefits for the nautical tourism sector more broadly. As estimated above in Section A3.3.3, this could result in additional economic output of €0.8m per year.

Administrative burdens on business

Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[215]. No such obligations are anticipated as a result of the intervention.

Public Authorities

At National level: National authorities would have to contribute to the expert review and setting of minimum standards, and ensure dissemination of the standards to relevant stakeholders in their country, which would entail some administrative costs. On the other hand, the implementation of minimum standards should simplify inspections, aiding the coast guards and other national maritime authorities in checking and enforcing compliance with safety equipment regulations for visiting vessels.

At EU level: The Commission would have to provide some administrative, and possibly financial, support to initiate and negotiate the establishment of minimum standards.

[214] Only in some cases extra equipment would be necessary, no different versions of the same equipment would be needed and therefore also dual inspections would be kept to a minimum.

[215] European Commission (2015), Better Regulation Toolbox

Position of SMEs

SMEs engaged in charter activities would benefit from cost savings and improve boat redeployment efficiently as described above.

Functioning of the internal market and competition

The functioning of the internal market would be improved through the enhanced legal certainty about on-board safety equipment requirements and reduced business costs as a result of having a common set of on-board equipment requirements across all Member States for cross-EU boat navigation. This would facilitate free movement of people (on private and charter boats) and free movement of goods and services (i.e. charter boats).

Consumers and households

Common standards would provide consumers (principally private boaters) with improved information and increased certainty regarding on-board safety equipment regulations. They would protect private boaters from making incorrect or unnecessary purchases of equipment or risking fines for carrying incorrect equipment.

Macroeconomic environment

Due to the scale of economic impacts anticipated within the sector, the intervention will have a limited impact on the overall macroeconomic environment.

A3.7.2.3 Social Impacts

Employment and labour market

Any positive economic impacts, through reduced charter operating costs and increased private boat tourism, may have knock-on effects for job creation.

Working conditions

Any positive economic impact, through reduced charter operating costs and increased private boat tourism, may have knock-on effects for wages in the charter and wider nautical tourism sectors.

Public health and safety

Common standards will facilitate greater compliance with the regulations and help to ensure that boats have the correct on-board safety equipment. Overall this is expected to result in a higher level of safety across the boating sector. Where differences in the minimum standards are essential to maintain an acceptable level of safety in particular locations, for geographical reasons, it is assumed that such variation can be accommodated and made explicit within the common standards.

A3.7.2.4 Environmental Impacts

Any resulting increase in nautical tourism holds the potential to generate environmental impacts. However these are not expected to be significant.

A3.7.3 Summary level assessment

Table 9. Summary table of impact scores

Impact type	Comparison tool of national safety equipment regulation	Reference list of EU minimum safety equipment
Performance and competitiveness	0/+	+
Administrative burdens on businesses	0	0
Public authorities	-/+	-/+
Position of SMEs	0/+	+
Functioning of the internal market and competition	0/+	++
Innovation and research	0	0
Consumers and households	0/+	+
Macroeconomic environment	0	0
Employment and labour markets	0/+	+
Working Conditions	0/+	+
Effects on social inclusion	0	0
Public health and safety	+	+
Culture	0	0
Resource use and waste	0	0
Water quality and resources	0	0
Biodiversity, flora, fauna and landscapes	0	0
Sustainable consumption and production	0	0
Transport and the use of energy	0	0
Land use	0	0

Key: a -/+ 7 point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact and, 0 = no impact

A3.8 Conclusions and recommendations

A3.8.1 Effectiveness

Comparison tool of national on-board safety equipment regulation

The comparison tool would help to address uncertainty issues by providing a more accessible, clear and accurate description and means of comparing the requirements of different Member States. It would directly address the underlying issues of information failure. It would also achieve the objective of providing all stakeholders with the necessary information to understand the diverse legal situation in all Member

States and to equip them with the means of avoiding uncertainty and the incorrect application of rules. However, it would not address the objective of establishing a more harmonised set of standards for cross-border activities.

The improved understanding and higher legal certainty would lead to some benefits for charter companies and private boaters by aiding avoidance of costs associated with incorrect and unnecessary purchases of additional safety equipment, although these benefits are thought to be small. An indicative estimate suggests that this could deliver potential cost savings of €0.8m per year. This intervention would therefore deliver minor positive economic and social impacts in the nautical tourism sector.

Reference list of EU minimum safety equipment

The reference list of minimum safety equipment would directly address the underlying intervention objectives of: providing all stakeholders with information to understand the requirements for on-board safety equipment in cross-border situations; and establishing a more harmonised set of standards for cross-border activities.

The improved certainty and application of common standards would avoid the need for charter companies (and, to a lesser extent, private boaters) to purchase multiple sets of on-board safety equipment. Indicative estimates suggest that this could deliver potential cost savings of €6.4m per year, increased charter revenue from more efficient redeployment of fleets of around €30m per year and possible increase in private boater activity and expenditure of around €0.8m per year.

The intervention may also encourage more cross-border tourism and is estimated to generate a positive economic impact of €0.8m per year for the nautical tourism sector.

A3.8.2 Efficiency

The costs associated with the development and maintenance of the comparison tool (Option 1) are expected to be small. The benefits are also expected to be limited and it is not clear that the intervention would be particularly efficient i.e. whether the benefits outweigh the costs. The measure can, however, be implemented easily and provides a partial solution to the problem at low cost and within a short timeframe.

The costs associated with Option 2a will be greater than Option 1 and the timeframe required for implementation is longer. However the benefits are also more significant and are likely to outweigh the costs of implementation over the medium term.

A3.8.3 Uncertainties

There are no significant uncertainties attached to Option 1 as long as the expert team for tool development is chosen carefully.

There is greater uncertainty associated with Option 2a because Member States would need to agree a common set of minimum standards. Whilst there would be opportunities for some divergence from these common standards where geographically specific safety issues are required, the effectiveness of the intervention would be undermined if (i) a high proportion of Member States did not implement the standards, and/or (ii) a high number of exceptions or additions were included.

The lack of basic quantitative data makes it difficult to quantify the economic consequences of the options. The most significant gaps in the data and information relate to:

- The current scale of cross-border boat movements and associated expenditures (for charter customers and private boat-owners).
- The number of boats that are permanently kept in a different Member State to their flag state and those that make trips between different Member States.
- The number of boaters who are discouraged from cross-border boating tourism and those that would be likely to participate under each option.

- The potential cost savings for charter businesses associated with each option.

A3.8.4 Conclusions

The comparison tool would not solve the problems completely, but is an easier measure to implement. It is therefore recommended to firstly implement the comparison tool to achieve legal certainty in the short term. The comparison tool will provide an evidence base to aid understanding of current requirements and support the development of recommendations for a common set of minimum standards which could be implemented at a later date. An updated tool would then remain in place to provide clarity on any instances of exceptions or additions to the minimum standards that may be required in particular geographic areas due to genuine safety issues.

A3.9 Annex: Evidence sources

A3.9.1 List of stakeholders

- Mirna Cieniewicz, European Boating Industry (EBI), Brussels, BE
- Ewa Tomczuk, European Boating Industry (EBI), Brussels, BE
- Andy Petty, AP Marine Surveys and RYA Examiner, Alicante, ES
- Patrice Haegelin, Logistic Manager for Navigare Yachting, SE
- Jürgen Tracht, Bundesverband Wassersportwirtschaft(BVWW), Cologne, DE
- Patricia Bullock, Network Marine Consultants, Palma de Mallorca, ES

A3.9.2 References

- Arimar (2015), Radeaux de Sauvetage et Annexes
- ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector
- EU Directive 89/686/EEC of 21 December 1989
- ICOMIA (2010), Statistics Book
- IMO: International Convention for the Safety of Life at Sea 1974 (SOLAS)
- IMO: Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs)
- Torralbo, J. & M. Castells (2014) Comparison of survival and safety requirements in European Union for Recreational Craft Inspections. A Spanish Case Study

Annex 4 Satellite applications

A4.1 Introduction

This annex presents the results from research on the topic of satellite applications in the market for nautical tourism on-board safety equipment. Such applications may use satellite systems for observation (e.g. of sea conditions), positioning or communications (in locations outside the range of GSM and other shore-based networks). In doing so the annex presents research findings and conclusions which consider the problems affecting market performance and whether intervention by the European Commission could address these problems.

A4.2 Topic and situation analysis

A4.2.1 Current recreational boat satellite applications (and other technology) practices

Most of the regulations governing maritime safety in general, including those applying to nautical tourism, were enacted at a time when satellite services were very limited or non-existent. The Global Maritime Distress and Safety System (GMDSS) is the exception. It uses the Inmarsat infrastructure to convey distress signals to response providers from anywhere in the world with very high reliability. But this is not required for leisure craft less than 24m.

Electronic navigation systems on boats use satellite-based Global Navigation Satellite Systems (GNSS)[216] such as the Global Positioning System (GPS) whose receivers are ubiquitous in mobile phones and other devices. These devices work in both inshore and offshore areas.

Although satellite telephony for two-way communication is important in ocean sailing, it remains relatively expensive compared to land-based Global System for Mobile (GSM) communications. Land-based GSM is accessible for nearshore activities. Basic signals for mobile phone use can remain usable for around 5 nautical miles (nm) to 20nm from shore. The range is primarily dependent on the location of GSM towers. Hence satellite-based communication equipment is not strictly necessary when sailing within range of the GSM network.

Most nautical tourism activities take place in coastal waters where shore-based GSM networks can be accessed. Such networks will often provide access at lower cost than the equivalent satellite service.

Some services such as the Automatic Identification System (AIS) can receive vessel transmissions using both satellite and shore-based systems. Services using AIS depend on satellite reception only when the transmitting vessel is beyond the range of shore-based receiving stations.

The need for satellite applications in nautical tourism is therefore dependent, at least in part, upon boats' distance from shore-based infrastructure and hence their ability to access land-based GSM communications. This has a critical bearing on the size of the market that is likely to be accessible to manufacturers of satellite-based safety and other systems.

A4.2.2 The satellite application (and other technology) market

Technology providers

Technology providers can be classified in two groups:

- Infrastructure owners/managers e.g. INMARSAT, Iridium (for communications), and GPS, GLONASS, and Galileo (for positioning);

[216] GNSS is a satellite system that is used to pinpoint the geographic location of a user's receiver anywhere in the world

- Device manufacturers e.g. Garmin, Raymarine and Simrad. Earth Observation satellite data are increasingly being used in a variety of information services (e.g. forecasting of metocean[217] conditions) that are used in nautical tourism, but these systems do not require specialist on-board equipment (i.e. they are broadcast to vessels using their conventional communication receivers).

Technology consumers

Nautical tourism technology consumers can be categorised into two groups:

- Superyachts: As superyachts are more than 24m in length, they have to comply with the safety regulations applying to commercial ships. This is a limited market in terms of vessel numbers: there are approximately 5,000 superyachts in the world. This compares with the 60,000 commercial vessels regulated through international conventions to carry specific equipment.
- Leisure boats (under 24m): There are around 25 million leisure boats globally, of which around 6 to 6.5 million are in the EU. They remain largely unregulated. Only a small proportion of these boats are likely to be involved in activities beyond the range of normal GSM networks.

As indicated above, the market of regulated nautical tourism vessels is very limited. Although there are believed to be around 6 to 6.5 million leisure craft in the EU, it seems that only around half of these are actually used to any significant degree. Of the vessels in active use, the majority are likely to be at the smaller, lower-cost end of the market (though no reliable data is available to quantify this distribution). Even the larger recreational boats may not have a need for satellite-based equipment e.g. if they do not regularly sail in offshore or ocean waters. The number of vessels for which there is a good case for investment in satellite-based safety equipment is therefore limited. This raises a barrier to introduction of equipment designed for the nautical tourism market.

This market situation means that there is limited development of satellite-based products specifically for the nautical tourism market. Most satellite-based safety equipment fitted to leisure craft is based on systems for commercial craft. Its price puts it out of reach of most nautical tourism users.

However, there is a growing trend for lower-cost versions of commercial equipment to be developed in order to capture the top end of the sub-24m leisure boat market. These products can 'piggy-back' on the investments made in development of commercial systems. Commercial market drivers can therefore signal the potential for migration of satellite-based technologies into the nautical tourism market.

A4.2.3 Requirements from regulation

Many of the regulations that apply to leisure craft have their origin in international conventions targeting commercial shipping, such as:

- International Regulations for Preventing Collisions at Sea (COLREG - IMO)
- Safety of Life at Sea (SOLAS - IMO)
- Marine Pollution (MARPOL - IMO)
- United Nations Convention on the Law of the Sea (UNCLOS - UN)

These international instruments are then used as the basis of creating or changing national law through relevant legislation. Some of these regulations (see below) are being extended to leisure craft.

Of these conventions, SOLAS has direct relevance to requirements for on-board satellite and other technology equipment. In addition, COLREG has some bearing on

[217] Meteorological and oceanographic

equipment such as navigation lights, but no significant relevance to equipment which could present opportunities for satellite technology.

Although regulations do not mandate the use of satellite-based equipment, the recent emergence of novel satellite technologies has opened up potential compliance solutions that exploit satellite capabilities.

Safety of Life at Sea (SOLAS)

The origins of SOLAS go back to the significant loss of life that occurred when the Titanic sank, and was the main reason for establishing the Inter-Governmental Maritime Consultative Organization (IMCO), now the International Maritime Organization (IMO). The SOLAS Convention is intended to preserve life on-board any ship or craft that goes to sea.

Earlier versions of the Convention did not cover vessels of less than 150GT. SOLAS is regularly reviewed and since 1 July 2002 SOLAS Chapter V, which looks at the Safety of Navigation, has applied to "all ships on all voyages" except warships, other government owned or contracted ships and ships navigating solely on the Great Lakes of North America. SOLAS V therefore applies to leisure craft, although there are many exemptions. Only the following regulations apply to leisure craft:

- Regulation 19 – Radar Reflector
- Regulation 29 – Lifesaving Signals
- Regulation 31 & 32 – Danger Messages
- Regulation 33 – Distress Messages - Distress Situations: Obligations and procedures
- Regulation 34 – Voyage/Passage Planning - Safe navigation and avoidance of dangerous situations
- Regulation 35 – Misuse of Distress Signals

The implications of these and other regulations, with regards to satellite-based technologies, are considered in more detail below.

Implications of SOLAS for Leisure Craft (up to 24m)

SOLAS has a number of implications for leisure craft of up to 24m (as summarised below). However it does not specify or imply a requirement for all leisure craft to carry satellite-based equipment.

Safety Equipment

Most EU countries publish requirements or recommendations for safety equipment on board nautical tourism vessels, based on SOLAS but with country-specific details. These are sometimes dependent upon the type of vessel and its use (e.g. distance from shore). For example:

- Ireland:
  - The Maritime Safety Directorate published a code of practice in 2004. This sets out recommended levels of safety equipment to be carried on board, depending on whether the vessel is in sheltered, coastal, offshore or ocean waters.
- UK:
  - There are exemptions for "leisure craft" from the Merchant Shipping (Fire Protection: Small Craft) Regulations 1998 and the Merchant Shipping (Life-Saving Appliances For Ships Other Than Ships Of Classes III To VI(A)) Regulations 1999.

- Class XII vessels (pleasure vessels of 13.7m in length and over) are required to comply with these regulations, or demonstrate compliance with equivalent standards.
- For leisure vessels of less than 13.7 meters in length, there are no statutory requirements for safety equipment other than those required under SOLAS V.

Other countries publish similar equipment lists, which in some cases are mandatory, but there is a wide variation in requirements.

A minority of EU countries (Portugal is one example) require vessels to carry satellite-based Emergency Position Indicating Radio Beacon (EPIRB) transmitters, particularly for use in offshore or ocean waters.

Maritime Radio

Most EU states either exempt leisure craft from a requirement to carry communications equipment, or limit the requirement to carry such equipment to leisure craft in offshore or ocean waters. For example, the UK's Merchant Shipping (Radio Installations) Regulations 1998 do not apply to leisure craft. It is therefore not mandatory for a leisure craft in UK waters / sailing under a UK flag to have a "radio installation" on board. It is however highly recommended that vessels are equipped with maritime radio equipment suitable for the area of operation.

Where a very high frequency (VHF) radio or other maritime radio equipment is carried, the equipment must be licensed. For equipment capable of voice transmissions a licence is usually also required for the operator (partly to avoid abuse of VHF bands that are reserved for safety transmissions).

Safety of Navigation for Pleasure Vessels

Voyage Planning

SOLAS Regulation V/34 ('Safe Navigation and avoidance of dangerous situations') concerns prior planning for the boating trip, more commonly known as voyage or passage planning. Leisure craft users should particularly take into account the following points when planning a boating trip:

- Weather: Prior to departure and during the voyage the weather condition and forecast should be checked regularly.
- Tides: The tidal predictions for the trip should be checked.
- Limitations of the Vessel: consideration should be given to fitness of the leisure craft including its safety equipment for the trip.
- Crew: Experience and physical ability of the crew should be taken into account. Crew members suffering from cold, tiredness and seasickness won't be able to do their job properly and could result in an overburdened skipper.
- Navigational Dangers: Mariners should be familiar with any navigational dangers which may be encountered during the boating trip. This generally means checking an up-to-date chart and a current pilot book or almanac covering the area of intended voyage.
- Contingency Plan: All mariners should always have a contingency plan in case something goes wrong, and have identified places of refuge should conditions deteriorate or if there is an incident or injury. Mariners should be aware that GNSS receiver, such as a GPS set, is vulnerable and could fail at the most inconvenient time. This might be due to problems with electrical systems, jamming or interference with the signals or meteorological activity.

Radar Reflectors or Radar Target Enhancers

Most large ships use radar for navigation and identifying other vessels in their vicinity. So, whatever size the boat is, it is important to make sure that the boat can be seen by radar. SOLAS Regulation V/19 requires all small craft (less than 150GT) to fit a radar reflector, or other means, to enable detection by ships navigating by radar at both 9 and 3 GHz 'if practicable'. Most EU states implement this requirement via national regulations that mandate a radar reflector for vessels venturing beyond sheltered or coastal waters.

SOLAS for commercial ships and superyachts above 24m

Merchant ships and superyachts are regulated and classed according to the IMO conventions and Flag State rules and regulations, including requirements for carriage of safety equipment. It is useful to examine the systems used to comply with these requirements, since some of these are satellite-based systems and adaptation of these could offer potential in nautical tourism.

Current technologies available to SOLAS ships are as indicated below:

Global Navigational Satellite System (GNSS) - A GNSS navigation device is a device that accurately calculates geographical location by receiving information from GNSS satellites. Initially it was developed and used by the United States military, but now most receivers are in automobiles and smartphones.

The GNSS is a satellite-based navigation system (e.g. GPS) made up of a constellation of a minimum of 24 satellites. Although the original intent for GPS was military, in the 1980s the U.S. government decided to allow the GPS infrastructure to be used by civilians. These satellite data are free for users and work anywhere in the world.

Marine application usually integrate GPS information with other electronic navigational aids such as AIS, ECDIS, EPIRB, and smart radars.

An Electronic Chart Display and Information System (ECDIS) is a computer-based navigation system that complies with IMO regulations and can be used as an alternative to paper navigation charts. Integrating a variety of real-time information, it is an automated decision aid capable of continuously determining and displaying a vessel's position in relation to land, charted objects, navigation aids and unseen hazards.

An ECDIS includes electronic navigational charts (ENC) and integrates position information from the GNSS and other navigational sensors, such as radar, and automatic identification system (AIS).

ECDIS is defined in the IMO ECDIS Performance Standards (IMO Resolution A.817(19)) as follows:

"Electronic Chart Display and Information System (ECDIS) means a navigation information system which, with adequate back up arrangements, can be accepted as complying with the up-to-date chart required by regulation V/19 & V/27 of the 1974 SOLAS Convention, by displaying selected information from navigation sensors to assist the mariner in route planning and route monitoring, and by displaying additional navigation-related information if required."

The Global Maritime Distress and Safety System (GMDSS) has, since 1992, been using terrestrial and satellite technology and ship-board radio systems to ensure rapid, automated alerting of shore-based communication and rescue authorities – in addition to ships in the immediate vicinity – in the event of an incident at sea.

All cargo ships of 300 gross registered tonnage and upwards and all passenger ships engaged on international voyages must be equipped with radio equipment that conforms to international standards as set out in the system. This means that search and rescue (SAR) authorities ashore, as well as shipping in the immediate vicinity of the ship in distress, can be rapidly alerted through satellite and terrestrial communications so that they can assist in a co-ordinated rescue operation with the

minimum of delay. Ships fitted with GMDSS equipment are more likely to receive help when they need it because the system provides for automatic distress alerting when a crew does not have time to send out a call with detailed information.

GMDSS also requires ships to receive broadcasts of maritime safety and SAR related information which could prevent an incident from happening. It also requires ships to carry satellite Emergency Position Indicating Radio Beacons (EPIRBs, see below), which float free from a sinking ship and alert SAR authorities with the ship's identity and location.

The introduction of the GMDSS in 1992 marked the most important change in maritime safety since the advent of radio in 1899. Modern satellite technology has resulted in a total transformation of the maritime distress system, with the GMDSS making extensive use of satellites for rapid and reliable communications. Before the current system, safety communications relied primarily on the ability of a ship in distress to alert other nearby ships for assistance. Now the emphasis is on alerting shore-based SAR authorities, as well as shipping in the immediate vicinity, in order to achieve co-ordinated rescue operations.

An Emergency Position Indicating Radio Beacon (EPIRB) is used to alert search and rescue services in the event of an emergency. It does this by transmitting a coded message on the 406 MHz distress frequency via satellite and earth stations to the nearest SAR co-ordination centre. The satellite can determine the position of the EPIRB to within 5km (3 miles). The coded message identifies the exact craft to which the EPIRB is registered. This information allows the rescue services to eliminate false alerts and launch an appropriate rescue.

The system works with the Cospas-Sarsat polar orbiting satellite system, giving true global coverage. There is an alert delay of about 45 minutes depending on when the satellites come into view on the horizon. GPS-enabled EPIRBs have a built-in transmitter which will typically alert the rescue services within 3 minutes and to a positional accuracy of +/- 50 metres (updated every 20 minutes) given a clear view skywards. Some EPIRBs also have a secondary distress transmitter. This transmits on 121.5 MHz and is used for "homing" purposes. When the rescue services get close, this allows them to direction-find based on the signal.

EPIRBs are generally installed on marine craft and can either be operated automatically after an incident or manually. In most countries they are required to be used in all commercial shipping as well as some yachts and leisure craft.

Personal Location Beacons (PLB) can provide a man-over-board function, and work in exactly the same way as EPIRBs by sending a coded message on the 406 MHz distress frequency which is relayed via the Cospas-Sarsat global satellite system.

Automatic Identification System (AIS) is an automatic tracking system used on ships and by vessel traffic services (VTS) of harbour authorities and other users for identifying and locating vessels by electronically exchanging data with other nearby ships, AIS base stations, and satellites. AIS information supplements marine radar, which continues to be the primary method of collision avoidance for water transport.

Information provided by AIS equipment, such as unique identification, position, course, and speed, can be displayed on a screen or an ECDIS. AIS is intended to assist a vessel's watchkeeping officers and allow maritime and search and rescue authorities to track and monitor vessel movements. AIS integrates a standardized VHF transceiver with a positioning system such as a GPS receiver, with other electronic navigation sensors, such as a gyrocompass or rate of turn indicator. Vessels fitted with AIS transceivers can be tracked by AIS base stations located along coast lines or, when out of range of terrestrial networks, through a growing number of satellites that are fitted with special AIS receivers which are capable of de-conflicting a large number of signatures.

With some exemptions, IMO conventions require all ships over 300 gross tonnage and engaged on international voyages, cargo ships of over 500 gross tonnage not engaged on international voyages and passenger ships irrespective of their size to be fitted with AIS Class A. However, when the IMO regulation was first implemented on 31 December 2004, it did not include a requirement to display AIS 'targets' on a screen. The regulation simply required a display to be capable of showing a minimum of three ships at any one time together with bearing, range and name. Even this scant information was not monitored on a routine basis.

Since 1 July 2008, IMO has required the integration and display of AIS data on all new radars. Arguably this means that AIS targets are now better displayed and that AIS has a greater role in improving navigational integrity and accuracy than was initially envisaged by improving information available to the mariner.

AIS Class B has been introduced by IMO to target the leisure boating market. However, large ships are able to 'filter out' AIS Class B transmissions from small craft. Such a facility is open to misuse and ultimately makes the fitting of anything other than a receiver a fairly pointless and expensive exercise, although the performance standards does not include such capability.

According to Dr. A. Norris, Chairman of the International Electrotechnical Commission Technical Committee responsible for international equipment standards for ship borne navigational and communications equipment, *'it may have been at the back of the mind of some legislators that innovation by manufacturers would be the best way to evolve both filtering and acquisition strategies in these relatively early days of AIS/radar integration. Maybe, in the future, more explicit functionality could then be statutorily defined. Until then, manufacturers will be implementing their own best ideas in these areas'*.

Clearly as more and more leisure craft users invest in low cost AIS transponders, the problems of Class B clutter on navigation displays for those navigating large vessels is likely to be a significant distraction. Under such circumstances, filtering of all AIS Class B targets and supressing alarms might be necessary to avoid distracting those on the bridge. Class B AIS Update Rate is lower than for Class A, and can be as long as 6 minutes for a vessel moving at less than 2 knots. This is arguably too slow for recreational craft (that frequently change direction) to be useful to larger vessels in busy, congested and confined waters.

A4.2.4 Trends in Advancement of Current Safety Systems

While the regulatory environment evolves rather slowly, satellite-based technologies are advancing rapidly. There is growing recognition that satellite-based communications services can have a major role within a variety of value chains serving Blue Growth. This is a result of both demand-pull (increasing demand for information services for maritime operations) and supply-push (proliferation of cubesats and constellations producing data and communication resources at reducing cost). This growth potential is recognised by the European Space Agency (ESA) that recently launched the 'Combining Innovation Networks in Maritime and Space' project (CinMARS) to identify some of the novel applications that could lead this growth.

There are various ongoing developments that could contribute to a safety-related maritime communications infrastructure: not only in satellite communication services such as Inmarsat and Iridium, but also in facilities such as Automatic Identification of Ships (AIS) whose range is being extended into deep ocean by use of satellites. Crowd sourcing of data in coastal waters is also of expanding interest[218], particularly where GSM network coverage is available for low-cost communications.

[218] e.g. to collect bathymetric and other data, uploaded directly from a boat's instruments.

Innovation topics in satellite-based systems

There has been a growing portfolio of European Framework Programmes for Research and Technological Development (RTD) projects across the field of satellite-based systems providing decision support in environmental and disaster risk management. The European Global Monitoring for Environment and Security (GMES) programme is a case in point. There is also a growing appreciation of the potential for novel information services that can tap into satellite data and communication assets, in markets ranging from health care to agriculture.

However, an RTD project search carried out for this study (see Annex A6.6) has shown that these programmes have not yet tackled the need for lower-cost systems enabling safety in nautical tourism. This is probably because the market is seen as too limited, with barriers to commercialisation of new systems.

Current technology development activity relevant to Nautical Tourism

A search of relevant projects has been carried out, looking particularly at EU RTD funding programmes and European Space Agency (ESA) programmes. Eight relevant projects were identified and reviewed (full descriptions of the projects reviewed are set out in Annex A: Recent project assessment.

Promising satellite-based advances in support of leisure boat safety and related functions are likely to centre on integration of sensor and other data and models, similar to other markets for satellite applications. This in turn presents challenges in terms of distributed information and communications technology (ICT) (e.g. web services) and data standardisation, which are the subject of other EU research projects.

Most of the ESA (ARTES – IAP) projects concerned with SAR (Search & Rescue) and Safety are of relevance to the functions of "monitoring sea traffic"; "detecting various vessel activities"; "identifying need of intervention"; and "optimising remedial/rescue activity". Sub-areas may present opportunities for re-engineering to create specific functions of greater relevance to the nautical tourism sector. Such sub-areas might introduce the use of mobile phones, for example; these are ubiquitous in practice and their use in enhancing safety systems for Nautical Tourism could be made widespread.

Across the various sectors of research considered, it is clear that security issues and commercial needs dominate. In many cases the classification and identification of small non-AIS vessels (or vessels such as fishing vessels that have disabled their AIS) plays an important role, and this could contribute to safety advances in nautical tourism. These advances could be addressed in conjunction with larger commercial and security developments, though this would need careful intervention to support the working together of what might be disparate and sometimes disinterested parties.

The ESA project on Easy and Safe Yachting (EASY) developed an integrated satellite-based capability to perform three functions: tourist services (service booking, maps and guides, sea tourism, etc.); on-line assistance services (alarm management related to boat malfunctions, intrusion, etc.); and navigation support services (route planning, port access, sea conditions, meteorology, bathymetry, route control, nautical cartography, warning about perils and dangerous areas, tracking and tracing, etc.). These information services have direct relevance to nautical safety (and compliance with SOLAS) as well as value-add for users.

On the other hand, stand-alone equipment development for nautical tourism safety, such as satellite-enabled devices for signalling and reception of distress calls, has had comparatively little attention. Auto-alarming and alerting beacons to allow the detection and location of vessels or personnel in distress were the subject of EU project SASJACKET[219] (http://cordis.europa.eu/project/rcn/106209_en.html), though

[219] http://cordis.europa.eu/project/rcn/106209_en.html)

this was not completed and no further information is available. Waterproof beacons capable of detection by satellites are available commercially, but ensuring that these are monitored by maritime surveillance and control systems is a systems integration challenge.

The ESA project MAPP (see Annex A: Recent project assessment) is developing a device aimed at combatting piracy on commercial vessels, but which could after cost reduction, scaling and modification be suited to emergency alerting and communication on yachts.

The European Space Agency has clearly been funding relevant projects that could benefit nautical tourism, and this foundation could now be built on. Most of this effort has been directed at commercial vessels (with a small minority at superyachts), and significant investment in functional integration and re-engineering for the nautical tourism market would be needed. However, in general, there has been very little FP7 or H2020 research into the interplay of satellites and nautical tourism. This suggests that a lack of focus on support for research and innovation in this field could have contributed to the lack of business investment in development of novel satellite-based safety equipment.

A4.2.5 Market potential

Satellite applications and uses in the maritime sector and their application to the small craft users cover:

- Navigation: GPS, AIS
- Communication: GMDSS, telemedicine, internet, telephone, data exchange
- Imagery: Weather, high traffic area, fisheries

The principal focus of technology in nautical tourism is improved safety. However safety on its own is difficult to sell to consumers. The market needs to be developed by combining improved safety with other features that offer more direct utility to consumers. Some examples of how nautical safety could be packaged within other benefits are given below.

Asset protection

Boat owners are increasingly concerned about theft of vessels and equipment (e.g. outboard engines). Satellite systems for tracking vessels and high-value equipment could be introduced into this market, with parallel benefits in terms of safety. For example, geo-fencing of personal watercraft could enable an alert to be triggered if the craft enters a hazardous location or to notify the owner that it is being moved without his/her consent.

Cost of insurance

Most boat owners buy insurance, both to protect themselves against cost of damage or theft, but also to indemnify against third-party claims. Insurance premiums vary widely depending on the value of the vessel, how it is used and stored, and the experience of the owner. It might be possible to reach agreement with insurance companies to reduce the cost of cover for vessels equipped with safety systems that significantly reduce risk of accident. This saving would partly offset the cost of safety equipment.

Information services

A lot of research effort has been directed towards understanding how human factors affect risk exposure. A significant problem is the sensory overload caused by the proliferation of equipment providing information into the bridge or cockpit. There is therefore a recent trend towards functional integration of navigation / safety / communication equipment so that, for example, safety-related alerts are shown on navigation displays.

Mobile telephony and smart phones provide a lot of functionality to which safety-related services could be easily added. This would reduce the cost of safety (by using low cost connectivity) and integrate it with services already used by the boat owner.

Additional areas

Applications of satellite technology that offer safety and other benefits to recreational boat users include:

- Insurance: insurance companies providing a reduced premium for small craft carrying satellite-based equipment for which improved safety is demonstrated (as occurs in other sectors);
- Security tagging of recreational craft (similar to cars, trailers and/or containers) to facilitate tracking using the GPS coordinates of the tag;
- Delivery of telemedicine support to mariners in medical emergency situations;
- Monitoring of fishing activities: AIS based equipment to detect behaviour that could indicate illegal fishing;
- Using vessels as 'platforms of opportunity' for crowd-sourcing of monitoring data e.g. to improve bathymetric data, or to improve water quality monitoring;
- Maritime history and archaeological data: possibly a free smartphone app to facilitate submission of data by the public (e.g. sports divers).

Non-safety related information services

There is a trend of increasing demand for at-sea internet services – for communicating with work, friends and family, and accessing social media as well as for downloading information on matters such as weather conditions. In the offshore market, i.e. outside of the range of GSM networks, this trend is most commonly identified in the commercial sector and in the cruise and luxury yacht markets, in which crew and passengers increasingly demand such services. There is anecdotal evidence of such demand in the private yacht market. The significance of such services is clearly likely to be greater for the former markets, where individuals may be spending long periods at sea, out of access of terrestrial systems. Increasing numbers of providers are targeting these markets (especially the commercial and cruise/luxury yacht sector, where demand is believed to be strongest). Costs have fallen and internet speeds have improved significantly over the last decade. Continued percolation of new products to the smaller yacht sector can be expected.

A4.2.6 Technology routes to market

Migration from commercial & superyacht

One possible market development pathway is for the migration of technology from the commercial and superyacht markets into mainstream nautical tourism. Indeed, companies such as Raymarine (a firm that sells into the commercial, superyacht and leisure craft markets) are pursuing product developments to exploit such migration. The development of products for the nautical tourism market still carries commercial risk (due to the relatively limited size of the accessible market), even if the technical risk can be minimised by adapting technologies already proven in other markets. Measures that addressed these risks could encourage a more rapid pace of new product development.

Expansion from non-marine

There is also, in principle, good potential for migrating technologies from non-marine markets into the nautical tourism market. An example of a possible migration path is adaptation of telemedicine and remote health care systems used for tracking the condition and location of patients to provide safety support for people engaged in

nautical tourism. The rapid growth in technologies for an ageing population should generate large potential for such 'dual use' technology deployment.

Pulling together a consortium that possesses the necessary source technologies, adaptation capability and target market awareness is not trivial, and requires enabling investment to seed the development.

Functional integration including safety

Development of systems (such as the ESA EASY project referenced above) that offer more than just safety services is seen as essential to achieve a price/performance point attractive in the nautical tourism market. Three possible approaches are:

- Integrating several functions in a single satellite-enabled device, so that the device cost can be justified against multiple value-adding functions. An example of this is overlaying real-time, location-specific weather warnings onto electronic charting products.
- Simplifying a device and thereby reducing its cost by tethering it to a mobile phone to use the phone's communication channel and GPS function. This approach is already used in mountaineering devices to achieve high levels of functionality at minimum cost.
- Running a nautical safety-related app on a mobile phone, simply using its GPS and communications channel, and access to relevant web services, to provide additional awareness of hazards and risk remediation advice (or other general tourism or utility functions).

A4.3 Problem analysis

A4.3.1 Definition of the problem

The application of satellite applications to the leisure boating sector has, thus far, been less extensive than might have been expected. Whilst developments in satellite technology potentially offer a number of benefits, including safety benefits, to users of recreational craft, these do not correspond to the primary areas of boating safety risks.

Why are new developments in nautical safety needed?

Policy interventions to raise standards of nautical safety are motivated by societal costs caused by poor standards of nautical safety. So it is important to explore the accident statistics that could mobilise measures to promote introduction of satellite-based safety equipment.

Casualty analysis has for a long time been the basis of developing new design rules and changing operational regulations and practices, by learning from previous poor practices that have contributed to casualty numbers.

One approach to assessing "safety" is to consider casualty statistics and the causative system failure. Initial discussions with various authorities involved in boating and yachting in EU, and other research for available data on nautical tourism casualties, indicate poor availability of data from EU sources. This apparent lack of quality data on nautical tourism casualties within Europe is in stark contrast to the data available from some other countries, such as New Zealand and the United States.

Assuming that US casualty statistics are not vastly different from those in Europe, the fatality rate among leisure boat users is significant. Although the rate of 5.2 deaths per 100,000 registered vessels is lower than the 19.2 road accident fatalities per 100,000 registered cars[220], the risk per hour of usage is undoubtedly much higher for boat users. Given the level of investment in road safety, there would appear to be

[220] Road accident data for Europe, as reported by WHO in 2015.

considerable potential for further investment in nautical safety. Analysis of available causality statistics does not imply however that there are significant safety concerns which could be readily allayed through an increase in use of satellite applications. The most common causes of casualties include alcohol consumption, lack of use of personal buoyancy aids and training.

A4.3.2 Causes of the problem

Limited market size

There are demand-side barriers due to the limited size of the accessible nautical tourism market for satellite-based safety equipment. Whilst there are around 6 to 6.5 million boats in the EU, only a proportion of these will be the type of boat requiring technology systems. There is currently no regulation requiring any form of satellite-based systems to be used on boats of up to 24m. Satellite-based systems are only required for boats sailing outside of the range of the existing GSM network. As such the number of customers who would actually need or want to invest in satellite-based systems is likely to be small.

Cultural barriers to safe practices

There is a perception that seas and oceans are beyond the reach of authority, and many boat owners protect their freedom from 'being told what to do' when at sea. This may be part of the reason why many boat owners are reluctant to wear life jackets. A significant proportion of boat owners are likely to perceive mandatory safety measures as inappropriate interference, and may not adopt all discretionary safety measures.

Lack of regulatory standards, drivers and enforcement

The EU Directive on Recreational Crafts 2013/53/EU[221] does not cover navigation, communication and related technology and equipment. Member State regulations on on-board safety equipment vary. There are currently very few instances of requirements for any sort of satellite-based systems. As such there is no requirement on boat owners to invest in such equipment. In addition to the regulatory fragmentation, there is also lack of standards relating to the technical performance required of satellite-based safety equipment.

Although some waters, facilities and countries require boat owners to buy a license and for boats to be registered there are many waters where no formal registration of vessels or users is required. Vessels which cross between different countries' territorial waters generally require proof of ownership, which is why some owners choose to register on a voluntary registry. Smaller boats (which are unlikely to visit foreign waters) are least likely to be registered. The lack of a formal and comprehensive registration system in Europe makes it difficult to impose and enforce any sort of compulsory insurance or basic level of competence for boat owners. It also makes statistical and risk analysis difficult as there is no data about the population of different types of vessel.

Lack of competence

According to the US data, inattention by boat skippers is a key cause of casualties, due to a lack of experience of the potential hazards at sea. It is difficult to persuade a user to invest in skills and equipment that could reduce risk if they are unaware of the risk. Thus the people who could benefit most from risk reduction measures are also the ones least likely to invest in them. However the majority of accidents and lowest levels of competence are typically found in the inshore area i.e. within the range of the GSM network.

[221] Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on Recreational Craft and Personal Watercraft and Repealing Directive 94/25/EC

Adverse price point

The nautical safety equipment market is three or four orders of magnitude smaller than the markets for mobile telephony and automotive safety systems. Products are therefore relatively expensive, in terms of their price/functionality ratio, and purchase of nautical safety systems represent a significant investment for owners. Also, since satellite-based safety equipment is currently recommended, and only occasionally mandated, only in offshore and ocean waters, which most vessels would rarely or never visit, the benefit of ownership is perceived as limited.

The relatively high price deters boat owners from investing in satellite equipment, hence reducing the potential market size further, and acting as a disincentive for equipment manufacturers to invest in development of new satellite equipment.

Risk of rapid technology obsolescence

The relatively high development costs and small market size mean that return periods for investments may be relatively long compared to the likely timeframe for a new technology to be superseded by new developments. This presents a commercial risk to developers and suppliers acting as a disincentive to investment.

Insufficient innovation support

Existing innovation support funds are not adequately targeted or generous enough to overcome the commercial risks linked to the above identified issues. Trans-national and cross-sector projects could be particularly useful in overcoming this barrier.

A4.3.3 Consequences of the problem

The limited and uncertain market for enhanced safety systems for nautical tourism means that the commercial motivation for manufacturers to invest in new products is rather limited. This results in the following adverse impacts:

- Casualty rates in nautical tourism are higher than they could be, often due to lack of basic hazard awareness;
- These casualty statistics, and the media coverage that follows accidents at sea, discourage new entrants into nautical tourism, which impacts on sales of traditional nautical products and services;
- Opportunities for investment in new satellite-based equipment for the nautical tourism market, and the resulting benefits for the wider Blue Economy, are not realised.

A4.4 Baseline scenario

The baseline scenario describes the likely trajectory of innovation in supply of equipment that uses or could potentially use satellite capabilities. This is defined by the current state-of-the-art, and how that is expected to evolve over the next five years.

From a technical perspective, satellite services and the space infrastructure on which they depend are improving in capability (bandwidth, return periods, resolution etc.) and coming down in price. This means that satellite-based services will tend to offer improved price/performance ratio in the future. Two important trends can therefore be identified:

- Improved functionality for existing customers can support purchase of more capable products and services, and introduction of new products and services that have become feasible.
- Increased cost-effectiveness will steadily bring satellite-based equipment into the price bracket of more nautical tourism users, thereby increasing the size of the accessible market for suppliers.

A4.5 Justification for EU action

There is not a clear justification for EU intervention in the satellite applications market.

Although satellite telephony for two-way communication is important in ocean (offshore) sailing, it remains relatively expensive compared to land-based Global System for Mobile (GSM) communications. Land-based GSM is accessible for nearshore activities. Basic signals for mobile phone use can remain usable for around 5nm to 20nm from shore. The range is primarily dependent on the location of GSM towers. Hence satellite-based communication equipment is not strictly necessary when sailing within range of the GSM network. Most nautical tourism activities take place in coastal waters where shore-based GSM networks can be accessed. Such networks will typically provide access at lower cost than the equivalent satellite service.

The relatively small offshore market for satellite-based communication system means that there has been limited bespoke development of satellite-based products for the nautical tourism market. Most satellite-based safety and other products fitted to leisure craft are based on systems for commercial craft. There is a growing trend for lower-cost versions of commercial equipment to be developed in order to capture the top end of the sub-24m leisure boat market. These products can piggy-back on the investment in developing commercial systems. In turn, such services percolate into the smaller leisure boat market.

It is not clear that unmet demand for satellite application services in the leisure boating market constitutes a market failure. Whilst there may be certain services that consumer want but the market does not provide (or provides but at too high a price), it is not clear that this is due to an inability of the market to function. Rather it is due to the relatively small market size and low potential return on investments. Further, it is not clear that the unmet demand is so significant to the consumers that individuals chose not to partake in boating activity because of it i.e. the social and economic costs of unmet demand are limited. There is no clear overriding public interest need e.g. for improved safety, for satellite-based communication. Statistics indicate that the majority of incidents occur in near-shore waters (where GSM networks are available) and do not relate directly to a lack of satellite communication-related services.

Under the baseline scenario, rapid advances in technology and decreasing prices can be expected to continue and the availability of new products and services (satellite based and GSM-based applications) is expected to continue to increase, incrementally satisfying the current unmet demand.

Development in the underlying satellite infrastructure is expected to continue and maritime application are already the target of EU and other support programmes. The nautical tourism sector is a small part of the consumer market for this technology and is not the most significant sector driving the technology's development and hence is not the most appropriate sector in which to focus support for its further development.

It is concluded that EU intervention in the nautical tourism satellite applications market is not justified and hence no intervention options are proposed.

A4.6 Annex A: Recent project assessment

Project name	SeaSearch
Funding programme	ARTES IAP – Feasibility Study Within the theme: Transport & Logistics, Safety & Security, Maritime & Offshore
From - To Dates	2015 to 2016

Relevant objectives & relevance to nautical tourism	The project activities of SeaSearch cover the feasibility of the development of an added value service designed for maritime surveillance offering recognition of suspect activity based on mobile phone detection and identification of suspect vessels using AIS and EO imaging, mainly SAR. Suspect behaviour is identified by vessel activity. Tourist vessels in distress will no doubt also exhibit particular behaviour, which could be included in the DFRC provided software
URL (if there is one)	https://artes-apps.esa.int/projects/sea-search http://www.dfrc.ch/resources/wwais/
Links to downloadable reports	https://artes-apps.esa.int/projects/sea-search

SeaSearch utilises the detection and tracking of mobile phones as input to sophisticated filtering subsystem, WWAIS, Vessel Tracker, which embodies a DFRC (http://www.dfrc.ch/) filter to detect unusual activity.

It is unlikely that a human operator will be able to track and classify all vessel movements in a major sea area and reliably detect all abnormal activities. Multiple sensors, other data sources and data processors together with a mixture of communication channels is the reality of the world explored by SeaSearch. The integration and use of such Distributed Computing Infrastructures (DCIs) creates complex workflows and this is itself a challenge. EU FP7 project SHIWA[222] addresses this key technical issue. SHIWA continues to be maintained at http://www.erflow.eu/ . DFRC's Abnormal Activity Detector is implemented as a stateless web service. It allows easy integration between marine situation picture and abnormal activities, where the tracks can be submitted for analysis. The output is *tracks* with the extension of the *abnormal activity* associated to the specific plots.

The DFRC Abnormal Activity Detector is currently able to detect more than 40 different abnormal activity patterns, and this number is growing. Whereas security concerns may identify abnormal activity such as liaisons between small craft at sea associated with smuggling, people trafficking, gun-running etc., it could also be developed to detect breakdowns or capsize of collisions of direct association with safety of leisure craft such as yachts.

The DFRC abnormal activity detector is a geospatial classifier that allows the highlighting of marine situation pictures with abnormal activity pattern that can be presented as decision support information to the system operator.

It may be possible to introduce additional data sources linked to individual small vessels – these would add to the complexity of building a situational picture but may be needed if Yachts and the like do not carry AIS – mobile phones could of course be the answer here – they are ubiquitous but their reliability may not be sufficient – they won't work if dropped in the sea or if they are switched off or have drained their batteries. The sudden loss of signal could itself be an abnormal event on a tracked vessel which could raise an alarm requiring further investigation.

Situational analysis will be a key part of optimising rescue or remedial measures during an at sea emergency. The remedial action will ideally exploit local maritime assets and provide tactical information such as local meteorological conditions.

[222] http://cordis.europa.eu/project/rcn/95203_en.html

Project name	PROFUMO
Funding programme	ARTES IAP – Feasibility Study Within the theme: Energy, Maritime & Offshore
From - To Dates	Feb 2015 - continuing
Relevant Objectives & relevance to Nautical Tourism	The objective of PROFUMO is the provision of weather routing services to the commercial and leisure maritime community. PROFUMO services are aimed – broadly – at two objectives: improved safety of navigation and fuel consumption reduction. The idea is to establish a cooperative schema where meteo-marine data is collected from standard and non-standard on-board instrumentation. Acquired data is used in the Profumo service centre to provide enhanced meteo-marine forecast and nowcast capabilities on a local scale The system utilises satellite navigation, satellite communications, earth observation
URL (if there is one)	https://artes-apps.esa.int/projects/profumo
Links to downloadable reports	

The idea of PROFUMO is to use ships as distributed meteo sensors in order to retrieve, via satellite together with meteorological data. Allowing improved local forecasting and *nowcasting*.

The routing services can be broadly classified as:

A) Advanced local weather forecasting services -> precise nowcast meteomarine maps and local short term forecast (6 hrs to 24 hrs);

B) Route planning support services -> route planning products based on specific user defined conditions and constraints and taking into account weather conditions along the route;

C) Dynamic route optimisation services -> "on the way" dynamic optimisation of the route based on weather conditions and taking into account fuel consumption minimisation principles and other user defined criteria;

D) **En-route navigation support -> en-route weather alerts and alarms handling and dynamic route re-planning based on safety needs (e.g. direction to protected coves).**

Services classes A B and D already exist on the market, but would be strongly improved through PROFUMO using real data from the cooperating user community. Service C does not exist at present on the market in the way it is proposed within PROFUMO.

Other programmes sponsored by the EU (with USA) whose participants could conceivably cooperate productively include the DRIHM2US (http://www.drihm2us.eu/) This is an FP7 project and the latest of 3 related EU part funded projects dedicated to

providing and using Infrastructure for Hydro-Meteorology. Co-opting vessels in the way that PROFUMO has considered could enhance DRIHM2US' objectives.

In mounting a sea rescue it would be beneficial to have the best possible situational picture including weather.

Project name	EASY Feasibility Study - Easy And Safe Yachting
Funding programme	ARTES – IAP Within the Theme: Tourism, Maritime & Offshore
From - To Dates	December 2012 - February 2014 and 2014 to Dec 2015 (complete demonstration programme)
Relevant Objectives & relevance to Nautical Tourism	Relevant Objectives & relevance to Nautical Tourism. Both phases of EASY had as an objective "one-stop-shop" services for the high-value leisure yachting market mainly for the Mediterranean Sea, integrating various space assets (satellite communications and satellite navigation) to make yachting more reliable, safe and "easy". Three groups of services to be provided would be: *tourist services* (service booking, maps and guides, sea tourism, etc.), *on-line assistance services* (alarm management related to boat malfunctions, intrusion, etc.) and *navigation support services* (route planning, port access, sea conditions, meteorology, bathymetry, route control, nautical cartography, warning about perils and dangerous areas, tracking and tracing, etc.)
URL (if there is one)	https://artes-apps.esa.int/projects/easy-feasibility-study
Links to downloadable reports	

The EASY architecture would be composed of a service centre and onboard units, communicating via terrestrial and satellite networks; onboard units able to interface with the GNSS system; and, integrated satellite communications ubiquitously extending coverage beyond wireless terrestrial networks.

Furthermore, satellite navigation integration would provide a geo-reference for e-tourism services as well as for navigation support services.

EASY Onboard Units would be enable always-on and ubiquitous connectivity handling various types of terrestrial and satellite communication standards, from narrowband (e.g. Inmarsat, Iridium, GPRS) to broadband (e.g. mini-VSAT, UMTS/HSPA, Wi-Max).

There is also an EU project concerned with small vessel life cycle and maintenance monitoring and management, BOMA FP7 EU project (http://cordis.europa.eu/project/rcn/101401_en.html) which though completed continues in other guises and in other EU projects including H2020. Prototype products i-Captain and i-Like from Holonix (https://www.i-captain.com/), could benefit a wider range of boat builders and users as EASY could provide (satellite) connectivity beyond its current connection ranges. The online assistance services have some aspects in common.

Project name	METSAR & CAESAR (two similar projects)
Funding programme	ARTES IAP Within the Theme: Maritime & Offshore
From - To Dates	2014
Relevant Objectives & relevance to Nautical Tourism	To improve the weather input to situational awareness to enable enhanced capability for maritime rescues coordination/control centres. This would enhance the rescue prospects and efficiency for leisure craft in distress at sea. Satellite GPS type information and communications figure importantly in concepts. CAESAR in particular concluded that there was no commercially viable system because the functions are largely provided by government. Individual components might have some prospect of commercial interest. METSAR did not include the use of potentially expensive buoy deployment nor did they produce a detailed conclusion but it is likely that a similar uncommercial conclusions occurred. They did suggest that in refocusing the direction of the study towards that of the user's needs, it was found that satellite and METOCEAN data had been reduced in importance in the overall service; and, the users had identified other functionality which could be deemed more significant.
URL (if there is one)	
Links to downloadable reports	

These two feasibility studies were interested in exploiting highly localised weather/sea condition information from other vessels. In this respect there were similarities with project PROFUMO.

In all three a systems integration approach was conceived. It is worth deconstructing all three taken together and eliciting the most attractive elements for leisure craft safety (reduction of risk of accident, detection of distress and increase of subsequent rescue success).

Project name	SIMONA
Funding programme	ARTES IAP Within the Theme Transport & Logistics, Maritime & Offshore
From - To Dates	Dec 2014 – Current (on-going)
Relevant Objectives & relevance to Nautical Tourism	The aims of SIMONA project are wider than nautical tourism but include it. In particular the aim is to provide an information platform based on the integration of satellite and terrestrial data that can both complement and enhance existing maritime situation awareness services operated by the Italian coast guard and navy over a wide area of the Mediterranean Sea and at the same time provide space-based services bringing functional advantages to private stakeholders like merchant ships. insurance companies and leisure boat users In this respect SIMONA identifies the desirability/need to integrate and exploit Earth Observatory information and commercial shipping Radar information to augment or substitute for AIS – leisure craft typically will not have AIS. Satellite communications GPS etc. are all vital satellite-centred facilities.
URL (if there is one)	https://artes-apps.esa.int/projects/simona
Links to downloadable reports	

SIMONA recently entered its second phase having successfully completed the first: "The major achievements of phase 1 have been: identification of user requirements, description of user scenarios, definition of proposed services, preliminary planning of the demo activities and analysis of the possible market of interest for SIMONA.

Phase 2 started in December 2015. The consortium is currently working on the description of the detailed design of the SIMONA components and the business model".

Project name	PROTECT - Piracy Prevention and Commercial Navigation in Insecure Waters
Funding programme	ARTES IAP Within the Theme: Transport & Logistics, Maritime & Offshore
From - To Dates	Feb 2014 to Current (on-going)
Relevant Objectives & relevance to Nautical Tourism	Private yachts have been intercepted and held to ransom by pirates. In discussing the motivation behind PROTECT the project wrote, *"… Other direct consequences of piracy include increased fuel cost of rerouting, increased insurance premiums, and adverse effects in some communities on tourism and fishing.* *The PROTECT project aims to exploit existing systems and infrastructure in conjunction with applicable space based assets to provide cost-effective added-value technology centred services that provide improved situational awareness to both on-board and shore based stakeholders, based on real-time innovative integration of piracy and sensor information/data."* The technical challenges and technologies being considered during the study coincide with a similar range of issues that would be relevant to a Nautical Tourism study aimed at protecting and rescuing leisure/tourist vessels in danger of distress.
URL (if there is one)	https://artes-apps.esa.int/projects/protect
Links to downloadable reports	

Intended users are:

"… The crew aboard vessels, primarily masters, shore based personnel, as well as maritime counter-piracy authorities require the following capabilities for improved situational awareness:

- The capability to identify suspect vessels e.g. distinguish fishing boats from pirate boats and skiffs
- The capability to track and monitor pirate boats/vessels once identified
- Long-range monitoring of vessels along a route i.e. the capability to monitor vessels further ahead along the planned route e.g. beyond the 20 nautical miles capability that is currently provided
- Capability to access information on suspicious piracy related activity along scheduled routes
- Capability to predict or identify threats in advance and receive appropriate prior notification
- Capability to optimise vessel routing taking into account weather information, fuel efficiency and risk of piracy attack …"

If one substitutes 'yachts' or 'tourist craft' for the words 'pirate boats' one realises the synergy. This is true of all PROTECT's description of work.

PROTECT also goes on to propose additional services (EO imagery, local weather, ship borne radar) to achieve:

1. Capability to detect suspicious vessels by exploiting ship borne radar collaboratively combined with vessel movement pattern analysis to identify suspect vessels.
2. Capability to enable non-pirate vessels to be identified in High Risk Areas (HRA) exclusively via GPS and SATCOMs.
3. Capability to exploit the encyclopaedic piracy information data contained within the system for auxiliary services such as;
    a) A smartphone or tablet device application that can be used to ensure compliance with BMP4.
    b) A smartphone or tablet device application that can be used by authorised personnel to upload information in real time, including photos of suspicious activity into the system.
4. Capability to re-route vessels taking into account likelihood of piracy incident, fuel cost, weather...
5. Capability to utilise EO imagery to identify piracy vessels, skiffs and dhows will be accommodated during implementation of the proposed piracy information data bank.

The ESA website indicates that the study is on-going. However, the report on the website is somewhat out of date.

Project name	MAPP-DEMO and MAPP
Funding programme	ARTES IAP
From - To Dates	MAPP 2014 – 2015 MAPP DEMO 2016 – on-going
Relevant Objectives & relevance to Nautical Tourism	This project is aimed at providing an alert and location service for commercial shipping. The MAPP device is probably large and expensive (little or no physical & cost information is available) but once established the unit size and cost could reduce allowing installations on yacht-sized vessels. The device relies on alerting EO services and utilises satellite communications for over the horizon linking.
URL (if there is one)	https://artes-apps.esa.int/projects/mapp https://artes-apps.esa.int/projects/mapp-demo
Links to downloadable reports	

This is essentially a device rather than an integration study. It will require systems integration. For deployment in leisure craft a modification of the algorithms and criteria determining an alarm for abnormal behaviour would be needed.

Project name	DeSIRE II
Funding programme	ARTES IAP Within the Theme: Aviation & RPAS, Safety & Security, Maritime & Offshore
From - To Dates	Nov 2015 – current (on-going)
Relevant Objectives & relevance to Nautical Tourism	DeSIREII addresses the use of satellites in controlling (information gathering) drones at long range. Such drones could be of great value in SAR activity in support of yachts.
URL (if there is one)	https://artes-apps.esa.int/projects/desire-ii
Links to downloadable reports	

A4.7 Annex B: Evidence sources

Literature

Background sources:

- A European strategy for more growth and jobs in coastal and maritime tourism
- Blue Growth, Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts
- Study in support of policy measures for maritime and coastal tourism at EU level
- Contribution to the EU tourism policy – sustainable coastal and maritime tourism
- Challenges and Opportunities for Maritime and Coastal Tourism in the EU – Results of Public Consultation (Commission)
- Industrial Competitiveness and Market Performance - Study on the competitiveness of the recreational boating sector

Specific sources:

- EU projects (FP7, H2020)
- ESA projects (esp. ARTES)
- IMO reports
- National and EU government agency reports (EMSA, MCA etc)
- Third-party reports (NGOs, consultancies)

Interviews

Interviews have targeted three stakeholder groups. These groups and the respondents consulted are listed below. Knowledge gained from these interviews has helped to evidence the analysis presented in the following sections.

Government and Inter-Governmental

- EMSA
- IMO
- MCA (UK)
- IALA
- Royal Institute of Navigation

NGOs & Trade Bodies

- RYA
- RNLI
- Icomia

Businesses

- Inmarsat
- Raymarine

Annex 5 Marinas and boating

A5.1 Introduction

This topic area focuses on the development of marinas and boating activities in the EU, including the role of marinas in supporting regional development.

The Recreational Craft Directive (2013/53/EU) defines boating activities according to the size of the vessel, its use and means of propulsion. The Directive applies to:

- Recreational craft, defined as "*any watercraft of any type, excluding personal watercraft, intended for sports and leisure purposes of hull length from 2,5m to 24m, regardless of the means of propulsion*".[223]
- Personal watercraft, defined as "*watercraft intended for sports and leisure purposes of less than 4m in hull length which uses a propulsion engine having a water jet pump as its primary source of propulsion and designed to be operated by a person or persons sitting, standing or kneeling on, rather than within the confines of, a hull*".[224]

This topic area defines 'boating activities' as those involving 'recreational craft' and 'personal watercraft' (as defined above), but also includes 'superyachts', defined as recreational vessels with a length of more than 24 metres.

Marinas are specially designed harbours with moorings for pleasure yachts and small boats. They are the most complex and highest quality types of port for nautical tourism. They facilitate many nautical tourism activities by providing safe points to access to the water and providing secure locations to store boats. Many marinas also provide additional nautical and ancillary leisure activities and can be visitor attractions in their own right. They also create demand for boating and other tourism products and services and facilitate linkages between nautical and coastal tourism. They have the potential to act as economic hubs for regional development and can catalyse the development of coastal tourism in specific locations.

Regional development is a broad term but can be considered a general effort to reduce regional disparities by supporting the development and growth of economic activities within a particular region. In the EU, Regional Policy targets regions and cities in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life[225].

This topic area focuses on the issues facing the development of marinas and boating activities in the EU and how these can be addressed to support the future growth in nautical tourism and coastal tourism more broadly, supporting the objectives of Europe 2020 and delivering benefits for businesses and coastal communities. It also examines whether there are current or potential issues which may limit the potential of marinas to act as catalysts for regional development.

A5.2 Topic and situation analysis

A5.2.1 Introduction

The development of marinas and boating activities has the potential to provide many benefits for nautical tourism and coastal economies in the EU. These benefits include the development of alternatives to the mass-tourism model, the ability to attract greater tourism expenditures by attracting a larger number of visitors (and relatively high value visitors) and providing a means of reducing seasonality effects and

[223] Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on recreational craft and personal watercraft (and repealing Directive 94/25/EC)

[224] *ibid.*

[225] http://ec.europa.eu/regional_policy/en/policy/what/investment-policy/

extending the tourism season, thereby supporting the profitability, competitiveness and future potential of tourism in coastal destinations. These potential benefits are significant at the EU level, but can be even greater at the local level, particularly in more remote coastal areas and communities with otherwise limited economic activities.

A5.2.2 Potential benefits of developing marinas and boating activities

The future development of marinas and boating activities provides an opportunity to address some of the key issues facing the wider market for coastal tourism, particularly:

- **Competitiveness issues** – The competitiveness of the coastal tourism sector is being challenged on several fronts. The mass tourism ('sun and beach') model faces increasing competition from low cost destinations outside the EU. Competition between coastal destinations is largely based on price and fails to add value to the EU's coastal tourism offer. These issues are evident in tourism statistics, which suggest that the number of tourist trips to coastal areas of the EU has been increasing over time but is being offset by reduced trip duration and lower average expenditures[226]. While the whole tourism industry is facing similar trends, average expenditures were already lower in the EU's coastal destinations and the reductions in average expenditures have been greater than elsewhere. This has squeezed margins, which causes knock-on effects for access to financial investments required to sustain or improve the tourism offer and attract higher value tourists.
- **Demand volatility and seasonality** – Coastal tourism is particularly vulnerable to seasonal demand and fluctuations caused by climatic, economic and political pressures. Demand for other types of tourism, such as cultural tourism and city breaks, tends to be more consistent over time. A public consultation on the challenges and opportunities for maritime and coastal tourism in the EU was undertaken in 2012. It identified seasonality issues as the top barrier in the EU (ranked as 'very important' by 54 per cent of respondents)[227]. Further, demand can be particularly restricted for islands and peripheral locations which are disadvantaged by structural accessibility issues. The coastal and maritime tourism strategy (CMT strategy) aims to address demand volatility and reduce seasonality by targeting specific types of tourists and activities in the low season.
- **Sustainability issues** – Another major issue with the mass tourism model is the increasing environmental pressures caused by significant and increasing numbers of visitors, visitor movements and developments in coastal destinations. This is a particular issue in the Mediterranean, such as on the Cote d'Azur and in parts of Spain where the mass tourism model has been dominant for many years[228]. Coastal destinations also face challenges from climate change and coastal erosion, which are expected to increase over time. The mass tourism model can also create negative social impacts and place additional pressures on local communities, their identities and cultures. These social and environmental pressures may not be sustainable in the long term and will affect the attractiveness and future tourism potential in many areas. Sustainability issues were also identified as a major issue in the public

[226] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level. (Ecorys estimates based on Eurostat data)

[227] European Commission (2012), Challenges and Opportunities for Maritime and Coastal Tourism in the EU: Summary Report of the Online Public Consultation Results

[228] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level.

consultation on maritime and coastal tourism (the second most common issue, classed as 'very important' by 43 per cent of respondents)[229].

- **Limited skills, innovations and access to resources** – The tourism sector provides relatively low skilled and low value employment which, combined with seasonality issues, can restrict its ability to attract a talented and skilled workforce. This can be a particular issue in coastal areas, which tend to have relatively low levels of education and productivity. The resulting lower levels of professionalism can also have knock-on effects in terms of limiting access to finance.

Developing marinas and boating activities in the EU can help to address these issues and support future growth in coastal tourism. Demand for boating activities, and participation levels, has remained strong despite the economic crisis, and has a longer season than mass tourism. Boating tourism can therefore provide strong demand across seasons and years, although the nature of demand for boating is evolving and suppliers need to continue to adapt over time. Boating also attracts relatively high value visitors. Reducing seasonality and increasing average tourist expenditures can increase the profitability and longer-term viability of coastal tourism in the EU. It can also increase incomes and employment in local economies, and ensure the sector is more competitive and better able to attract investment and a more talented and higher skilled workforce in the future.

Marinas are central to the development of this sector and also play a catalytic role in local and regional economic development. They have an important influence on the wider marine sector by facilitating boating activities by providing storage and access to the water and thereby influencing the number of boats sold and kept in the EU. Marinas and boating activities therefore support output and employment among companies involved in boatbuilding, distribution, repair and servicing, brokerage and retail, boat hire and charter, sailing schools, passenger boat services and other related services and supply chains. These activities generate impacts for local businesses but also support upstream activities, such as manufacturing, distribution and retail, which can be located elsewhere in both coastal and inland locations.

Marinas also contribute to the wider tourism industry by providing tourism infrastructure and services and serving as visitor attractions in their own right. Marinas are therefore able to attract boating and non-boating users, who spend money on the marina site and in the wider local economy, and can therefore act as catalysts for boating and wider tourism activities in their local area.

Marina developments can be used as a tool to trigger local economic development in different locations. They provide a means of distributing the benefits of marinas and boating activities more widely, including more remote coastal areas and communities with otherwise limited economic activities, where they can lead development of the local economy. A study on the use of marina developments to support economic development in the EU found that marinas located in less developed localities can initiate the rapid development of the local economy[230]. As such they offer opportunities to address EU regional development policies and reduce regional disparities.

A5.2.3 Known market size and scale

The nautical industry and services sector is a major contributor to economic growth and employment at the EU level. Marinas and boating activities are important

[229] European Commission (2012), Challenges and Opportunities for Maritime and Coastal Tourism in the EU: Summary Report of the Online Public Consultation Results

[230] Transnav (2013), The Phenomenon of the Marina Development to Support the European Model of Economic

Development.

components of the wider nautical tourism sector. The manufacture, operation and hosting of recreational craft, and associated services, supports relatively high value and skilled employment as compared to most other coastal tourism activities. The sector is estimated to have generated turnover of around €28 billion and employ at least 200,000 people in 2014[231]. This compares to other recent estimates of turnover of €20 billion and 234,000 employees in 2011[232]. Given the lack of comprehensive EU data, there is significant uncertainty regarding these estimates. Evidence suggests that activity levels remain markedly below those seen prior to the 2008 financial crisis[233].

Nautical sector activity is concentrated in the services sector[234] (which broadly corresponds to the boating and marinas market), which generates approximately 59% of economic output[235]. Nautical sector activities are concentrated on the Mediterranean coast, which generates around half of the associated of the economic output and employment, followed by the North Sea (22%), Atlantic Ocean (17%) and Baltic Sea (12%) regions[236].

There is an overall lack of specific data on the size, type and capacities of the marina industry in Europe. As a result, there is some uncertainty about the number, capacity and utilisation of coastal marinas in the EU. The European Boating Industry (EBI) estimates that there are over 4,500 marinas in Europe, which offer 1.75m berths[237]. Other sources suggest there are around 4,400 coastal marinas and mooring sites in Europe[238], of which approximately 1,600 are high quality marinas providing more than 400,000 marina berths[239]. However, all of these figures appear to include freshwater marinas. Removing freshwater marinas from these estimates suggests that the number of high quality coastal marinas in the EU is likely to be around 1,040, with these facilities providing approximately 360,000 marina berths (excluding the Black Sea) (see Table 10).

The location of these marinas and berths by sea basin is presented in Table 10. The data suggest that marinas in the Mediterranean are relatively large, averaging almost 430 berths, while those in the Baltic Sea are considerably smaller, with an average of around 160 berths per marina. The data also suggest a similar picture to Table 10, with 48 per cent of marina berths in the Mediterranean, 43 per cent in the Atlantic Ocean and North Sea and 9 per cent in and around the Baltic Sea.

[231] Based on extrapolation of ICOMIA data for 2014 for a subset of EU MS, assuming a linear relationship between MS nautical sector and the size of the economy.

[232] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth'; COM(2014) 254 final/2 of 13.5.2014

[233] Stakeholder interviews; and *ibid.*

[234] Including: boat repairs and services, boat and watersports charter/rental, sailing schools, boat dealers/brokers, chandleries, marinas and financial and other professional services.

[235] Based on data for six MS sourced from ICOMIA Statistics Book 2015.

[236] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level

[237] http://www.europeanboatingindustry.eu/eu-affairs/tourism#B

[238] www.portbooker.org

[239] ADAC (2010), Marinaführer, Deutschland, Europa.

Table 10. Coastal marinas and berths by sea basin, 2010

	Mediterranean Sea (Europe)	West Europe / Transatlantic	Baltic Sea and countries around the Arctic Circle	Total
High quality marinas	401 (39%)	436 (42%)	203 (20%)	**1,040**
Marina berths in high quality marinas	171,158 (48%)	153,896 (43%)	33,060 (9%)	**358,114**
Average berths per high quality marina	427	353	163	**344**

Source: ICF analysis of ADAC (2010), Marinaführer, Deutschland, Europa.

However, these figures focus on high quality marinas only and there is currently no robust estimate of the total number of coastal marina berths in the EU. It is assumed that the EBI estimates are the most reliable, which suggest that there are 4,500 marinas and 1.75 million berths, although this includes coastal and inland marinas and berths. These estimates can be combined with the ADAC estimates, which suggest that coastal marinas account for 65 per cent of all 'high quality' marinas in the EU. If it also assumed that coastal marinas and berths account for 65 per cent of the EU total, then there are likely to be around 2,900 coastal marinas in the EU, providing approximately 1.1m coastal marina berths.

The marinas sector in the EU is estimated to have a turnover of between €3bn[240] and €4bn[241] (i.e. around a quarter of the broader recreational boating services sector) and to employ between 40,000 and 70,000 people[242].

The EBI estimates a total EU boat park[243] of 6.3 million vessels and suggests that 48 million EU citizens regularly participate in watersports, 36 million of whom are regular participants in boating activities[244]. However, these figures cover boats and boating activities on inland as well coastal waters. The lack of a central registration system makes it difficult to produce accurate estimates of boat ownership or track trends over time. While reductions in disposable income have curtailed luxury and recreational spending, it is difficult to estimate the full impact of the financial crisis in 2008. Evidence collected from the stakeholder interviews suggests that while boat ownership and boating participation have remained relatively stable in terms of overall numbers, there have been more significant changes to:

- Purchases and production of new boats (which have fallen significantly since 2008 but are now starting to show the first signs of recovery in some Member States)[245].
- The size of vessels being purchased and used for boating (e.g. increasing demand for smaller vessels).
- Demand for marina berths and waiting lists (which have fallen in many areas since 2008 due to lower demand for boating and the decreasing average size of

[240] Estimate based on UK revenue per coastal marina berth (drawing on ICOMIA 2014 turnover data and BMF estimate of number of UK coastal marina berths), applied to the total estimate of 1.1 coastal marina berths in the EU.

[241] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[242] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[243] 'Total boat park' is defined as the total boat fleet – i.e. the total number of recreational boats in use/service/ownership in a particular area.

[244] http://www.europeanboatingindustry.eu/eu-affairs/tourism#B

[245] Stakeholder interviews

vessels, which either require smaller marina berths or are more likely to be removed from the water and kept on trailers or dry storage systems, thereby reducing pressure in marinas).

- The demographic profiles of boaters (e.g. increasing average age of boaters).
- The types of boating activity (e.g. growth of shared ownership and charter activities).

These trends and issues are described in greater detail in Section A5.3 below.

A5.2.4 Structural and geographical characteristics

The spatial distribution of marinas and boating activities is aligned with the location of marinas, since this is where most boats are stored and/or are able to gain access the water. These trends are evident from the above data, which suggest strong correlation between the share of marina berths and the economic contribution of marinas and boating activities in each sea basin. For example, the Mediterranean Sea is estimated to account for 48 per cent of marina berths in the EU and 49 per cent of the economic contribution of marinas and boating activities. Similarly, the North Sea and Atlantic Ocean are estimated to account for 43 per cent of marina berths and 39 per cent of the economic impacts of marinas and boating, while the Baltic Sea is estimated to account for 9 per cent of marina berths and 12 per cent of the economic impacts of marinas and boating.

Although marina models are very diverse, two main types can be identified[246]:

- Established locations (i.e. old towns/cities by the sea) where demand is already in place and no additional infrastructure is needed. In these cases, marinas focus on the provision of services to boaters and are likely to be part of a broad spectrum of tourist attractions in the area.
- Locations with no existing demand but great potential, where marinas are established and used to trigger local development (i.e. providing private investment to revitalise infrastructures and local services). In these cases, the marinas are used as attractions, to act as a leader in the region's economic development. This model is common in less developed areas and may be particularly relevant for future economic progression in Europe, as it allows for diversification that opens up other development options.

There are both private and public (municipality/regionally) owned marinas. Some studies (such as Ecorys, 2015) have noted the emergence of private owners that operate a chain of marinas or marina clusters. Major private marina investors include: Compagnie des Ports du Morbihan (FR), Yacht Havens Group Limited (GB), Ste du Nouveau Port Vallauris Golfe-Juan (FR), Lamda Flisvos Marina α.ε. (GR), Pampas Marina Aktiebolag (SE), and Marina Dalmacija d.o.o. (HR)[247]. Nevertheless, the market is typically fragmented as most marinas are small or medium sized enterprises that operate on their own and have a relatively local focus.

A5.2.5 Catalytic role of marinas for regional development

Many coastal economies are dependent upon tourism activities. These are an important source of income and employment in coastal communities and provide additional benefits including local investment and infrastructure development, health and safety improvements, etc.[248] Marinas play a major role in realising these benefits. They support local income and employment through their core activities of providing

[246] Kizielewicz, J. and Lukovich, T. (2013). The Phenomenon of the Marina Development to Support the European Model of Economic Development. TransNav. V7, N3, September 2013

[247] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

[248] UNEP (2009), Sustainable Coastal Tourism: An Integrated Planning and Management Approach

marina berths and related services. However, marinas also provide additional indirect benefits for local economies by:

- Purchasing goods and services from local and regional suppliers as part of their day-to-day operations.
- Influencing the number of boats sold and kept in the EU, which supports upstream activities including boat-building, distribution and retail services[249].
- Providing a marketplace that links boaters (consumers) and local suppliers of boating goods and services such as boat repair and maintenance, chandlers and brokers, which supports incomes and employment in the boating supply chain.
- Attracting boaters to spend money in the local economy when visiting the marina, which supports the local tourism economy.

It is also common for marinas to support other local tourist attractions and events by raising awareness amongst marina visitors, and acting as a tourist information service. Some marinas provide additional services beyond their core marina offer, which can offer further economic benefits for local coastal economies. For example, some marinas are able to:

- Increase the accessibility of the waterfront and offer a range of other leisure and tourism services (e.g. restaurants, hotels and shops) that attract additional 'non-boating' visitors, as well as boaters, to spend money on the marina site and in the local economy.
- Facilitate growth in other sectors, such as water transport and renewable energy, by providing berths for ferries or maintenance vessels (e.g. for offshore wind farms).

In summary, marinas can contribute to local regeneration and economic development through their core activities, increasing the attractiveness of coastal destinations to visitors, and by stimulating additional economic activity and employment.

The nature and scale of direct and catalytic development impacts associated with marinas and boating activities are poorly documented, although some studies demonstrate the principal mechanisms and impacts (e.g. British Marine Federation (2007)[250], Bizarri, C. and La Foresta, D. (2011)[251], Kizielewicz, J. and T. Lukovic (2012)[252], Luković (2012)[253]). For example, the British Marine Federation (BMF) found that every job in the 'core' coastal marinas sector in the UK supports a further 12 jobs in the local economy (through the activities of tenant businesses, purchases from suppliers and visitor expenditures in the local economy). The Marina Industries Association of Australia (MIAA) has presented similar findings, which suggest that the activities of marina operators account for around one in four of all people employed on marina sites in Australia in 2010-11 (or one in seven people if contractors providing further services at marinas are also included).[254]

Similarly, a number of the marinas investigated for the BMF study were found to be effective regional catalysts, supporting local regeneration, the creation of high value jobs, and reduced seasonality of employment and turnover. Some were able to do so

[249] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

[250] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

[251] Bizarri, C. and La Foresta, D. (2011), Yachting and pleasure craft in relation to local development and expansion: Marina di Stabia.

[252] Kizielewicz, J. and T. Lukovic (2012), The Phenomena of the Marina Development to Support the European Model of Economic Development, TransNav, Vol.7/3.

[253] Luković (2012) , Nautical Tourism and Its Function in the Economic Development of Europe, Visions for Global Tourism Industry - Creating and Sustaining Competitive Strategies

[254] MIAA (2012), Significant economic and employment impact, Position Paper #12, Marina Industries Association of Australia

purely by expanding and improving their core marina offer – thereby improving the image and attractiveness of the marina and the local area to visitors, and inspiring local businesses to raise the quality of their own goods and services – while others integrated additional leisure facilities such as cinemas, restaurants, and retailers, or sought to develop closer connections with other local tourist attractions.

There is also evidence of the impacts of new marina developments in the EU. Table 11 details changes in a number of different indicators that occurred in an economically depressed area of Croatia after the development of a new marina[255]. The data show significant increases in population (particularly working age population), employment, and the number tourism and other businesses.

Table 11. Economic progression of Rognozica, Croatia after the development of Marina Frapa

Development Indicators	Before marina (1996)	After marina (2005)
Local population	350	Over 2,000
Average age	Over 70	About 40
Number of employees	30	800
Number of SMEs	10	100
Price of land per m^2	10-20	150-300
Number of restaurants	1	8
Number of cafes	2	15
Number of shops	2	9
Number of exchange offices	0	2
Number of medical centres	0	4
Primary schools	0	2

Source: Luković (2012), Nautical Tourism and Its Function in the Economic Development of Europe, Visions for Global Tourism Industry - Creating and Sustaining Competitive Strategies

Marinas are also well placed to support wider economic diversification, such as through the development of economic clusters. Clusters can support increased productivity and operational efficiency by: facilitating access to goods, labour, and knowledge; easing coordination and cooperation between firms; helping to raise awareness of best practice; enabling innovation; and harnessing synergies[256]. This, in turn, can provide a range of benefits including increased revenues, enhanced competitive advantages, access to new customers and markets; economies of scale; improved relationships with the wider community and businesses; and improved visibility[257]. Marinas can play an important role in facilitating the growth of such clusters, thereby aiding a variety of activities and sectors, although their ability to perform this role is dependent on a number of factors, including:

- Access to appropriate space for diversification and/or expansion of marina facilities.
- Availability of funding for the required developments.

[255] Luković (2012), Nautical Tourism and Its Function in the Economic Development of Europe, Visions for Global Tourism Industry - Creating and Sustaining Competitive Strategies

[256] Ecorys (2014), Support Activities for the Development of Maritime Clusters in the Mediterranean and Black Sea Areas

[257] McKinley, E. (2012), Marina 2020: A Vision for the Future Sustainability of Channel / Arc Manche Marinas

- Wider engagement and relationships with prospective 'cluster' members and providers of business services.

Key success factors in the development of clusters are:

- Diversification and harnessing synergies between marinas and between marinas and other businesses.
- Business-to-business and research cooperation across sectors to build new value chains, ideally with coordination between business, research, and government.
- Competency development and knowledge sharing through cooperation with specialised educational institutes, as clusters allow the development and retention of specialised skills that are essential for building competitive advantage.
- Joint promotion of the cluster, its members, and its products internationally.
- Smart infrastructure and planning, including sharing infrastructure and coordinated zoning to avoid conflicts and overlaps.
- Trans-boundary cooperation to enable access to markets, allow clusters to jointly address challenges, and support learning.[258]

A5.3 Problem definition

This section focuses on specific problems affecting the development of marinas and boating activities and their wider tourism and economic impacts. These problems have been categorised as:

- **Demand issues** – focusing on volatility of demand and constraints to the demand for boats, equipment, and boating and marina services. This affects the expenditures of boaters on boating goods and services but also their tourism expenditures on other goods and services. This has implications for the revenues, incomes and employment amongst suppliers of marina and boating services, the marinas and boating supply chain and the wider tourism economy;
- **Supply-side issues** – focusing on constraints and restrictions to the development of marinas and boating goods and services. These issues can affect the ability of marinas and boating businesses to react and respond to the changing demand from consumers, exploit opportunities and enhance the economic benefits for the boating and tourism businesses and the wider local and regional economies; and
- **Issues restricting the movement of boats and boaters** – focusing on regulatory barriers and awareness issues that can restrict the movement of boats and boaters between Member States but also movements between local areas and regions within individual Member States.

A5.3.1 Identification of the problem(s)

A5.3.1.1 Demand issues

The demand for boating can be defined as demand for boats and equipment but also demand for boating and marina services. The key demand issues relate to:

Volatility of demand and demand constraints

Headline levels of participation in boating and the demand for boating tourism have remained broadly stable over time, despite the financial crisis. However, there are

[258] Ecorys (2014), Support Activities for the Development of Maritime Clusters in the Mediterranean and Black Sea Areas

high levels of discretionary expenditure in purchasing boating goods and services and boating activities. These expenditures are highly dependent on consumer confidence and are therefore vulnerable to economic pressures and have fallen since the financial crisis in 2008 following a long period of strong growth.

The European boat-building industry was estimated to have grown by 228 per cent between 1998 and 2008[259], driven by expansion in Italy, the Netherlands, Germany, France and the UK. However, the EBI stated in 2013 that *'since 2008, the boating industry was harshly hit by the financial and resulting economic crisis and saw its current production divided by two compared to 2007 levels'*.[260] The main driver has been falling demand from European consumers and it is estimated that domestic boat sales have fallen by 60 to 80 per cent since the economic downturn, while new boat registrations in the EU have fallen by 40 per cent since 2009[261]. Boat-builders have consolidated their models and ranges to save costs and the International Marine Certification Institute (IMCI) reported that the number of boat models seeking certification has fallen by more than half and continues to fall (with 12 per cent fewer models in 2015 compared to 2014)[262]. Many manufacturers have also reduced the size of their workforce and employment in the sector fell by five per cent between 2008 and 2012. The largest declines in employment were experienced in Spain, Croatia and Sweden where employment fell by around 50 per cent and in Italy, Finland and Portugal where employment fell by around a third[263].

Eurostat Prodcom data suggests a smaller decrease of 12 per cent in boat production values between 2008 and 2013, and a ~30 per cent decline in value added over a similar period. There were significant differences between Member States; production values fell by 71 per cent in the UK and by 82 per cent in Italy between 2008 and 2013[264]. Overall production values have fallen by less than demand from EU consumers because of the actions of EU boat-builders to shift their focus towards exports. This strategy has already delivered some successes as export sales increased significantly in 2013, including a 47 per cent increase in exports to North America[265].

However, there are also barriers to the further expansion of EU boat exports. EU manufacturers are particularly concerned about differences between the EU and the US in the standards for recreational boating. They would like greater alignment of the ISO standards, as used in the EU, and AYBC standards in the US[266]. Lack of harmonisation could offer a comparative advantage (in the US market) to US manufacturers. EU exports are subject to import tariffs in China and Brazil. These reduce the competitiveness of EU boat-builders in these significant markets[267].

There are now signs of recovery in both consumer confidence and production levels and values, although these remain considerably lower than 2008 levels. Stakeholders reported that domestic demand was starting to recover in some Member States, particularly for smaller vessels. This is likely to reflect the fragile nature and slow rebuilding of consumer confidence in the sector, as purchases of the smallest and cheapest vessels are returning, possibly in advance of more expensive purchases. Stakeholders also reported that demand for superyachts appeared impervious to the economic downturn and had remained strong throughout the financial crisis.

[259] Ecorys (2012), Blue Growth: Scenarios and Drivers for Sustainable Growth from the Oceans, Seas and Coasts – Marine Subfunction Profile Report: Coastal tourism and yachting (4.1)

[260] European Boating Industry (2013), Contribution to the EU Tourism Policy – Sustainable Coastal and Maritime Tourism

[261] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[262] Interview with IMCI.

[263] Eurostat Structural Business Statistics (NACE C3012) – excludes UK data

[264] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[265] *ibid.*

[266] *ibid.*

[267] *ibid.*

The overall weakness of consumer demand and shifts in relative demand for different types of vessel have implications throughout the boating industry. The reduction in new boat purchases has impacts on boat manufacturers. However, to the extent that boaters are more likely to make repairs and improvements to their current vessels rather than purchase new ones, opportunities are created for boat repair and maintenance providers, and for producers and suppliers of parts and materials.

The changes to demand also have implications for marinas. Capacity issues (i.e. unmet demand and waiting lists for marina berths) have generally eased due to reduced demand for marina services. The smaller size of vessels seeking marina berths is prompting marina operators to reconfigure marina layouts to provide more dry storage and to provide improved access for smaller vessels (cranes, slipways, etc.). There is also increasing pressure on prices as boaters seek to reduce costs.

Changing trends and profiles of demand

The EU has an ageing population and the average age of boaters is also increasing over time. The average age of boaters is estimated to have increased from around 45 to 55 years over the last ten years[268]. Around 20 per cent of the EU population will be over 65 in 2020 and this is expected to increase to 30 per cent by 2060.[269] This demographic change has a number of potential benefits for marinas and boating. Older people have relatively high purchasing power and more free time in which to travel and participate in activities such as boating, and do so throughout the year. However, this group also has different demands to younger people. It is more likely to prioritise convenience, comfort and safety and require higher levels of accessibility and support. This is likely to generate new demands for marina and boating services and could potentially require the adaptation of marinas, boats and equipment to better meet the needs of older people and make boating more accessible.

A study in Germany suggested that boats and boating equipment should be designed to better meet the needs of ageing boaters. It suggests that there would be significant benefits from designing boats and marinas to meet the physical needs of older users, and that enabling older people to use boats for an additional five years could add €13bn to the German economy alone.[270] [271] However, interviews with stakeholders suggested that this issue is greater for boating equipment, such as electronic winches and improved safety equipment to facilitate movement around the vessel, rather than the design of vessels themselves.

As well as serving demand from older boaters, the boating industry also wants to attract younger people and reduce boating 'drop-out', where people obtain a boat licence but do not go on to own a boat or become regular participants in boating[272].

Stakeholders suggested that it can be difficult to attract younger people to boating due to their lack of available capital, greater family and work commitments, and increasing competition for leisure time and expenditures from other recreational activities. This younger age group is also driving a trend of increased chartering and shared ownership of boats. Chartering has proven to be more resilient to the economic downturn. It provides a cheaper means of participating in boating activities than boat ownership.

[268] *Ibid.*

[269] European Commission (2008), Regions 2020: An Assessment of Future Challenges for EU Regions.

[270] Forschungsvereinigung für die Sport- und Freizeitschifffahrt e.V. (2012). Alters- und geschlechtsabhängige Referenzdaten der Leistungsfähigkeit von Wassersportlern bei Aktivitäten auf Motor- und Segelyachten - Folgerungen für den Bootsbau.

[271] European Boating Industry (2013) Contribution to the EU Tourism Policy – Sustainable Coastal and Maritime Tourism

[272] Around 70,000 people acquire a boating licence in Germany each year but only around 15,000 actually go on to participate in boating. Source: European Boating Industry, newsletter.

Many of the national boating associations in the EU have introduced campaigns to encourage participation in boating, particularly amongst the younger age groups. These campaigns include *'Start Boating',* an online promotional campaign taking place in Germany in 2016, which is complemented by a series of events offering trial experiences. Other similar initiatives currently taking place include *'#Embarcate'* in Spain, *'Fête du Nautisme'* in France and *'Navegar m'è dolce'* in Italy.

A5.3.1.2 Supply-side issues

The supply-side issues relate to the producers of boating goods and providers of boating services, including the owners, developers and operators of marinas. The supply of boats and boating goods is generally responsive to changes in demand. However, the supply of marinas and marina services can be less responsive to demand-side changes as a result of barriers to innovation and investment which are described below.

The key supply-side issues relate to a lack of innovation and investment (particularly in new and existing marinas) and the limited role of marinas in regional development.

Lack of innovation and investment (particularly in new and existing marinas)

A key issue affecting the development of marinas and boating activities is a lack of innovation and limited investment, particularly marina investment. This affects the ability of suppliers in the sector to adapt to the changes in demand for marinas and boating services and service the new models of demand effectively. A survey of marinas undertaken in 2015 found their investment plans were mainly on hold[273].

The stakeholder interviews undertaken for this study also reported a general lack of innovation and investment across many marinas. This spanned from relatively low cost investments, such as electronic booking systems for berths, to more significant investments such as the replacement of concrete piers with floating pontoons (that provide easier and level access to vessels at all times and thereby meet the needs of older and less mobile boaters).

There is also a lack of investment in the development of new marinas. However this has become less of an issue since the constraints on marina capacity have eased in many areas due to falling demand and smaller vessel sizes. There is a lot of previous evidence describing the lack of marina berths across the EU. For example, ICF undertook a survey for the BMF in 2006/07 which found that 68 per cent of UK marinas reported excess demand for berths of all sizes, while 82 per cent reported excess demand for larger berths of more than 14m[274]. However, demand for berths changes over time and there is a lack of up to date information relating to overall berth capacity and waiting lists by marina or region. The European Boating Industry (EBI) has highlighted:

- A lack of visitor berths, particularly in the Mediterranean Sea, which can discourage tourists from travelling between marinas, and thereby restrict tourism spend.
- A lack of dry storage for boats, which is particularly useful for small vessels that can be lifted from the water and stored on land, freeing up space in the marina and reducing the impacts of salt water on the vessels themselves.[275]

There appear to be capacity constraints for superyachts. More than 60 per cent of superyachts are based in the Mediterranean sea basin and, while the number of

[273] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[274] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands.

[275] European Boating Industry (2013), Contribution to the EU Tourism Policy – Sustainable Coastal and Maritime Tourism

superyacht berths is increasing (most notably in Italy), the number of berths in the most popular cruising zones is lag behind demand[276].

Stakeholders reported considerable variance in capacity issues between areas. They suggested that marinas in many areas of the EU now have spare capacity. Waiting lists had disappeared for some marinas in the south of France for the first time, and the same had happened in the Solent in the UK (though most marinas in these areas remain at, or close to, full capacity). There continue to be ongoing capacity constraints in locations such as Ibiza and Majorca and some large cities, including Stockholm and Gothenburg in Sweden. There are also increasing opportunities for marina development to meet increasing demand in Eastern Europe (e.g. Romania, Bulgaria and Poland).

There are many issues causing a lack of investment in marinas. They include: the small size, local focus and fragmented nature of businesses in the sector; a lack of competition between marinas; limited access to finance; a lack of certainty and security for marina operators and limited time periods over which to receive a return on investments; and regulatory issues that increase administrative burdens, costs and confusion for marina developers and operators.

The limited role of marinas in regional development

Overcoming the demand and supply side challenges described above requires an integrated approach to the management and development of marinas[277]. However, the fragmented nature of the marina segment, and the lack of integration between marinas and planning authorities at a regional (and inter-regional) scale, has also limited the broader role of marinas in regional development.

Again, there is variation among Member States. In the UK, the potential of marinas to support regional development is reported to have been hampered by a lack of linkages between marinas and local authorities, while in France, linkages are stronger but funding as well as policy direction is reported to be lacking[278]. For marinas to be growth catalysts they must be embedded in relevant strategies at local, regional, national, and sea-basin scales, and benefit from effective, multi-level governance.

A5.3.1.3 Issues restricting the movement of boats and boaters

The free movement of boats and boaters is important for the future development of marinas and boating activities in the EU. Restrictions on the movements of boats will:

- Affect boaters' expenditure on fuel, equipment, marina fees, etc., with knock-on impacts on supply chains.
- Affect the expenditures of these boaters on tourism, with impacts on coastal economies.
- Influence the appeal of boating for some consumers, potentially changing levels of participation and the associated boating and tourism-related expenditures and resulting impacts.

There are a number of issues affecting the movement of boats and boaters. Some overlap with topic areas covered in other annexes of this report (e.g. the lack of harmonisation of rules and regulations relating to skipper licences and boat safety equipment) and are not repeated here. Others are caused by a lack of information available to boaters about marinas, boating and leisure facilities in different locations and other factors, such as taxation of boats. These are described in more detail below.

[276] Superyacht Intelligence (2011), Superyacht Intelligence Quarterly: Marina Capacity and Berth Analysis Report.

[277] McKinley, E. (2012), Drivers for Marina 2020 in the Channel Region: A Draft Report.

[278] Robins, D. (2012), Identifying Best Practice in Channel Arc Manche Marinas.

A5.3.2 Causes of the problem

A5.3.2.1 Demand issues

Influences on the demand for boating include:

- **Economic factors (and consumer confidence)** – Demand for boating is particularly sensitive to consumer confidence and economic conditions. Boating-related expenditures are discretionary and are typically amongst the first expenditures to be foregone during times of adversity. The weak state of much of the EU economy in recent years has affected boating and tourism expenditure, with impacts on the marinas and boating sector and its supply chain, and the wider coastal and maritime tourism sector.
- **Increasing competition for leisure time** – Boating activities are competing against an ever increasing number of alternative leisure interests for the time and expenditures of participants. There is some evidence that the number of leisure pursuits undertaken by the typical family is growing over time. For example, one stakeholder reported that the average family in Sweden has three times more leisure interests than it did in the 1970s.

  This not only impacts on the overall participation levels but also reduces the frequency with which the average consumer goes boating. This has knock-on impacts for boat ownership and boating expenditures (someone who sails once or twice a year is unlikely to take on the expense of owning a boat). This is one of the reasons for the recent increases in boat charter activities and is also part of the rationale for campaigns to encourage new entrants to try boating.
- **Perceptions of boating costs and affordability** – Boating is often perceived to be expensive. There are, however, many models and options for boat ownership and boating participation. The industry believes that lack of awareness of these options restricts participation and is another reason for the recent 'go boating' campaigns.
- **Tax burdens** – The taxes applied to boats and boating services contribute to its overall cost. In some cases boat owners have experienced tax increases as governments seek to raise tax revenues following the financial crisis. For example, recreational boats are considered a luxury product category in Spain and owners now have to pay a matriculation tax of 12 per cent (for boats in excess of 8 metres) on top of VAT, which is charged at 21 per cent[279]. High levels of VAT were also reported as an issue for marinas and a barrier to the rental of marina berths. Stakeholders questioned why marinas should pay higher rates of VAT than other tourism facilities, such as caravans, campsites or hotels.

A5.3.2.2 Supply issues

This section describes factors influencing innovation, investment in marinas and boating, and the role of marinas in regional development. These issues include:

- **Economic factors (and business confidence) –** Economic factors have had a significant impact on business confidence and the willingness and ability of businesses to invest, innovate and make the changes needed to satisfy the changing demand for marinas and boating. A survey undertaken in 2015 found that more than half (54 per cent) of boating manufacturers felt the economic crisis was ongoing, some seven years after the financial crisis of 2008. Just over 60 per cent reported that they could now see some positive developments.[280]

[279] However, an exemption from the matriculation tax was introduced in 2014 for charter boats in Spain.

[280] *ibid.*

- **Leases and concession policies** – Most of the EU coastline is owned by national governments. The development of a new marina has often involved a private company undertaking the construction, development and operation of the marina in exchange for the right to the income it generates for a fixed period of time. The specific form of contract varies between Member States, but these 'concessions' lasted for 30 to 50 years. In France, there was considerable development of marinas in the 1960s and 1970s. Many of these concessions are now expiring, at which point they can be re-tendered, or the marinas revert to State control. Concession periods in Spain were often shorter – around 20 years – and many have already expired. The approach of the end of the concession period can affect the operator's willingness to invest in the development or maintenance of the marina as it may not have sufficient time to achieve a return on the investment.

  The issue is a particular problem in Spain, where there has been a tendency to allow marina operators to continue to manage sites after concessions have expired without a new concession being agreed, or by means of 12 month rolling leases. For example, it was recently reported that 12 of the 36 marina concessions in the Valencia Region were operating on this basis[281]. This creates uncertainty over future ability to operate and is likely to have a negative effect on levels of investment in these marinas.

  Stakeholders generally considered the open tender process to be fair but confirmed that marina investments need the security provided by a concession contract of adequate length. Renegotiating and extending the concession may be an option where current contract does not provide sufficient time to make required investment viable.

- **Sector fragmentation and local focus restricting innovation and product diversification –** Fragmentation of the sector and the small size of the typical marina and boating business creates barriers to innovation and investment. It can also affect capacity for clustering, collaboration and knowledge exchange and the role of marinas in regional development. A lack of product diversification and innovation strategies was identified as the third most common challenge for maritime and coastal tourism in the EU in the Commission's 2012 public consultation[282].

  The marinas and boating sector is predominantly made up of small and medium-sized enterprises (SMEs). The EBI states that 97 per cent of businesses in the sector are SMEs[283]. They typically do not have the capacity for strategic engagement with other marinas or authorities, e.g. through marina clusters, and face particular issues in accessing finance[284]. The value chain is often fragmented and geographically dispersed, operating under 'closed' business models, which prevent spill-over effects and the ability to engage in joint marketing and promotional activities[285].

  While some of the above issues could be addressed, at least in part, by developing marina clusters, the fragmented nature of the sector also creates barriers to clustering. The key barriers to clustering are[286]:

[281] http://www2.euroweeklynews.com/3.0.15/news/on-euro-weekly-news/costa-blanca-south-torrevieja/135185-expired-marina-and-yacht-club-concessions-get-a-year-s-amnesty

[282] EC (2012b), Challenges and Opportunities for Maritime and Coastal Tourism in the EU: Summary Report of the Online Public Consultation Results

[283] http://www.europeanboatingindustry.eu/facts-and-figures

[284] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[285] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector

[286] McKinley, E. (2012), Marina 2020: A Vision for the Future Sustainability of Channel / Arc Manche Marinas

- Concerns regarding a loss of competitive advantage through increased collaboration.
- Wide variation in the needs of marinas linked to the significant differences in their size, range of services, ownership structure, management approach, funding opportunities, and in the regulations they are subject to.
- Limited opportunities for diversification due to location, size, resources, space, market demand, financial constraints, and the size of the local market.

Uncoordinated and fragmented messages from marinas to public authorities can also result in weak lobbying effects on marina-relevant regulation and public policy, resulting in less favourable regulatory conditions than may otherwise be the case. This also acts to further restrict the role of marinas in regional development.

- **Access to finance** – Access to finance is a generic issue for EU businesses across all industries, including those associated with marinas and boating activities. Since 2008 finance has been difficult to access, with fewer and smaller loans provided by banks and other credit providers, especially for large projects such as marina developments. Historically some marina developments have benefited from public investment and availability of this has also declined. The BMF reported that the cost of marina infrastructure can be prohibitive unless other forms of value creation (e.g. hotels, restaurants) are incorporated into the development[287]. The reduced supply of finance for marinas is likely to make the inclusion of additional facilities and services even more important.
- **Lack of awareness of the economic benefits and contribution of marinas and boating activities** – There is little robust evidence on the economic contribution of marinas and boating activities at an EU level and the importance of marinas as catalysts of regional development[288] [289]. Research has also found cases of public authorities not having a good understanding of the value of marinas to their communities[290]. Stakeholders believe that many of the supply-side barriers are linked to policy-makers' low level of awareness of the economic contribution made by marinas and boating. The lack of engagement with the marina sector on regional planning was seen as a further manifestation of this problem. It was suggested that economic impacts and tax revenues could be increased significantly if marinas and boating activities were a greater priority for local, regional, national and European organisations. The above analysis has highlighted the significance of these activities as well as the lack of a comprehensive and robust study of the economic benefits of marinas and boating activities at an EU level.
- **Regulatory issues and a lack of harmonisation** – Regulation, particularly planning and environmental legislation, can hinder development and diversification plans so constraining long-term growth and productivity of the marina and boating industry[291] and their ability to provide the diversified set of services that allow them to maximise their roles as economic catalysts. ECSIP (2015) suggests that national regulations are by far the strongest barrier to marina development. EU-level regulation targeted specifically at marinas and

[287] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

[288] Ecorys (2012), Blue Growth Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts

[289] Kizielewics, J. and Lukovich, T. (2013). The Phenomenon of the Marina Development to Support the European Model of Economic Development. TransNav. V7, N3, September 2013

[290] McKinley, E. (2012). Marina 2020: A Vision for the Future Sustainability of Channel / Arch Manche Marinas. Industry Report. Recommendations for Best Practice. University of Chichester

[291] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

boating activities is limited to the Port Reception Facilities Directive and the Recreational Craft Directive. Other directives directly or indirectly affect marinas and operations, mostly with respect to environmental issues such as impact assessments, water quality, ecosystem integrity, environmental noise, and habitat maintenance[292].

The development and operation of coastal marinas is not currently subject to either a common regulatory framework or common technical standards (such as ISO or CEN). The lack of common standards for marinas (e.g. operational, safety and security standards) was identified as an issue in the 2012 public consultation on maritime and coastal tourism. Technical standards for yacht harbours are currently being developed under the ISO 13687:2014. The first part has already been published[293]. Two more parts are currently being finalised and will be published in the near future.

The EBI has reported a lack of coordination and consistency in the rules and regulations applied to marine protected areas (MPAs). Examples are rules on boat access, anchoring, speed limits, disembarking, waste water releases, and related activities such as fishing.[294] While individual marinas are only likely to have to comply with their local rules and regulations, marina groups and clusters would benefit from harmonised rules to support future development of marinas and boating activities, alongside increased cooperation between MPA managers, environmental regulators, and marina and boating stakeholders. Harmonised rules and regulations would also help to reduce overall complexity and support the provision of information and guidance to EU marinas.

The stakeholder interviews undertaken to inform this study suggested that some environmental legislation can be confusing for the marinas and boating sector. For example, it can be difficult to reconcile regulations relating to invasive species (that can be transport on boat hulls) and those relating to anti-fouling. Stakeholders also reported that regulatory burdens can restrict the development of marinas and boating activities, such as via controls on dredging.

A5.3.2.3 Issues restricting the movement of boats and boaters

The impact on movement of variation in rules on skipper licences and boat safety equipment is discussed elsewhere in this report. The movement of boats and boaters has also been shaped by general demand factors, such as consumer confidence and competition from other leisure activities, which have reduced average boat size, trip duration and changed patterns of expenditure. Additional issues affect the movement of boats and boaters across the EU include:

- **Regulatory and taxation issues** – Privately owned vessels used by EU residents within the EU are required to be VAT paid. While this has implications for purchases of second hand boats, it also affects the movement of boats around the EU as customs officers in other Member States may require evidence that VAT has been paid. Boat owners will need to provide the original invoice showing VAT has been paid, which can cause problems if documentation has been mislaid. While this might already prevent boaters from visiting other Member States, there have in reality been very few instances of prosecutions to date. An increasing focus on tax evasion could cause Member States to increase the stringency of checks, which could restrict the movement of vessels between Member States.

[292] Ecorys (2016), Study on specific challenges for a sustainable development of coastal and maritime tourism in Europe: Final Report

[293] http://www.iso.org/iso/catalogue_detail.htm?csnumber=54284

[294] European Boating Industry (2013) Contribution to the EU Tourism Policy – Sustainable Coastal and Maritime Tourism

- **Information issues** – Stakeholders suggested that the movement of boats and boaters can be restricted by a lack of information about the standards of marinas in other areas. Many boaters only require a basic level of services but existing schemes, such as the Blue Flag Programme (a voluntary eco-label for marinas and beaches run by the Foundation for Environmental Education) and the Gold Anchor scheme (operated by TYHA), typically attract the largest, best quality and most expensive marinas that want to be able to promote themselves as a four or five star facilities. The cost of the Gold Anchor certification process can be prohibitive to smaller marina operators. The ISO standard currently being developed will help to address these issues, supporting a common, low cost system that can be applied to all marinas.

A5.3.3 Consequences of the problem

A5.3.3.1 Intermediate economic consequences

The immediate consequences of these issues are described below:

- **Changing business models (i.e. increased sharing / charter)** – Boat charter and shared ownership is becoming more popular. While this creates benefits for boat charter businesses, there is an increasing need for regulation of bareboat charters to protect consumers from rogue traders, and ensure the necessary insurance and safety regulations are being applied. An ISO standard for bareboat charter is currently being developed (ISO/AWI 20410)[295].
- **Lack of product innovation / diversification** – The rate of technical and professional innovation in the marinas and boating sector is influenced by the low level of best practice exchange and engagement between marinas and between marinas and other providers of nautical and coastal tourism products. This also affects the ability of marinas and boating activities to adapt to meet the changing needs of boaters and attract new people to participate in boating activities.
- **Investment in marinas and boating activities** – a failure to invest in marinas and marina services is likely to inhibit the sector's ability to respond to changes in consumer demand and to attract new people to participate in boating activities and to catalyse wider economic activity through the provision other tourism and other sector facilities/infrastructure.
- **Water access issues** – Marinas have typically focused on servicing the needs of larger and higher value vessels. But there has been a shift in demand towards smaller vessels, which the industry has been slow to adapt to. It requires marinas to adapt to provide smaller berths, dry storage, slipways and cranes.
- **High costs (inability to benefit from economies of scale)** – The fragmented nature of marinas and the low purchasing power of individual marinas (compared to group purchasing / negotiation) means that they are unable to benefit from economies of scale and therefore face higher costs than if they were part of a group or cluster of marinas.
- **Lack of coordination of marketing efforts** – Uncoordinated marketing results in a weaker profile than could be achieved through coordinated marketing efforts. As such tourist numbers are lower than they could otherwise be, which has knock-on effects for the wider economic and social benefits of marinas and boating activities.

[295] http://www.iso.org/iso/catalogue_detail.htm?csnumber=67922

- **Lack of integration of marinas with regional plans** – Lack of integration with regional plans can limit the role of marinas in support regional policy objectives through, for example, marina-centre leisure or industrial clusters.

A5.3.3.2 Ultimate economic consequences

- **Below-potential revenues and profitability of the marina and boating sector** – slow adjustment to changing consumer demand, will result in missed opportunities to generate revenues and profitability of businesses in the marina and boating sector and its supply chain. For example, it is estimated that missed opportunities to increase participation by older people could be costing the sector up to €15bn/yr of economic activity[296].
- **Low catalytic effect on regional economic activity** – not exploiting opportunities in the marina and boating sector will have knock on effects on the performance of linked tourism activities. Lack of integration of marinas in regional economic planning and provision of marina-based infrastructure/facilities for wider non-boating leisure and non-leisure sectors will limit the role of marinas in driving broader-based regional economic growth.
- **Reduced ability to meet economic objectives for maritime and coastal tourism in the EU** – particularly those relating to:
  - Increasing the competitiveness of the EU coastal tourism sector by offering a viable and sustainable alternative to the mass-tourism model and attracting more and higher value coastal tourists.
  - Attracting visitors to EU coastal areas outside the peak season (particularly those located in the Atlantic Ocean, North Sea and Baltic Sea basins) and address seasonality issues.
  - Helping to attract and support skilled and higher value employment in coastal areas. This would represent a missed opportunity to increase productivity, facilitate innovation, professionalism and support collaboration and access to resources.

A5.3.3.3 Ultimate social and environmental consequences

The social and environmental consequences of not exploiting development opportunities in the sector include:

- **Reduced ability to meet social and environmental objectives for maritime and coastal tourism in the EU,** particularly in reducing the social and environmental pressures associated with the mass tourism model (though increased marina/boating development can itself create additional environmental impacts).
- **Outward migration from coastal communities** as a consequence of the scarcity of economic opportunity. This would deprive the local labour market of relevant skills, further eroding the competitiveness of the coastal tourism sector and posing a threat to the future development and longevity of the marina sector more generally[297].

A5.3.3.4 Key stakeholders affected

The key stakeholder groups associated with the above issues are:

[296] Based on annualised estimate of missed economic opportunity in Germany (see Section A.5.3.1.1), extrapolated on the basis that Germany accounts for approximately 17% (ICOMIA 2014 Statistics Book) of the total EU recreational craft production value

[297] McKinley, E. (2012), Drivers for Marina 2020 in the Channel Region: A Draft Report.

- **Marina owners, operators and developers** miss opportunities to broaden and increase participation and hence their revenue base. This has knock on effects on up and downstream sectors.
- **Public authorities** – The lack of synergies between marinas and public policy objectives, represent missed opportunities to achieve regional objectives.
- **Boaters** have less choice and a poorer nautical tourism offer, due to a lack of investment in infrastructure and services and suppliers not adapting to changing boater needs.
- **Other maritime and non-maritime sectors** – Marinas can support the activities of other sectors, such as offshore renewables, by providing safe storage for maintenance vessels. Limitations on marina development affect the ability of marinas to play this supporting role.
- **Coastal communities** are affected by the impacts of marinas and boating on their local environment. The above issues also prevent local businesses and economies from maximising the potential economic benefits of marinas and boating in terms of increased high value visitors and expenditures and the associated demand for other tourism products and services.

A5.4 Baseline scenario

The marinas and boating sector has undergone significant change since the financial crisis in 2008. Some activities, such as boat production, have experienced significant declines in domestic demand and have had to take extreme action in terms of rationalising their operations and changing their focus towards the export of boats outside the EU. Domestic demand is only now starting to show the signs of recovery, albeit concentrated on small vessels, although it is expected that consumer confidence will continue to grow and demand for larger vessels will follow. However, domestic market is unlikely to return to pre-crisis levels in the short term. The export market is therefore likely to remain an important focus for EU boat-builders.

The changing demand profiles and models are also likely to continue. The average age of boaters is likely to continue to increase over time, in line with the ageing EU population, although the current campaigns to boost overall participation, particularly amongst younger boaters, should help to stem the decline of younger boaters. However, competition from other leisure pursuits will continue to increase. The demand for shared ownership and charter activities is also expected to continue to increase over time as boaters seek alternative models to the traditional 'single owner' model. Boaters are expected to continue to demand alternative models that are more suited to the time and expenditure that they want to devote to boating activities. However there is unlikely to be significant additional investment or innovation in the sector to meet the changing needs of boaters, without additional support. Key barriers to investment, such as the lack of finance and the fragmented nature of the sector, are unlikely to change. There has been a rise in the prevalence of marina chains and networks – examples include: ADAC, TransEurope Marinas and MP Network[298] - indicating that a degree of sectoral coordination is occurring. However, without dedicated efforts, the marina industry is likely to remain unintegrated into wider economic development planning and hence their role in catalysing broader based economic growth limited.

A5.5 Justification for EU intervention

Article 195 of the Treaty on the Functioning of the European Union (TFEU) requires the EU to complement Member State tourism sector actions 'particularly by promoting the competitiveness of Union undertakings in that sector', and thereby EU action should

[298] http://www.mpnetwork.eu/en/who-we-are/the-company/

be aimed at 'encouraging the creation of a favourable environment for the development of undertakings' and 'promoting cooperation between the Member States, particularly by the exchange of good practice' (and excluding any harmonisation of the laws and regulations of the Member States)[299]. On this basis, a number of the issues affecting the marina sector sit within the bounds of EU competences, although there are also a number of other issues which are arguably outside of these competences.

In the boat building sector there is a current focus on export markets to sustain the activities of EU boat-builders, while domestic markets continue their slow recovery. The European Commission is well placed to tackle trade barriers and support the international harmonisation of standards relating to recreational craft in order to support export opportunities and enable EU boat-builders to compete on a level playing field with boat-builders from outside the EU.

The European Commission could provide valuable support in helping the sector to overcome barriers limiting the scale of investment and pace of innovation. The development of regional clusters and the sharing of new and emerging best practices, along with improved access to finance, would enable the sector to better and more rapidly adapt goods and services to meet changes in consumer demand.

There are also opportunities to improve the functioning of the internal market by removing barriers to the cross border movements of boats and boaters and improving and establishing framework conditions to support the development of marinas and boating activities in the EU. For example, the European Commission could promote the harmonisation of legislation and standards relating to skipper licensing and safety equipment (see Annexes 1, 2 and 3).

There is also a need to better integrate marinas into regional planning and economic development processes and procedures[300] to support the sustainable development of coastal tourism and maximise the potential of marinas as catalysts for broader-based economic growth. Maritime spatial planning (MSP) and integrated coastal zone management (ICZM) are two EU-driven frameworks that could contribute to this goal, by improving decision-making processes and outcomes with respect to maritime development, sustainability, and the coordination of policies affecting the coastal zone. Integrated planning processes can support greater interactions between related stakeholder groups, such as small-scale tourism service providers, that may otherwise find themselves excluded from planning processes due to a lack of coordination. Ensuring sufficient participation in turn ensures that plans appropriately represent sectoral interests, which may encourage marina development specifically and the development of innovative service offerings across multiple regions, or even across borders, in general. For example, the Network of the Lower Adriatic Marinas, supported by the European Territorial Cooperation Programme between Greece and Italy, connected port structures and created a cross-border tourist network, thereby establishing a permanent network of integrated services. MSP/ICZM processes identify conflicting and compatible uses at a large scale and encourage the integration of plans across multiple geographic regions (including, importantly, integration with terrestrial planning). Promotion at a multinational and cross-border level – i.e. by the European Commission – would be beneficial, notwithstanding the fact that marine planning is a national competency[301]. If addressed and encouraged at a cross-border level this could provide broad-based framework conditions to encourage longer-term investment and innovation in marinas to address sector-specific issues and broaden their role in wider economic development.

[299] http://www.lisbon-treaty.org/wcm/the-lisbon-treaty/treaty-on-the-functioning-of-the-european-union-and-comments/part-3-union-policies-and-internal-actions/title-xxii-tourism/484-article-195.html

[300] UNEP (2009), Sustainable Coastal Tourism: An Integrated Planning and Management Approach

[301] *ibid.*

A5.6 Intervention options

A5.6.1 Objectives

General objectives:

- To stimulate performance and competitiveness.
- To promote skills and innovation.
- To strengthen sustainability.

The specific objective is to encourage enhanced marine and boating market development through:

- Supporting the competitiveness of marinas and boating activities in the EU.
- Removing barriers to innovation and investment.
- Supporting the sector to adjust to changes in demand.
- Supporting the cross-border movement of boats and boaters (see Annexes 1, 2 and 3).
- Promoting collaboration, cooperation and integration between marinas, public authorities and the wider economy.

A5.6.2 Long list of options

The above suggests that there is a rationale for EU intervention to provide incentives and create favourable framework conditions to support the development of the sector and capitalise on its catalytic potential. There is likely to be a role for intervention options that support the adoption of innovation business models and infrastructure/facilities to satisfy changing consumer demands; that support the integration of marinas in economic and development planning; and that address barriers to movement within the internal market and externally. The following intervention options were identified as a result of desk research and interviews with stakeholders.

Policy option 1	**Support EU boat and boat product exports**
Nature of the measure	Trade support for EU boat-builders in global markets
Relevant objectives & problems	• Remove unnecessary barriers to international trade
Implementation procedures	• Include boats and boat products within the scope of negotiations for access to major international markets e.g. tariffs with China and Brazil
Complementary actions	-
Intervention logic	• Outputs: Trade negotiations with countries imposing barriers to EU imports. • Outcomes: Increased export opportunities for EU boat-builders. • Impacts: Improved performance and competitiveness.

Policy option 2	**Innovation and R&D funding**

Nature of the measure	Provision funding to encourage innovation
Relevant objectives & problems	• Encourage product innovation and diversification • Support the industry to adapt to better meet changing demand from consumers • Encourage the provision of new services such as immediate boat charters, concierge services at marinas, etc. • Support the development of products and services targeted at the needs of older boaters (e.g. marina facilities, boat and equipment design) • Support the reconfiguration and development of marinas to support the growth in demand for smaller vessels by developing dry storage systems and providing appropriate access to the water
Implementation procedures	• Provide funding to promote innovation and R&D through European programmes.
Complementary actions	• Develop linkages between the industry and research institutions.
Intervention logic	• Outputs: Fund innovation. • Outcomes: Production innovation and investment to capitalise on emerging opportunities and adjust to changing consumer demand. • Impacts: Improved performance and competitiveness.

Policy option 3	**Funding call to support the design of marina, boat and equipment adapted to the needs of elderly and less mobile people**
Nature of the measure	Provision of funding for R&D and innovation
Relevant objectives & problems	• Support the industry to adapt to better meet changing demand from consumers • Support the development of products and services targeted at the needs of older boaters (e.g. marina facilities, boat and equipment design)
Implementation procedures	• Provision of funding to support innovation.
Complementary actions	• -
Intervention logic	• Outputs: New designs for marinas, boats, equipment and marina services adapted to meet the needs of older boaters. • Outcomes: Remove barriers to innovation and investment. Increased participation in boating activities. Support the sector to adjust to changes in demand. • Impacts: Product innovation and diversification. Improved performance and competitiveness.

Policy option 4	Increase awareness of the economic benefits of marinas
Nature of the measure	Research call
Relevant objectives & problems	• Assess the economic contribution and impacts of marinas and boating activities in the EU. • Identify best practices in marina products and services and the integration of marinas within regional development planning
Implementation procedures	• To be commissioned by the European Commission as a research study.
Complementary actions	Raise awareness of the findings amongst policy-makers at local, regional, national and EU levels.
Intervention logic	• Outputs: Research project providing robust evidence of the economic impacts of marinas and boating activities in the EU and a range of innovative and emerging best practices. Accompanying promotional campaign to raise awareness amongst policy-makers. • Outcomes: Increased awareness of the economic impacts of the sector, the potential role of marinas for regional development, and best practices that seek to maximise the economic performance and impact of marinas. • Impacts: Improved performance and competitiveness of the sector and contribution to regional development objectives.

Policy option 5	Capacity building on integrating marinas within regional plans so as to maximise catalytic effects
Nature of the measure	Research on and dissemination of best practices and models for integration of marinas within regional plans and economies
Relevant objectives & problems	• Supporting the competitiveness of marinas and boating activities in the EU. • Fostering the catalytic role of marinas for reginal development.
Implementation procedures	• To be promoted and implemented by the European Commission. Phase I might include a research study, while Phase II might involve outreach to marinas, local policymakers, and businesses to obtain input, understand first-hand perspectives, and develop appropriate strategies.
Complementary actions	• Raise awareness of the findings amongst policy-makers at local, regional, national and EU levels.
Intervention logic	• Outputs: Research project identifying methods of integration of marinas into regional development; best practice examples and models for reference by local and regional policymakers on how to best involve marinas. • Outcomes: Increased awareness of the potential for marinas to act as regional hubs; improved integration of marinas into regional policy and planning.

	• Impacts: Improved performance and competitiveness; wider coastal economic development.

Policy option 6	Forum for marina knowledge exchange
Nature of the measure	Conference or workshop, potentially followed by the development of an online knowledge platform, to encourage marinas to exchange information and share best practice between marinas and with policymakers, local businesses and other interested stakeholders.
Relevant objectives & problems	• Identifying opportunities for collaboration. • Sharing past experiences to guide future development. • Encouraging the formation of marina networks and clusters.
Implementation procedures	• To be organised by the European Commission, in conjunction with marina association representatives to engage a broad range of stakeholders. • A first phase could include marina and marina industry representatives only, and participation could be expanded to local non-marina businesses and representatives, policymakers, local industries, and other interested stakeholders in a second phase. This would allow marinas to exchange knowledge and best practice and discuss issues of specific relevance to the industry, before exploring wider opportunities for collaboration and development of regional hubs.
Complementary actions	-
Intervention logic	• Outputs: Conference proceedings. Online forum to facilitate sharing of best practice. • Outcomes: Formation of networks within and among industry participants as well as between industries. • Impacts: Improved performance and competitiveness; improved skills and innovation.

A5.6.3 Screening of options

The intervention options were evaluated as part of a screening exercise to select the options that should be taken forward to 'impact assessment' stage. The outputs of this screening exercise are shown in Table 12. Each row of the table represents an individual intervention option. A summary name of each intervention is provided as well as a summary of the role of the Commission in delivering the intervention. The screening was carried out based on the following criteria:

- **Acceptability / ease of implementation**: the administrative burden required to gain acceptance of the intervention from Member States (i.e. this is lower where push back from Member States is expected) and of the process of development and implementation of the intervention (i.e. lower for legislative approaches; higher for voluntary or 'no regret' approaches).
- **Effectiveness:** the extent to which the intervention, assuming that it is successfully implemented, would resolve the problem.

- **Proportionality**: the extent to which the intervention (and its potential costs) are considered to be proportionate to the scale of the problem and its consequences.
- **EU Added Value**: the extent to which the objectives of the intervention can be better achieved at Union level (rather than individual MS acting alone; or the 'industry' developing the intervention).
- **Conclusion**: whether the intervention is to be scoped in or out of the impact assessment; whether it is scoped in on the basis that it should be combined into a package of interventions.

Each of the above criteria is given a summary score of "low/moderate/high", with supporting text provided as necessary.

Table 12. Screening exercise for the long list of policy options relating to marinas and boating development

Policy option Summary	Role of COM	Acceptability / ease of implementation	Effectiveness	EU added value	Proportionality	Conclusion
1. Support EU boat and boat product exports	Supporting; COM action at EU level to negotiate removal of trade barriers	**Low**: negotiations with non-EU countries is likely to be difficult and costly	**Low-Mod**: trade negotiations typically occur over long time period; whilst there will be long term benefits, the current relative reliance on export markets may dissipate if EU domestic demand returns over the medium term. Requires an assumption that negotiations are successful and outcomes provide meaningful adjustments to barriers	**High**: negotiation of import tariffs and barriers to trade needs action at the EU level rather than individual MS	**Mod**: potential benefits for EU growth and employment; but not guaranteed and cost of intervention is also potentially large	Excluded
2. Innovation and R&D funding	Provision / redirection of funding; supporting the sector to adjust to changes in demand	**Mod**: EU funds required; can be linked into pre-existing funding programmes; non-legislative; no mandatory participation	**Mod**: addresses key issue re. funding and investment in innovation; facilitates increased participation in growing markets (older boaters / smaller vessels / charter)	**Mod**: requires multi-MS action to support boater movements between MS; existing market failures limit likelihood of industry provision	**High**: proportionate	**Take forward**
3. Funding call to support the design of marina, boat and equipment adapted to the needs of elderly / less mobile	Provision / redirection of funding; supporting the sector to adjust to changes in demand	**Mod**: EU funds required; can be linked into pre-existing funding programmes; non-legislative; no mandatory participation	**Mod**: addresses key issue re. funding and investment in innovation; facilitates increased participation amongst older boaters	**Mod**: requires multi-MS action to support boater movements between MS; existing market failures limit likelihood of industry provision	**High**: proportionate	Excluded as covered in 2

Policy option Summary	Role of COM	Acceptability / ease of implementation	Effectiveness	EU added value	Proportionality	Conclusion
people						
4. Increase awareness of the economic benefits of marinas	Commission research of economic benefits and opportunities associated with marinas	**High**: low cost; non-legislative; no mandatory participation	**Mod**: would raise awareness of economic benefits of marinas – providing valuable evidence for the industry to use in support of integration with development strategies and plans	**High**: requires assessment of benefits of marinas for total EU and individual MS. There are already a few studies for individual MS	**Mod**: proportionate but addresses lack of awareness only so not guaranteed to be sufficient to deliver change	**Take forward** (as part of a package)
5. Capacity building on integrating marinas within regional plans so as to maximise catalytic effects	Supporting; COM to help raise awareness of catalytic effects of marinas, organising workshops to discuss and develop the guidance documents and help with dissemination	**High**: relatively low cost; non-legislative; no mandatory participation	**Low to mod**: addresses key issues re. lack of integration of marinas in regional plans but would need complementary actions to resolve the problem	**High**: requires multi-MS inputs to be effective at EU level and ensure guidance is accessible to all MS; also help to ensure harmonisation and coherence across the EU	**Mod**: proportionate but addresses lack of awareness only so not guaranteed to be sufficient to deliver change	**Take forward** (as part of a package)
6. Forum for marina knowledge exchange	Hosting of forum / contract for its design and operation	**Mod**: start up and maintenance costs for the forum; non-legislative; no mandatory participation	**Mod**: addresses key issue regarding lack of info exchange in segmented sector dominated by SMEs; facilitates ongoing engagement and learning	**Low**: opportunities would be maximised at EU level but could also provide benefits at the MS level; evidence that industry-driven cooperation between marinas is improving e.g. via marina networks	**Low-Mod:** proportionate but may be insufficient	Excluded

A5.6.4 Short-list of options taken forward for assessment

The options selected for detailed appraisal are:

- **Option A – Innovation and R&D fund** (policy option 2 in Table 12).
- **Option B – Support marina regional integration (package)** – to include the following individual interventions:
  - Increase awareness of the economic benefits of marinas (policy option 4 in Table 12).
  - Capacity building on integrating marinas within regional plans so as to maximise catalytic effects (policy option 5 in Table 12).

A5.6.5 Option A – Innovation and R&D funding

A5.6.5.1 Implementation and effectiveness of the option

The topic analysis highlighted challenges for boating and marina services, which included a lack of product innovation and diversification and low levels of investment. These issues are restricting the ability of the marinas and boating sector to satisfy changes in demand for marinas and boating activities, the most significant of which relate to an ageing profile of boaters and increasing demand for smaller vessels and boat charter services. This option is focused on supporting the marinas and boating sector to make the necessary investments and innovate in order to adjust to, and maximise the potential benefits of, these changes in demand for boating activities. For example, it aims to:

- Support the development of products and services targeted at the needs of older and less mobile boaters (i.e. by adapting the design of marina facilities, boats and associated equipment);
- Support the reconfiguration and development of marinas to support the growth in demand for smaller vessels by developing dry storage systems and providing appropriate access to the water; and
- Encourage the provision of other new services demanded by consumers. Examples highlighted by stakeholders included concierge services at marinas and immediate boat charters (that do not need to be booked in advance).

These would be achieved by: allocating funding to promote innovation and R&D in the sector, probably achieved through existing European funding programmes, in order to overcome issues of access to finance and improving the viability of investment. A European Economic and Social Committee opinion report[302] recognised that "nautical firms need easier access to European research, development and innovation funds currently available to other transport modes, but to which the nautical industry has limited access". The intervention might also involve complementary actions to support linkages between the industry and research institutions to encourage collaborations and support innovation.

A5.6.5.2 Direct and indirect effects of the intervention

The intervention aims to support the marinas and boating sector by removing barriers to, and incentivise increases in, innovation and investment. The stakeholders expected to be directly affected by the intervention are described below:

- **Marina owners, developers and operators, and other providers of boating services; manufactures of boats and boating goods:** would benefit from increased access to funding to facilitate the innovations and investments that will enable marinas to meet the changing demand and exploit

[302] European Economic and Social Committee (2013). Nautical industries: restructuring accelerated by the crisis. CCMI/103 - CES1769-2012_00_00_TRA_AC.

the available opportunities. This will have knock on effects on the broader boating sector, where marinas operate as hubs for activities.

- **The European Commission** will incur relatively costs of providing funding to support innovation and R&D; although this could be through providing explicit opportunities for the sector to access pre-existing funding programmes rather that the creation of new funds.

Other stakeholders are also expected to be indirectly affected by the intervention:

- **Boaters** would benefit indirectly from increased innovation and R&D in the marinas and boating sector in terms of greater consumer choice and a range of products and services that better meet their demands and requirements and facilitate their participation in boating activities. Marina and boating innovations and investments can also attract new entrants to try boating activities and increase the participation of older and less mobile boaters.
- **Other tourism businesses and coastal communities** would also benefit indirectly from increased boaters and boating participation, which would increase demand for other tourism goods and services in coastal locations. This would also help to support employment and economic growth in coastal communities.

A5.6.5.3 Economic impacts

- **Performance and competitiveness**. This intervention aims to stimulate innovation and R&D by addressing increasing access to finance, facilitating investment and supporting business' capacity to innovate and produce products and services that better meet customers' expectations and needs. This should provide strong benefits for the overall performance and competitiveness of the marinas and boating sector and coastal economies more broadly. It should also ensure that boat-builders and manufacturers of other boating equipment are also better able to compete against other recreation activities and in key export markets. Increases in innovation and R&D will require businesses in the sector to put forward their own investment, supplemented and incentivised by the availability of public sector funds. The scale of these changes will depend on the willingness of businesses in the sector to change their current behaviour and increase levels of investment and innovation to prioritise the needs of consumers and groups of consumers that are not currently being met.
- **Administrative burdens on businesses**. Administrative burdens are defined as the costs incurred by businesses in meeting legal obligations to provide information on their action or production[303]. Such obligations may be imposed on funding recipients to enable MS and the Commission to monitor expenditure and impacts of the funding programme. The cost of providing such information is likely to be minor.
- **Public authorities**. The Commission will incur costs from provision of funding to support innovation in the sector.
- **Position of SMEs**. Marinas and boating businesses in the EU are predominantly SMEs, while the barriers to investment and innovation, such as access to finance, are likely to be more significant for SMEs as they do not benefit from the same economies of scale as larger marina groups and boat manufacturers. It is therefore expected that, while this intervention should target the whole marina and boating industry, the funding should be appropriate for access by SMEs, where the funding is likely to add greatest value.

[303] European Commission (2015), Better Regulation Toolbox

- **Functioning of the Internal Market and competition**. The intervention should help to address some of the barriers that are currently restricting innovation and investment in the sector and encourage greater competition between marinas and manufacturers of boats and boating equipment. This, in turn, should support increased opportunities and choice for consumers and remove barriers to access and participation in boating activities.
- **Innovation and research**. This core objective of this intervention is to stimulate innovation and R&D activity to support the development and introduction of new products and services to service the changing demand for marinas and boating and make more efficient use of resources e.g. through new technologies such as the installation of dry storage systems.
- **Consumers and households**. The development of innovative products and services will generate benefits for existing and potential boaters through increased choice and the provision of more appropriate solutions to meet consumer needs. These benefits are likely to be particularly significant for groups of customers whose needs are not currently being met, such as older and less mobile boaters.
- **Macroeconomic environment.** Investments and innovations in marinas and boating products and services have the potential to add value by helping the industry to exploit additional opportunities. Returns on funding in the form of GVA may range from 1:1 to 1:11.[304] The ratio achieved will depend on the nature of investments undertaken, but would be expected to fall at the lower end of this range. The scale of returns will depend on the scale of funding provided. Whilst it has not been feasible to establish robust quantified estimates, it can be shown illustratively that were €100m of funding put forward, this could generate €200m per year increase in GVA based on a 1:2 multiplier. The scope for successfully unlocking additional economic activity through such investment is considerable – readily demonstrated by considering the extent of unmet demand from older people, estimated earlier in this section to be worth approximately €15bn.

A5.6.5.4 Social impacts

- **Employment and labour markets**. As stated above, investments in innovation and R&D have the potential to unlock additional demand for boating and marina services, which can support significant additional employment across the EU and particularly in coastal economies. It will not only support employment in the marinas and boating sector, but will also generate significant indirect effects and support employment in other boat-related activities (such as distribution, retail, repair and maintenance) and wider tourism activities (such as the provision of accommodation, food and drink).
- **Working conditions**. The stimulation of innovation and R&D is unlikely to impact on working conditions in the labour market but will provide opportunities to increase boating participation and the number of boating visitors to coastal areas. This will help coastal areas to address seasonality issues by attracting larger numbers of visitors throughout the year – a point particularly noted in relation to increasing activity by older participants who have more flexibility to participate outside of peak times.

[304] For example, the ex-post evaluation of the 7th EU Framework Programme (FP7) found that the €50bn contribution from the European Commission provided leverage for €40bn of additional contribution from grantees and indirect economic effects of €500bn resulting from the development of new technologies, products and markets. European Commission (November 2015), Commitment and coherence - Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013)

- **Effects on social inclusion**. This intervention is expected to support additional employment and growth in coastal areas across the EU. It could therefore help to support social inclusion, particularly in coastal economies with high levels of unemployment. However the effects are likely to be small and locally/context specific.
- **Public health and safety**. The stimulation of innovation and R&D has the potential to provide significant health and safety benefits for target consumers. For example, innovations in the design of marinas and boats and/or investments in facilities, such as floating pontoons and lifts, have the potential to support and facilitate the accessibility of marinas and boating amongst older and less mobile people, thereby providing significant health and safety benefits for these consumers.

A5.6.5.5 Environmental impacts

- **Resource use and waste**. It is unlikely that this intervention will have a significant impact on resource use and waste. It is expected that most investments and innovations would increase levels of boating participation, which may cause levels of waste and resource use in the industry to increase. However, other investments and innovations are likely to support and facilitate the growing demand for boat charter activities, which may, in turn, lead to lower levels of waste and resource use as described previously.
- **Water quality and resources**. The primary aim of this intervention is to use investment and innovation to unlock additional demand for marinas and boating activities and thereby increase levels of boating participation, associated expenditures and their economic impacts. It is expected that the increased levels of boating activity will cause increases in the levels of sewage discharges and other pollutants and thereby reduce the quality of waters in coastal and marine areas, although the scale of these impacts is likely to be relatively small in most areas.
- **Biodiversity, flora, fauna and landscapes**. As described above, an increase in boating activity, resulting from increased investment and innovation, is likely to have negative impacts on biodiversity, flora, fauna and landscapes, particularly through physical disturbance, visual and acoustic disturbance, and marine litter from vessels, and through the land-based pressures associated with an increased number of visitors. As before, these impacts are expected to be proportionate to the overall increase in boating activities brought about by the investments and innovations and are likely to be relatively small in scale.
- **Sustainable consumption and production**. Increased investments and innovations in the marinas and boating sector are unlikely to have significant impacts on sustainable consumption and production. Many of the expected investments and innovations are likely to increase levels of consumption and production, while others, such as those supporting the development of boat charter activities, are expected to support more sustainable consumption and production through more efficient use of vessels.
- **Transport and the use of energy**. As stated above, increased innovation and investment is expected to increase boating participation and boat movements, and potentially attract additional tourists to visit coastal areas. This will result in increased demand for transport and energy use, although these changes are likely to be relatively small in scale.
- **Land use**. Increased innovation and investment in marinas and boating activities are unlikely to deliver significant changes in land use. Investments and innovations that increase demand for boating participation may be expected to drive overall increases in demand for marina berths and new marina developments, thereby generating impacts for land use. However, some

investments and innovations may reduce demand for land for boat storage, such as the installation of dry storage systems or investments in boat charter activities.

A5.6.6 Option B – Support marina regional integration (package)

A5.6.6.1 Implementation and effectiveness of the option

This option combines two of the policy options described in Table 12 into a single package of interventions that aim to exploit opportunities from increasing the role of marinas in supporting regional development. To deliver this aim, the intervention needs to address a number of issues and barriers including: a lack of awareness of the total economic contribution of marinas and associated boating activities; fragmentation in the marinas and boating sector; and a lack of collaboration with local and regional authorities and integration of marinas in regional plans.

In practical terms, this option is expected to use the following interventions to deliver its objectives:

- Commissioning a research study to assess the economic contribution and impacts of marinas and boating activities in the EU.
- Undertaking research and delivering workshops to identify and assess the potential options, successful models and other best practices which can help to integrate marinas into broader regional development plan and capitalise on their potential role as economic catalysts.
- Dissemination of research and learning outputs to support capacity building in and across MS to support the practical application of the outputs.

A5.6.6.2 Direct and indirect effects of the intervention

The intervention aims to: encourage greater collaboration in the marinas and boating sector through increased exchange of good practice and joint marketing and promotion activities; and encourage greater integration of marinas in regional development by raising awareness of the benefits of marinas and boating, identifying and developing information on approaches and options for integrating marinas in regional development. This is expected to maximise synergies and benefits from increasing collaboration and integration.

The stakeholders expected to be directly affected by the intervention are described below:

- **Marina owners, developers and operators** would benefit from increased collaboration within and outside of the sector, stimulated through dissemination activities and improved efforts to integrate marinas into regional plans, and a more proactive approach from public authorities to support broad-based marina development.
- **The European Commission** will incur costs associated with the various interventions including: undertaking and commissioning research; delivering workshops; developing and disseminating guidance.
- **Public authorities within Member States** will also incur costs in participating in the interventions, but will benefit from a better understanding and learning opportunities to foster improve regional development and capitalise on marina developments for regional development policy purposes.

Other stakeholders are also expected to be indirectly affected by the intervention:

- **Coastal communities** would be expected to benefit from the economic benefits generated by the recognition and enhanced role of marinas in supporting regional development.

- **Tourists (including boaters)** would benefit indirectly from improved tourism offers, products and services resulting.
- **Other tourism businesses** would benefit from increased visitors to coastal destinations, attracted by the improved tourism offers, products and services.

A5.6.6.3 Economic impacts

- **Performance and competitiveness**. The core aim of the intervention is to maximise the potential for marinas to enhance the overall performance and competitiveness of their local economies. Increased regional collaboration between marinas and wider tourism and economic development actors will also provide economies of scale and the opportunities for joint marketing and promotion activities should improve competitiveness. Access to finance is also likely to be improved as a result of increased awareness of the benefits of marinas amongst providers of funding and other sources of finance.
- **Public authorities**. As stated above, public authorities (and particularly the Commission) will incur costs from delivering the interventions, while there are also likely to be ongoing costs for local and regional authorities from collaborating with marinas, although these costs are likely to be offset by the benefits for regional development.
- **Position of SMEs**. The intervention is expected to deliver significant benefits for SMEs. For example, most marinas are SMEs and are expected to benefit from heightened awareness of their economic potential and the outcomes of improve collaboration and integration.
- **Functioning of the Internal Market and competition**. The intervention should also support competition and the functioning of the Internal Market. Regional integration and collaborations are likely to support the movement of boaters between marinas and potentially between Member States, while the exchange of good practice is likely to deliver improvements in marina services and therefore provide consumers with greater choice.
- **Innovation and research**. Increased exchange of good practice and collaboration between marinas, other businesses and public authorities is likely to result in increased innovation in the sector compared to the baseline scenario. This is expected to support further increases in visitor and boater numbers and expenditures.
- **Consumers and households**. As stated above, visitors (including boaters) will benefit from improved tourism offers, products and services, while households and residents of coastal communities are expected to benefit from increased economic growth and employment.
- **Macroeconomic environment.** Coastal and maritime tourism is a significant sector in the EU and is estimated to have employed almost 3.2m people in 2011 and generated €183bn of GVA[305]. However, marinas also contribute to local and regional economies by supporting additional expenditures of boaters, and increasing the attractiveness of coastal destinations to all visitors, thereby stimulating additional economic activity and employment. It is therefore likely that integrating marinas in regional development can deliver significant economic benefits for coastal economies.

  BMF research[306] suggested that the scale of the overall impacts of coastal marinas is closely related to the range of on-site facilities and services to

[305] Ecorys (2013), Blue Growth - Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts - Final Report

[306] British Marine Federation (2007), Economic Benefits of Coastal Marinas in the UK and Channel Islands

attract boaters and non-boaters, the number of marina berths, the number of visiting boaters, and the opportunities for marina users and visitors to spend money both on-site and in the local economy. Fostering improved integration of marinas with marine and regional development planning can directly and indirectly provide the conditions necessary for increasing their linkages and synergies with local and regional economies. The BMF research found that the overall impact of coastal marinas was seven times larger than that of the 'core' coastal marinas sector, while every job in the 'core' coastal marinas sector in the UK supporting a further 12 jobs in the local economy (including the indirect and induced impacts but also the wider impacts identified above); but that there was significant variation in the contribution of different marinas. The lack of evidence of the impact of coastal marinas across the EU makes it impossible to produce similar estimates for the whole of the EU. However, available estimates imply indirect and induced impacts support less than 1 additional job per marina/boating job[307], indicating significant potential for increasing the catalytic effect of marinas. It was not feasible to develop robust quantitative estimates of the economic impact.

A5.6.6.4 Social impacts

- **Employment and labour markets**. As stated above, the intervention is expected to support increased visitors and tourism expenditures, which will support additional employment amongst the marinas, other providers of boating services, other tourism businesses, and their respective supply chains.
- **Working conditions**. The intervention is unlikely to have any significant impact on working conditions but does enhance opportunities for coastal economies to address seasonality issues by attracting larger numbers of boating and non-boating visitors throughout the year to spend money in the local economy.
- **Effects on social inclusion**. This intervention is expected to support additional employment and growth in coastal areas across the EU and could therefore help to support social inclusion, particularly in areas with high levels of unemployment, although the scale of these impacts is likely to be relatively small and locally/context specific.
- **Culture**. There is unlikely to be a significant link between the intervention and cultural impacts. However, increased collaboration between marinas and other tourism related businesses has the potential to support access to, and participation in, cultural activities, such as under the Curioseaty project. Furthermore, the increased integration of marinas in regional plans could develop opportunities for marinas to support cultural strategies and visitor offers.

A5.6.6.5 Environmental impacts

- **Resource use and waste**. The intervention is unlikely to deliver any significant change in resource use and waste. The expected increase in boater and visitor numbers may cause levels of waste and resource use to increase, although this may be offset to some extent by increased economies of scale and lower resource use as a result of increased clustering and collaboration in the sector.
- **Water quality and resources**. Similarly, the expected increase in levels of boating activity may cause some increases in the levels of sewage discharges and other pollutants, although any changes are likely to be relatively small in scale.

[307] ECSIP Consortium (2015), Study on the Competitiveness of the Recreational Boating Sector.

- **Biodiversity, flora, fauna and landscapes**. The expected increases in the number of boaters and other visitors may increase pressures on biodiversity and landscapes, although the increased integration in regional plans is likely to help minimise any impacts.
- **Sustainable consumption and production**. The intervention is not expected to have a significant impact on sustainable consumption and production.
- **Transport and the use of energy**. The expected increases in the number of boaters and other visitors may result in increased demand for transport and energy use, although these changes are likely to be relatively small in scale.
- **Land use**. The intervention is not expected to deliver any significant impacts for land use. While the increased levels of boating activity may increase pressures for new marina developments, the increased integrated of marinas in regional plans is likely to help minimise impacts for land use.

A5.6.7 Summary level assessment

The results of the summary level assessment are presented in Table 13 below. It suggests that the options provide relatively strong economic impacts, particularly in terms of supporting performance and competitiveness and enhancing economic growth and employment for the marinas and boating sector and their wider coastal communities. The options also provide moderate social benefits, particularly for employment and labour markets and public health and safety, while environmental impacts are expected to be relatively small in scale.

Table 13. Summary level assessment of impacts

Impact type	Option A – Stimulate innovation and R&D	Option B – Support marina cooperation and regional integration (package)
Economic impacts		
Performance and competitiveness	+++	++
Administrative burdens on businesses	0	0
Public authorities	-	-
Position of SMEs	++	++
Functioning of the internal market and competition	++	+
Innovation and research	++	+
Consumers and households	++	+
Macroeconomic environment	+	+
Social impacts		
Employment and labour markets	++	++
Working conditions	+	+
Effects on social inclusion	0	0
Public health and safety	++	0
Culture	0	+

Environmental impacts		
Resource use and waste	0	0
Water quality and resources	-	0
Biodiversity, flora, fauna and landscapes	-	0
Sustainable consumption and production	0	0
Transport and the use of energy	-	-
Land use	-	0

A5.7 Conclusions and recommendations

The following conclusions are based on an analysis of impacts, and consideration of the respective costs and benefits of the different policy options described above.

A5.7.1 Effectiveness

Each option addresses different issues restricting the development of marinas and boating (including its role in regional development) and there is relatively little overlap between the options:

- Option A aims to stimulate innovation and R&D to ensure the industry can respond more effectively to changes in demand. Funding would be expected to have a multiplier effect on economic output, the scale of which will depend on the nature of investments undertaken and the scale of funding put forward.
- Option B aims to support marina regional integration. In particular it is expected to facilitate the broader role of marinas in economies and enhance regional economic multipliers of marinas.

The overall effectiveness of each option is expected to be moderate. The assessment of impacts has been hampered by the lack of reliable data on which to base estimates, as described below.

A5.7.2 Efficiency

Each of the options is estimated to provide an efficient response to addressing the barriers restricting the future development of marinas and boating activities. The proposed options have relatively low costs of implementation, which is due in part to the efforts that the industry is already taking to develop solutions to address the identified issues and barriers.

A5.7.3 Uncertainties

There are significant uncertainties associated with the proposed options and the scale of their expected impacts.

None of the proposed options are mandatory or legislative, so it is difficult to estimate not only those who will be influenced by the research findings, guidance and standards, but also the extent to which it will influence their behaviour.

The lack of robust data and evidence also restricts the opportunities for quantifying impacts, which are based primarily on a qualitative assessment. Additional data and research would be necessary to provide an improved understanding of the potential impacts of these interventions. Key gaps in the data relate to a lack of: comprehensive information relating to the size, type and capacities of the marina industry in Europe; assessments of the direct and indirect economic impacts of marinas and boating activities across the EU; data showing the frequency of boating participation and the movements of boaters between marinas and between Member States. As a result, the magnitude of the impacts presented above is highly uncertain.

A5.7.4 Recommendation

Each option represents an appropriate proposition for the Commission to address the barriers restricting the development of marinas and boating activities. The effectiveness of each option is considered to be broadly proportionate to the costs of its design and implementation. Both options address significant issues. There are strong synergies between the two options. As such, there is merit in taking forward both options.

A5.8 Annex: Evidence sources

A5.8.1 List of stakeholders

- Mirna Cieniewicz, Secretary General, European Boating Industry (EBI)
- Udo Kleinitz, Secretary General, Icomia
- Carol Paddison, Secretariat, European Boating Association (EBA) / Cruising Officer, Royal Yachting Association (RYA)
- Brian Clark, Head of External Relations, British Marine (BM)
- Ulrich Heinemann, Managing Director, International Marine Certification Institute (IMCI)
- Stuart Carruthers, General Secretary, European Boating Association (EBA) / Cruising Manager, RYA
- Emma Barton, Executive Secretary (Environment), European Boating Association (EBA) / Planning and Environmental Manager, RYA
- Jose Luis Fayos, Technical and Export Manager, Spanish Marine Trade Association (ANEN)
- Roberto Perocchio, President, Association of Italian Marinas (Assomarinas) / Chairman, Icomia Marinas Group / Director, Italian Marine Industry Association (UCINA)
- Philip Witte, Head of Marinas and Nautical Tourism, German Marine Federation (BVWW)
- Mats Eriksson, CEO, Swedish Marine Industries Federation (SWEBOAT)
- Jean-Michel Gaigné, Chairman, TransEurope Marinas

A5.8.2 References

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Annex 6 Combined products

A6.1 Introduction

This topic area examines the current market situation and the potential role of combined nautical and coastal tourism products (henceforth 'combined products') in supporting growth in nautical tourism. Combined products are here defined as comprising:

- **Integrated products** – where one activity is sold as a package alongside another (e.g. a diving trip and island excursion sold as one product); or where one activity directly incorporates another (e.g. kayaking whilst exploring heritage sites).
- **Integrated product promotion** – where multiple tourism products are promoted together in the marketing of destinations (e.g. marketing a destination by promoting multiple activities available in the location; or marketing multiple linked destinations through common or combined activities).

Combined products can be used to strengthen the competitiveness and appeal of tourism products and locations (at a local, regional or international scale), and hence enhance growth in tourism. Types of activities that provide opportunities for combined coastal and nautical tourism products include yachting/marinas, nautical sports such as sailing, kayaking and rowing, and other activities such as marine archaeology, maritime heritage, underwater tourism and eno-gastronomic (food and drink tourism) activities.

Previous collaborative projects aiming to develop combined products have delivered strong outcomes in terms of GVA and employment creation. For example, the SURFINGEUROPE project generated a 1:10 ratio in terms of the estimated GVA return on funding. This suggests that there are likely to be opportunities to yield considerable additional benefits for growth and employment from increasing the development of combined products.

The coastal and maritime tourism sector is estimated to employ around 3.2m people and generate €182bn of GVA, with even larger indirect effects[288]. The significant scale of the industry suggests that even a small increase, resulting from the increased development of combined products could contribute significant economic benefits. Whilst, there is evidence that rapid growth in certain markets (notably Spain) could continue in the absence of intervention, it is important to consider the uneven nature of this growth as well as the potential for lessons from market development in these regions to be transferred to comparatively underdeveloped regions. The development of combined products could help to address these issues.

Other underlying trends are supportive of the development of combined products; whilst the increasing role of the internet in planning and booking travel is leading to shorter and more spontaneous patterns of travel booking, there is strong evidence that consumers are also increasingly looking for novel travel experiences and activities within places that they visit.

The text that follows considers whether there are problems that are constraining the development of combined products and whether there is a need and role for the EU to support such development. It identifies and elaborates potential intervention options to address the problems and assesses the impacts of a shortlist of options.

A6.2 Topic and situation analysis

A6.2.1 Market dynamics, size and scale

Coastal and maritime tourism

Coastal and maritime tourism is a significant sub-sector of the wider tourism industry. Coastal destinations are the preferred holiday destination for 63 per cent of European tourists[308] and were estimated to provide 63 per cent of all bed places in the EU in 2011 (accounting for 16 million bed places). Overall, the coastal and maritime tourism sector employed almost 3.2m people in 2011 and generated €183bn of GVA in direct economic value, with indirect effects thought to be 3-4 times greater[309].

The significance of the coastal and maritime tourism sector to Member State national economies varies. It can be a vital component of economies in coastal areas within Member States - locations where there may be few alternative sources of employment. Coastal tourism supports 1.1 per cent of all EU27 employment, but this share increases to 3.3 per cent in Spain, 3.7 per cent in Greece, 7.2 per cent in Malta and 8.6 per cent in Cyprus, and is significantly higher in local coastal communities within these Member States[310]. Given continued overall tourism growth in these economies, these figures can be expected to have increased in intervening years, and could be expected to continue to do so in the absence of intervention, albeit possibly at a lower rate.

Nautical tourism is an important part of coastal and maritime tourism. It comprises yachting and marina activities plus other nautical sports, such as diving, surfing and fishing. Marinas and boating alone generate €39bn of GVA and supports 372,000 jobs, including indirect and induced effects[311]. There are fewer comprehensive data available on the scale and impact of the other nautical sports, although this is a growing and profitable area of activity. Current activities are concentrated in the Mediterranean sea basin, however there is also potential for development across other parts of the EU[312]. According to figures from the Frontur survey conducted by the Institute for Tourism Studies (IET)[313], interest in nautical sports attracted two million tourists to Spain in 2010, 9.2 per cent more than in the previous financial year.

Diversification and development of nautical tourism can have positive indirect effects on other activities that are horizontally (e.g. excursions, underwater photo safari, customer service) or vertically (e.g. shipbuilding) associated with it.[314]

Market trends and combined products

The Coastal and Maritime Tourism Strategy (CMT Strategy)[315] suggests that the recent and projected growth in demand for nautical tourism activities provides opportunities to enhance overall tourism in the EU. It suggests that there are opportunities to develop new products that combine coastal tourism and nautical tourism activities and satisfy growing demand for 'attractive and sustainable products that provide unique and customised experiences'. The 2012 public consultation on the challenges and opportunities for maritime and coastal tourism in the EU supports this view. It

[308] Eurobarometer 48 (1998), Facts and figures on the Europeans on holiday 1997–98.

[309] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level. *(Figures include direct and indirect effects of coastal tourism, cruise tourism and yachts and marinas)*

[310] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level.

[311] Ecorys (2013), Study in support of policy measures for maritime and coastal tourism at EU level.

[312] Marusic, Z., Ivandic, N., Horak, S. (2012) Nautical tourism within the TSA Framework: the case of Croatia

[313] IET (2011), Inbound tourism http://www.ine.es/en/metodologia/t11/t11trec_en.pdf

[314] Gozalez, Y.E.L. (2014) European Nautical Tourists: Exploring destination image perceptions. Tourism and hospitality.

[315] European Commission (2014), A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism.

identified growing requests for customised tourism experiences (reported by 19 per cent of respondents)[316].

There are no data available with which to quantify the extent of combined products in the EU. However, demand for multi-activity and multi-destination holidays has increased significantly in recent years, particularly in relatively well-developed markets. Whilst there is a growing demand for specialist nautical tourism activities amongst a 'core' of dedicated enthusiasts, there is growing evidence that tourists are demanding access to a wider range of activities whilst on holiday. For example, diving holidays typically require a few days of non-diving to avoid decompression problems (see Case Study 4) so attractive non-diving activities and services are an important part of the offer. Providers of yacht charters have seen increased demand for short term charters (rather than the traditional one or two week charter periods), as people seek to combine yachting with other activities in one holiday. As a result charter companies are seeking to develop combined packages with additional non-boat based activities which can enable them to sell full week charters[317].

Increased use of the internet has led to significant change in the tourism sector in the last 10 to 20 years. It is much less common for interactions between suppliers and consumers to be mediated via travel agents and tour operators. The sector has had to become more dynamic and demand-focused. Consumers now have the means to liaise directly with suppliers, find their own deals and assemble their own packages. They increasingly want to control the process of selecting and composing a holiday and demand greater flexibility. As a result, standardised and package holidays are being replaced by customised, individualised trips. There is a need to offer different types of components with different types of activities and accommodations that customers can combine to create their own, unique travel itinerary[318]. This increases the importance of coordinated marketing and delivery of nautical and coastal tourism products to ensure that they are visible, appropriately packaged and accessible to the consumer.

The CMT strategy suggests that there is likely to be unmet demand for combined products as the linkages between such products are usually weak and are not well presented (i.e. visitors typically book nautical activities separately from their hotels, restaurants and other attractions). Interviews with port authorities and other stakeholders indicate a general lack of knowledge of such goods and services amongst tour operators, so combined marketing of these products may be scarce.

Even in traditionally well-structured segments of the industry, such as cruise tourism, there is potential for greater product combination and marketing through strategic partnerships and provision of enhanced infrastructure in order to enhance demand and capturing of expenditure. Such practices of combined destination marketing to cruise visitors are also being applied to private boating visitors. For example, the port of Toulon Bay has noted growing demand for information from yacht and boat visitors that is similar to that requested by cruise visitors, and is working closely with the port captain to tailor marketing approaches for cruise liners towards yacht and boat visitors (see Case Study 1).

Increasingly, nautical tourism stakeholders recognise the need to develop combined marketing propositions and products in a context of increasing international competition (and competition from non-coastal EU locations). Successfully promoting combined products can be an important part of improving competitiveness and market positioning. Combined approaches are being adopted to create a stronger offer and hence improve competitiveness and entice more tourists to regions. In some cases, this entails coming together through formal or informal networks to foster greater

[316] European Commission (2012), Challenges and Opportunities for Maritime and Coastal Tourism in the EU: Summary Report of the Online Public Consultation Results

[317] Interview with ICOMIA

[318] https://www.cbi.eu/market-information/tourism/trends/#more-demand-for-customised-travel

collaboration (see Case Study 2). Networks can also be an important mechanism to raise awareness locally of opportunities around nautical tourism and to gain buy-in from local decision-makers (see Case Study 3).

Interviewees consider that a lack of financial resources and awareness of the role of combined products present barriers to further development. There are a number of examples of intra-EU thematic and combined product projects developed using EU funding, including some linked to nautical tourism (see Case Study 5 and Section A6.2.2).

There is a need to strengthen destination marketing in Europe and make it more cohesive, especially in marketing cross-border areas (e.g. the German, Dutch and Belgian area Euregio Maas/Rhine).[319] The idea of combined intra-EU products is not new; the European Cultural Routes concept was launched in 1987 to promote transnational routes that help tourists discover European history. These routes have demonstrated "enormous potential for small business generation, clustering, intercultural dialogue, and promoting the image of Europe in general"[320]. Intra-EU products, such as the European cycling route 'EuroVelo', can act encourage the clustering of tourism SMEs; although the effects can be diminished by SMEs' lack of awareness of the opportunities[321].

Case Study 1 Integrated destination marketing: Var-Provence

In the context of a rapidly expanding and increasingly competitive global cruise industry, ports and marinas are increasingly acknowledging the importance of developing an attractive destination marketing proposition in collaboration with local tourism and recreation providers. This is particularly the case where competition between ports is fierce, such as in Mediterranean France. The Department of Var, for example, has been attending cruise operator trade fairs and promoting the range of activities available within its ports, helping to distinguish the destination geographically from the Cote d'Azur and to develop a common marketing strategy to help target key decision-makers in cruise companies.

The port of Toulon Bay, which handles some 340 calls a year from major cruise liners as well as providing 8000 yacht berths, and has been particularly active in marketing the port as a stopover destination to cruise companies, and increasingly to yachts. In recent years, the port has noticed the importance of making local excursions available in addition to providing competitive infrastructure and port facilities. Whilst cruise operators (who often make a substantial share of their revenue from land-based excursions) often delegate excursions to local tour operators, it is felt that these tour operators lack the time and resources to research new activities and opportunities and anticipate trends. Consequently, the port, and its associated marketing department have taken the approach of reaching out to cruise operators and passengers directly with information about local excursions, tourist operators and coastal recreation activities possible within the local region. Given the diversity of tourists travelling on cruise ships, it is important to have a diverse offering.

The port has noted growing demand for similar information amongst yacht and boat visitors to the local marina and is working closely with the port captain to tailor approaches for marketing to cruise liners towards this yacht and boat visitors.

[319]http://www.parkstad-aachen.com/index.php-url=-hotel_recreation_toerism-tourism_trends_for_europe.htm

[320] European Commission webpage (2016). Cultural Tourism. Based on Council of Europe (2010). Impact of European Cultural Routes on SMEs' innovation and competitiveness. Provisional Edition. Competitiveness and Innovation Framework Programme (CIP).
http://ec.europa.eu/growth/sectors/tourism/offer/cultural/index_en.htm

[321] Council of Europe (2010). Impact of European Cultural Routes on SMEs' innovation and competitiveness. Provisional Edition. Competitiveness and Innovation Framework Programme (CIP)

Although demand is relatively small, these can be high value visitors and efforts are ongoing to develop leaflets and web applications to target these and other groups. This is necessitated by wider changes in the marina that include the ageing of the customer base, less use of boats, a decline in boat ownership and increase in temporary leasing.

Case Study 2 Integrated destination marketing: Reseau Plaisance Cote d'Opale

Objectives

The Opal Coast Group works to foster greater collaboration between five marinas in the north of France (Dunkerque, Gravelines, Calais, Boulogne-sur-Mer and Etaples-sur-Mer. The primary focus of the grouping is to develop opportunities for sailing and berthing across the north of France, with a secondary focus on other nautical activities such as diving and kayaking. The group is working to develop 'mixed' products and services encompassing multiple nautical activities so as **to increase the overall attractiveness** of the region to visitors.

A third agenda is promoting marinas as **gateways** to goods and services on the mainland and nearby towns. The group is working with tourism authorities inland to advance this agenda in the context of regional development –raising the profile of local infrastructure, transport and accommodation that allows marina visitors to extend their stay inland.

Demand for nautical tourism in the region is comparative low as compared to that in markets such as Brittany and the Mediterranean coast. Although the region benefits from high volumes of terrestrial tourism, it is felt that marinas and their surrounding economies may be missing out on such forms of tourism through **a lack of promotion and organised offering**.

Implementation

The overall structure and profile of the marina sector has changed substantially since 2008. Whereas before the service offering of marinas was more passive in nature, there is an increasing effort to **offer a wider range of products and services** to those making use of berths.

To support these activities, the group takes a **collaborative approach** to pursuing grant funding and securing other forms of public assistance for nautical tourism. Whilst public grants to support regional development and heritage projects in this region of France are thought to be relatively generous, interview participants point to low levels of political awareness and engagement with the concept of nautical tourism as a major barrier to securing such sources of funding.

Accordingly, the group's major focus to date has been on the development of collaborative bids for INTERREG funding and other EU competitive grants. Nonetheless, it is felt that the focus of many calls to date has been largely on environmental issues rather than tourism development and diversification.

Barriers to the development and exploitation of combined products are: availability of funding, time, knowledge and understanding (of what nautical tourism constitutes and its potential benefits) and the lack of collaboration between marinas and inland authorities and interests.

Source: Personal communication, Boulogne Developpement

Case Study 3 Integrated destination marketing: Nautical tourism in

Nord-Pas de Calais Picardie

A partnership of a number of French regional authorities, together with the Federation of Nautical Industries of the Reseau Plaisance Cote d'Opale, recently studied the links between the nautical tourism sector and the wider regional economy.

It found that nautical tourism activity in the marinas had a direct and indirect economic impact of some €320m annually Over 2000 jobs were supported through a combination of recreational and tourist goods and services linked to the marinas. Visitors to the marinas (i.e. boats making temporary use of berths) carry an average of 2.4 people on board and stay an average of 2.25 nights, with an average total spending of €158 per boat per stay or €29 per person per stay. In addition, the multiplier effects from nautical tourism on the regional economy are thought to be substantial. For example, an average of 2,900 visitors from Dunkirk to the port of Cayeux-sur-Mer (Port Hourdel) are estimated to generate demand for 11,600 tourist beds nights per year for local accommodation providers.

The marinas face a number of challenges that include an aging fleet and an ageing customer base (age 58 on average).

Some 265 sites in the region (including coastal and inland locations) provide opportunities for nautical tourism activities (such as yachting, diving). There are thought to be substantial opportunities to exploit more sophisticated nautical tourism markets in the UK, Belgium and the Netherlands, as well as to attract additional revenue from the high volumes of conventional tourism to the region.

This study was intended to build awareness and knowledge of the opportunities for nautical tourism development in the region and to strengthen support amongst key decision-makers for the development and marketing of combined products.

Case Study 4 Integrated destinations: Dive tourism in Germany[299]

Germany is among the leading diving markets in Europe, both in setting wider market trends and overall size (estimated at some 420,000 divers in 2014). The German Dive Sport Organisation has forecast that the market will grow to around 500,000 divers within the next ten years. It is indicated that the most important requirements for German dive travellers are health and safety standards and certification, an attractive marine environment and attractive non-diving activities. Profiles of those undertaking diving show that the largest segment constitute 'leisure divers' (70 per cent) who prefer to combine diving trips with other non-diving related activities. So-called 'passionate divers' (20 per cent) make their travel plans on the basis of diving conditions, whilst 10 per cent of 'families and couples' have at least one enthusiastic diver and are highly motivated by the quality of other holiday elements, having high disposable income. This group, together with leisure divers, are thus presumably more likely to visiting tourism destinations where diving is offered as part of a combined, high-quality package of local services. Diving holidays typically require a few days on which there is no diving because of the need to prevent decompression problems.

Case Study 5 Integrated products: Curioseaty

The Curioseaty project is an example of an existing initiative aiming to address some of the issues described above. It is developing a transnational 'nautical tourism' route based on the history and cultural heritage of ancient and modern European maritime civilizations and societies in Spain, Portugal, France, Italy and Croatia. It will provide tourists with information on destinations, sites of interest and nautical

experiences, as well as tourism products such as hotels, hostels and restaurants. Hence it connects the market potential of water sports to European maritime heritage, making heritage visible and accessible to nautical tourists. This will allow tourists to practice nautical sports while also enjoying Europe's maritime culture and heritage.

The project aims to contribute to the diversification and competitiveness of the European nautical sports and coastal tourism offer. It is encouraging European nautical destinations and tourism businesses to work collectively to develop products and market the project to tourists, thereby improving their combined competitiveness.

The project mapped attractions, services and sport activities in a number of coastal destinations in five European countries. The partners built a communication strategy to promote the route in Europe and beyond. They created a website and app to provide relevant information online.

The project provides an example of how to combine outdoor/sport activities and cultural heritage with the aim of providing tourists with a unique experience.

A6.2.2 Existing EU support

The EU provides tourism stakeholders with various funding support opportunities. For example, the European Regional Development Fund (ERDF) aims to increase economic and social cohesion between EU regions. It can support tourism-related research, tourism-related IT-products (e.g. mobile apps), innovative tourism services in less favoured and peripheral regions, and niche tourism products and services.

The European Commission offers co-funding through the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) programme for sustainable transnational tourism products that diversify the EU tourism offer. It is stated that *"these are thematic products (or services) in areas such as eco-tourism, sports tourism, food and wine tourism, health and wellbeing tourism, protected natural sites-based tourism and nature tourism. These can be thematic tourism products such as transnational itineraries or projects in areas such as environmentally friendly tourism, sports tourism, food and wine tourism, health and wellbeing tourism, nature tourism, or 'slow tourism' – travel which allows tourists to engage more fully with communities along their route*."[322] The aim of this COSME initiative is to:

- Strengthen transnational cooperation in sustainable tourism.
- Encourage greater involvement in sustainable tourism for small and micro enterprises, and local authorities.
- Stimulate competitiveness in the European tourism sector.

Examples of nautical tourism-related projects funded under COSME include[323]:

- WILDSEAEUROPE (2015 funding call): A Discovery Journey of Europe's Marine Biodiversity through Water Sports & Coastal Trails. Aims to create a transnational Sustainable Tourism Route that connects European coastal destinations with a rich marine biodiversity and unique places where tourists and visitors will be able to experience marine wildlife through water sports & outdoor activities.

[322] European Commission (2016). Sustainable transnational tourism products – webpage: http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/transnational-products/index_en.htm

[323] Project descriptions available at: http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/transnational-products/index_en.htm

- Thematic Routes on Underwater Cultural Heritage (2015 funding call). This call for proposals aims to 3 projects from a maximum budget of €195m[324], to promote the creation of 'touristic thematic routes on underwater cultural heritage and its preservation as a way to enhance the competitiveness of the coastal and maritime tourism sector and to promote diversification in tourism offering.

SURFINGEUROPE (2015 funding call). The main objective of this project is to define and promote a sustainable transnational surf tourism product called SURFINGEUROPE, providing a wide visibility of the product itself and its market uptake. The product will cover five countries, establishing Europe as surfing route: Viana do Castelo (Portugal), Ribamontan al Mar (Cantabria, Spain), San Sebastian (Basque Country, Spain), region of Brittany (France), Bundoran (Ireland) and the regions of South West England, Wales and the Channel Islands (United Kingdom). The project entails some €500,000 of annual funding for the four work packages, which are estimated to result in €5m of additional GVA in the five localities participating in the project[303].

CurioSEAty (Spain, France, Portugal, Croatia, Italy) (2013/14). See Case Study 5. The project had an overall budget of €199,907.

Venetian Routes: Enhancing a shared European multi-cultural sustainable Tourism (VeRoTour (2012-2014 funding period). The project aimed to implement and enhance a trans-national thematic cultural route linking the extraordinary and complex system of maritime routes, settlements, defensives fortifications and cultural heritage dating back to the Republic of Venetia (the so-called Serenissima) across seven countries (Italy, Spain, Slovenia, Croatia, Albania, Greece and Turkey). Total funding for the project amounted to €279,998, with €64,703 assigned to the Region of Veneto (from initial match funding of €16,175). The actions of the project are divided into six work packages.

Other projects funded through other EU instruments include[325]:

- SLOWTOURISM (ERDF 2010-2014). A regional cooperation project which linked Italian and Slovenian tourist areas by the Adriatic through the philosophy of slow tourism, with a special focus on sustainability, responsibility and eco-friendly concepts. The project developed a common market strategy and targeted tour operators, tourism associations and businesses, and local governments. It developed new holiday options for local tourists as well as the international market, in particular China and Japan, increasing demand for environmental and nature-related tourist destinations. The network involved more than 100 operators for each 'slow' route/destination, whilst tourism organisations and associations ensured the continuity, promotion and marketing of the 'slow' products and packages during and after the end of the project.
- Banff Coastal Tourism Programme (Scotland) (EAFRD 2010-11). The project encouraged tourist service businesses to work collaboratively to stimulate growth of the industry in north Aberdeenshire. This was achieved through quality service provision, including: increasing the range of quality products, services and accommodation; facilitating collaborative work between businesses to improve the overall visitor experience; improvement to the Banff coast environment combined with activities such as wildlife tourism and water sports, and strengthened local partnerships. The programme had a budget of some €228,000, of which €102,600 was sourced from the European Agricultural Fund for Rural Development/LEADER funds.

[324] https://ec.europa.eu/easme/sites/easme-site/files/Draft-%20call%20for%20proposal%20text_underwater_heritageclean.pdf

[325] European Commission (2016). Guide on EU Funding 2014-2020 for the Tourism Sector. Annex. Additional examples for coastal and maritime tourism.

- Mistral sweet factory and café – FLAG Slowinska (Poland) (EMFF, 2011-12). The sweets made in the factory use Omega 3 fatty acids produced from fish. The owner has launched a range of educational and promotional activities linked to regional history and environmental conservation. The setting up of a sweet factory that uses Omega 3 acids from fish, complete with cafeteria, helped generate additional income for a fisherman and his family, as well as contributing to the touristic attractiveness of the fishing port of Ustka. The project has helped attract new types of tourists to the port area: school groups and families with children.

The examples above highlight the range of EU funding programmes that have provided support to the development of combined products in the past, with funding typically in the region of €200,000. Projects completed to date highlight a strong degree of geographical and thematic variety, encompassing both combined goods and services and combined marketing of nautical tourism.

A6.2.2.1 Summary of impacts from previous project supported by EU funding

Few data are available on the impacts of the above listed projects. Data for SURFINGEUROPE are presented in Case Study 6.

Case Study 6 SURFINGEUROPE project: Surfing the Atlantic Area[326]

One major project initiated under the Surfing Europe funding call is the 'Surfing the Atlantic Area' project, a collaboration of eight partners from five countries that aims to increase the circulation of surf tourists along the European Atlantic coast (aiming for an increase of 10 per cent of surf tourists in each destination), to increase the number of employees by five per cent, and to contribute to an increase in global surf business volume of 20 per cent.

The number of surfers increase to 18,300 in 2014 from 7,840 in 2011 (including both locals and tourists). Over the same period expenditure increased by €7.9m (60 per cent), supporting 101 additional jobs created in the sector locally and the local economy benefitted from a €5.7m boost to GVA.

Each of the four SURFINGEUROPE project packages has been allocated the equivalent of €500,000 for each year of the 18 month project, generating an estimated return in GVA of €5m per year in each of the 5 locations participating (or a 10X rate of return). Notably, the focus of these packages differed between service/product innovation and marketing-led activities. For example, one of these packages involves the creation of a transnational surf tourism product club.

A6.2.3 Regional sea strategies

Regional sea strategies provide policy support for the development of combined products. For example, Priority Area 4 of the Atlantic Action Plan[327] includes specific objectives to 'preserve and promote the Atlantic's cultural heritage', combating seasonality and improving prospects for SMEs through diversification of maritime and coastal tourism products and development of niche markets by investing in maritime sport, marinas and nautical leisure activities, identifying and promoting cultural and natural attractions of the Atlantic seaboard such as artisanal fishing, local cuisine and maritime heritage, protecting and promoting tourist attractions. The Atlantic Area Action Plan support team provides 'guidance and proactive support' for organisations

[326] FSS (2015) Surfing the Atlantic Europe Project Description http://ec.europa.eu/DocsRoom/documents/11274/attachments/1/translations/en/renditions/native.

[327] COMM (2013) 279 – Communication from the European Commission: Action Plan for a Maritime Strategy in the Atlantic Area. Delivering Smart, Sustainable and Inclusive Growth.

engaging in activities that support the delivery of the plan, including facilitating partnership building between organisations.

Similarly, the sustainable tourism pillar of the Action Plan for the Adriatic and Ionian Region[328] aims to support the diversification of tourism offerings in terms of products and services, and outlines the creation of five new macro-regional tourist routes as well as targeting a 50 per cent increase in off-season arrivals through diversification. Specific examples highlighted include linking cruise roots to local economies and promotion of recreational fisheries as well as establishment of common standards and promotion of public-private partnerships.

A6.3 Problem definition

In general, there is a perception amongst stakeholders that there is a growing but underexploited demand for combined products that could be better supported through more partnership working.

This is demonstrated by the findings of the 2012 public consultation on the challenges and opportunities for maritime and coastal tourism in the EU. The responses suggested that the competitiveness of maritime and coastal tourism would be best supported by European support for initiatives encouraging the development of partnerships between tourism operators and local businesses (96 per cent of respondents agreed).

The second most popular approach was to increase competitiveness in the sector through support for innovation (94 per cent), followed by support for the diversification of tourism products and services (93 per cent) and the setting up of clusters and networks of stakeholders to improve sectorial organisation, including at the trans-national and trans-regional levels (93 per cent). Specific suggestions for trans-national and trans-regional initiatives included the development of common transport infrastructures for better accessibility, promoting a common cultural or industrial maritime heritage and promoting combined itineraries for eco-tourism.

There was also agreement that there was a need to strengthen the image and profile of Europe's maritime and coastal tourism sector, particularly by:

- Using websites and promotional campaigns by sea basin, together with dedicated communications for specific groups (92 per cent agreed);
- Promoting the richness and diversity of Europe's maritime and coastal regions (90 per cent agreed);
- Cross-border promotional initiatives and activities amongst stakeholders to promote coastal destinations (89 per cent agreed);

These findings also suggest a need for increased coordination, diversification and innovation in tourism products and services for the EU to remain competitive with other destinations, satisfy changing demands from consumers and to support the development of remote coastal areas. There were also specific suggestions from respondents relating to the development of tourism products and services that extend offers from coastal areas to the hinterland.

A6.3.1 Causes of the problem

There are a number of factors that are contributing to the problem:

- **Sector fragmentation limiting innovation** – The development of combined products typically requires innovation and cooperation between the providers of different tourism services or between agencies promoting tourism. A key barrier is the fragmentation of the coastal tourism sector:

[328] COMM (2014) Communication from the European Commission concerning the European Union Strategy for the Adriatic and Ionian Region.

- The sector is dominated by small and micro businesses, which have relatively limited capacity for change and innovation. This creates barriers to the development of innovative tourism solutions.
- Cooperation and knowledge sharing in the sector are limited, particularly in remote areas and across different Member States – a situation confirmed by interviewees, who cite the lack of a common understanding of combined products among businesses, educational institutions and policy-makers as a barrier. There appears to be a structural lack of cooperation, due to high levels of internal competition between businesses, neighbouring locations, regions and between Member States. This is a barrier to knowledge sharing, partnerships, innovation and joint marketing initiatives, and restricts competitiveness.
- For large scale intra-EU product development, administrative complexity can be challenging in building and maintaining partnerships[329].
- Differing motivations from different partners can undermine initial combined product development objectives. This can be accentuated when financial inputs differ across involved partners.

This issue can be demonstrated by considering the performance of existing European Cultural Routes. An evaluation of the performance of the routes concluded that*: "While some networking is taking place between Cultural Route partners, there is a clear lack of support mechanisms – capacity-building and funding, in particular – to encourage more face-to-face partner interactions and meetings. Without this vital "connection" each partner concentrates his/her activities on their own part of a Cultural Route, thereby hindering network expansion"*.[330]

- **Shortage of skills required for product diversification**. A lack of marketing and other skills is another barrier to product diversification and the development of diversification strategies in the coastal tourism sector. There is a need for the sector to develop resilient and sustainable strategies, products and services and market these effectively to a global audience, particularly in a context of changing age demographics and ownership patterns in the yachting sector. This will require development of a range of strategic, managerial, marketing and professional skills at the local level.
- **Limited access to finance**. As evidenced in Section A6.2.2, there is some funding available (i.e. around €200,000+) for medium-to-large scale combined product projects at the EU level. Despite the availability of EU funding, difficulties remain in accessing finance, particularly for smaller scale funding requirements. This is due in part to a structural lack of time and capability in relation to the administrative processes for accessing existing funds. Some progress has been made over the last few years in improving the availability of financing and credit for SMEs through the provision of loans, guarantees and venture capital. The European financial institutions — the European Investment Bank (EIB) and the European Investment Fund (EIF) — have increased their operations in respect of SMEs in recent years, most notably through COSME. Although the SBA[331] still identifies access to finance as being the second-largest problem faced by individual SMEs more generally. The fragmented nature of the sector and predominance of micro-businesses can present a barrier to access

[329] ProjectSeaEurope. A Discovery Journey of Europe's Marine Biodiversity through Water Sports & Coastal Trails. Presentation. http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/transnational-products/index_en.htm

[330] Council of Europe (2010). Impact of European Cultural Routes on SMEs' innovation and competitiveness. Provisional Edition. Competitiveness and Innovation Framework Programme (CIP)

[331] http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_5.9.2.html

existing EU funds[332] which typically require multi-partner, multi-Member State bid consortia.

- **Lack of awareness and engagement**. A major challenge for the development of combined products is the general lack of awareness of opportunities relating to nautical tourism amongst regional economic decision-makers. Seen as a 'coastal management' issue, nautical tourism is rarely integrated within regional economic strategies and plans and often attracts little support from politicians, civil servants and other key decision-makers, according to stakeholder interviews. This is despite the considerable spending power of many visitors to ports and marinas and potential wider economic benefits to the tourist economy from engaging these visitors in a wider range of local activities. Stakeholders indicate that whilst there are often considerable local resources allocated towards developing environment or heritage amenities for the benefit of the tourist economy, comparable resources allocated to nautical tourism are scarce.

Overall the evidence suggests that the challenge of developing combined products is likely to be part of a broader issue relating to a lack of collaboration and cooperation between tourism businesses and sub-sectors, as well as between different regions and Member States.[333]

A6.3.2 Consequences of the problem

Key consequences:

- Lack of unique and customised experiences offered fails to cater for changing demands in this regard, limiting demand for nautical tourism activities.
- Lack of market visibility and weak product differentiation and promotion compared to established destinations (coastal and non-coastal) and loss of potential tourists to competing non-EU destinations.
- Reduced opportunity for combined product related clustering and new business generation.

This will reduce the ability to meet the economic objectives for maritime and coastal tourism in the EU, particularly those relating to:

- Increasing the competitiveness of the EU coastal tourism sector by offering a viable and sustainable alternative to the mass-tourism model and attracting more and higher value coastal tourists.
- Attracting visitors to EU coastal areas outside the peak season (particularly those located in the Atlantic Ocean, North Sea and Baltic Sea basins) and address seasonality issues.
- Helping to attract and support skilled and higher value employment in coastal areas. This would represent a missed opportunity to increase productivity, facilitate innovation, professionalism and support collaboration and access to resources.

A6.3.2.1 Key stakeholders affected

The interactions between the issues above and individual stakeholder groups are described below:

- Tourists have access to fewer products in EU coastal destinations and are less aware of the available.

[332] Ecorys (2016). Study on specific challenges for a sustainable development of coastal and maritime tourism in Europe. European Commission

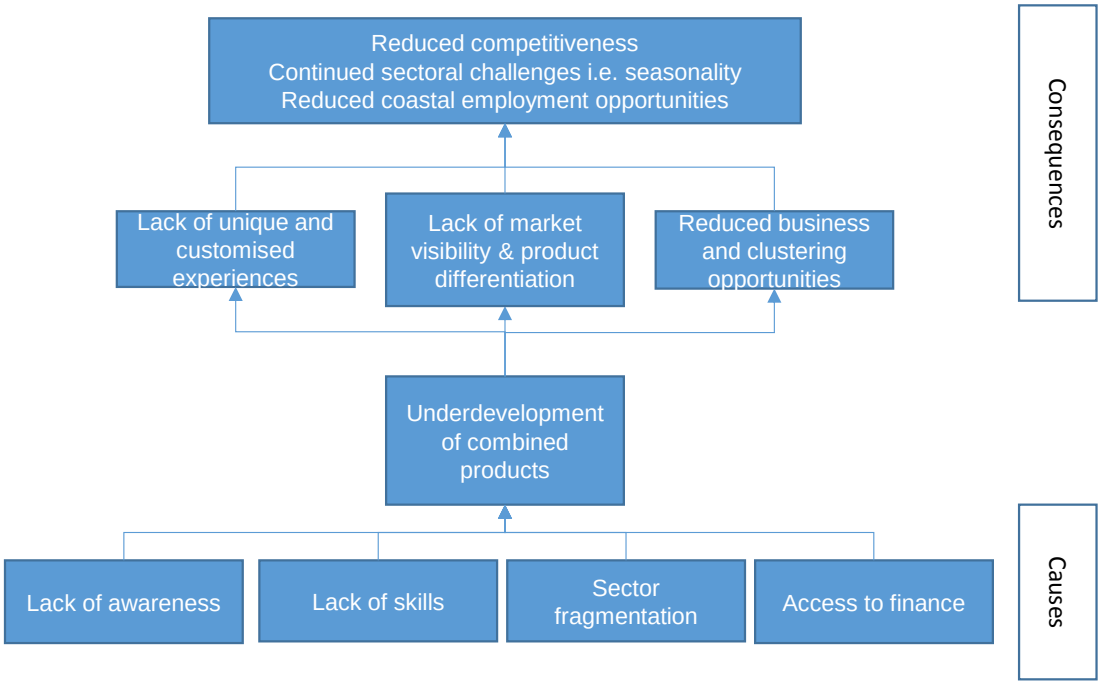
[333] European Commission (2012), Challenges and Opportunities for Maritime and Coastal Tourism in the EU: Summary Report of the Online Public Consultation Results

- Tourism businesses are missing the opportunities provided by fully exploiting the benefits of coastal tourism. They also more exposed to the seasonality of the mass-tourism model, which restricts their turnover, profits and has knock-on effects for their ability to access finance and attract staff with higher levels of skills and expertise. Tourism businesses can also contribute to the above issues through the low levels of collaboration, cooperation, innovation and promotion of synergies with other tourism providers.
- Tour operators and travel agents have the challenge of working with a fragmented sector comprising lots of small businesses. The analysis suggest that joint working with tourism businesses to share knowledge, collaborate and develop new products is comparatively uncommon.
- According to interview participants, a major challenge is a lack of evidence of the links between nautical tourism and the wider regional economy and a corresponding lack of engagement from politicians and other decision-makers.
- Local coastal communities are affected by the negative social and environmental pressures resulting from the mass-tourism model. The above issues also prevent local businesses and economies from maximising the potential economic benefits of combined nautical and coastal tourism products in terms of increased high value visitors and expenditures, reduced seasonality effects, and the associated increases in demand for other tourism products and services.

A6.3.3 Problem tree summary

The linkages between problems, causes and consequences are summarised in Figure 11.

Figure 12. Problem tree



A6.4 Baseline scenario

Under the baselines the causes of the problem are likely to remain largely unaddressed. A quantitative depiction of the scale and rate of combined products under the baseline is not feasible due to scarcity of data. Some incremental

development of combined products is expected to occur (as evidenced through the review of recent EU funded combined products), linked both to existing EU funding opportunities and where clear and readily accessible market opportunities are present. The growth potential for nautical tourism appears greatest in mature/established coastal tourism markets, a trend which is expected to continue. In the absence of intervention, it is likely that the gap with less established markets will continue to grow.

A6.5 Justification for EU intervention

Article 195 of the Treaty on the Functioning of the European Union (TFEU) requires the EU to complement Member State tourism sector actions 'particularly by promoting the competitiveness of Union undertakings in that sector', and thereby EU action should be aimed at 'encouraging the creation of a favourable environment for the development of undertakings' and 'promoting cooperation between the Member States, particularly by the exchange of good practice'.

These requirements link to the key issues affecting the combined products market of limited collaboration (especially cross-border) and innovation due to the structure of the sector and associated transactional costs. Such factors are unlikely to change without intervention. There is considered to be unmet demand for combined products that the market is not fully delivering due to the high transaction costs and imperfect information relating to identification and development of combined product opportunities, innovation and partnership working. This erodes the competitiveness of EU nautical and coastal tourism, resulting in missed opportunities for tourism-generated jobs and growth. There is a role for the EU in fostering cross-border activity and partnership working and spreading best practice and catalysing innovation.

A6.6 Intervention options

A6.6.1 Objectives

The general objectives of the intervention are to:

- Stimulate performance, competitiveness and innovation
- Enhance employment and the efficient use of labour
- Strengthen sustainability

The specific objective is to increase development of combined products, through:

- Provision of information to raise awareness of the potential opportunities for combined products.
- Facilitation of opportunities for collaboration and partnership building.
- Improvement of skills relevant for the development of combined products and the development of partnerships.

A6.6.2 Long list of intervention options

The above issues and market failures suggest that there is a rationale for public intervention to provide incentives and create favourable framework conditions to support the development of combined products. There is likely to be a role for intervention options that can catalyse change in the sector by working to overcome information failures and play a convening role, bringing relevant actors together and helping to stimulate the creation of an enhanced market for combined products. The following intervention options were identified as a result of desk research and interviews with stakeholders:

- Option 1: Organising a conference to draw attention to the market potential for combined nautical and coastal tourism products.

- Option 2: Issuing a call to organise a specialised EU wide nautical and coastal tourism professional fair to kick-start the development of a combined product 'market place'.
- Option 3: Micro-funding for innovation to facilitate the development of combined products amongst SMEs.
- Option 4: Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge about innovations and products.

The options are targeted at supporting the development of a market for combined products. To be successful the development of this market will require a collaborative approach involving all relevant actors as well as good visibility in the market place.

These options should therefore be focused on involving tourism businesses, tour operators, travel agents, tourist boards and associations as well as educational institutions and policy-makers across regions and Member States. This will be important to develop joint offers and propositions which create sustainable value and share economic and social benefits amongst all actors and areas.

Policy Option 1	**Nautical-coastal tourism product conference**
Nature of the measure	Organising a conference to draw attention to the market potential for combined nautical and coastal tourism products.
Relevant objectives & problems	To raise awareness amongst key stakeholders of opportunities for nautical tourism development, to support the development of a common understanding and definition of nautical tourism, facilitate opportunities for networking and partnership building, and disseminating best practices.
Implementation procedures	An EU level conference could be hosted by the Commission to highlight the range of initiatives ongoing across Europe relating to combined products. This could include port and harbour authorities but also stakeholders such as tour operators, cruise operators and sailing clubs – much of this networking occurs on an informal basis at present so established networks could be brought together in a more formal setting.
Complementary actions	A working group focused on strengthening partnership working at the regional and sub-national level; A conference input and output paper, highlighting the potential role of combined products, evidence of their success, lesson and best practices.
Intervention logic	• Output – conference, conference briefings and dissemination papers, discussion/working groups • Outcome – increased understanding of the opportunities and approaches to support partnership working • Impacts – increase development of combined products and nautical tourism activity

Policy Option 2	**EU wide nautical and coastal tourism professional fair**
Nature of the measure	Issuing a call to organise a specialised EU wide nautical and coastal tourism professional fair to kick-start the development of

Policy Option 2	EU wide nautical and coastal tourism professional fair
	such a 'market place'.
Relevant objectives & problems	To link potential buyers of combined products with potential suppliers and destinations; many existing large-scale buyers (e.g. cruise operators) typically establish new contracts with providers through annual trade fairs
Implementation procedures	The call would ideally be an open procedure awarded to a supplier with technical awareness and knowledge of the relevant industries as well as connections to key companies.
Complementary actions	• A coordinated marketing campaign to potential delegates and other interested parties. • A demonstration tour or away day highlighting an effective project.
Intervention logic	• Output – broad participation and engagement across relevant stakeholders. • Outcomes – stronger understanding, knowledge and links between suppliers and buyers of combined products, supporting increased growth over the longer term. • Impacts – increase development of combined products and nautical tourism activity.

Policy Option 3	Micro-funding for innovation
Nature of the measure	Micro-funding for innovation to facilitate the development of nautical and coastal tourism products and services amongst SMEs
Relevant objectives & problems	To help address the lack of local funding and awareness of nautical tourism businesses by establishing effective 'proof of concept'. It will be important that the funding is not accompanied by a high administrative burden as this will act as a disincentive for potential applicants who are likely to have limited time and financial capabilities. This would address one key issue (lack of engagement from local politicians/public administration coupled with insufficient scale to attract larger funding sources) cited by interview respondents. For example, some ports have explored development of specialist web applications linking yachtsmen to local nautical tourism activities but have been unable to secure access to finance
Implementation procedures	The fund would entail competitive awards to SMEs engaged in innovative nautical tourism combined products business activities. In order to reduce administrative and transaction costs, whilst raising the profile of combined products.
Complementary actions	• A Europe-wide funding call linked to nautical tourism SMEs and combined products • A dissemination event for funded projects, highlighting the business case behind these investments
Intervention logic	• Output – funding for a pool of viable demonstration projects • Outcome – increased awareness and engagement of the

	viability of such combined products amongst key decision-makers. • Impacts – increase development of combined products and nautical tourism activity

Policy Option 4	Nautical and coastal tourism virtual platform
Nature of the measure	Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge about innovations and products.
Relevant objectives & problems	Recognising the importance of partnership and replication in combined products development, the platform would act as a community of best practice across the EU. • Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge about innovations and products. This could be used to: • demonstrate the potential benefit of combined products in order to overcome issues of competition; • facilitate partnering through network events and match-making • share ideas and experiences and develop concepts, • provide a database of funding opportunities • share best practices in partnership development and management and combined product development and marketing.
Implementation procedures	The platform would ideally be hosted by the EU to ensure sufficient scale and profile, with promotional activities in Member States to ensure wide engagement.
Complementary actions	• A promotional campaign across the EU (e.g. through marketing materials) • Collaborative demonstration pilots to showcase the platform
Intervention logic	• Output – increased collaboration and knowledge exchange between developers of combined products. • Outcome – stronger collaboration in the sector and awareness of the breath of activities undertaken across the EU. • Impacts – increase development of combined products and nautical tourism activity.

A6.6.3 Screening of the long list of options

Table 14. Screening exercise for the long list of policy options relating to NT-CT combined products

Policy option	Role of COM	Acceptability/ease	Effectiveness	EU added value	Proportionality	Conclusion
1: Organising a conference to draw attention to the market potential for combined nautical and coastal tourism products.	Hosting of the event, with possible external support	**Mod-low**: specific support would be needed to engage 'hard to reach' stakeholders	**Mod-low**: effectiveness is contingent on the engagement and subsequent uptake of outputs by industry, which is not assured. Range of existing events available.	**Mod-low**: industry-organised events, including cross-border events are common and readily deliverable where market demand is indicated	**Mod**: proportionate but likely to be insufficient	Excluded
2: Issuing a call to organise a specialised EU wide nautical and coastal tourism professional fair to kick-start the development of such 'market place'.	Some additional funding to procure services from a specialist provider and undertake promotional activities	**Mod-low**: specific support would be needed to engage 'hard to reach' stakeholders	**Mod-low**: effectiveness is contingent on the engagement and subsequent uptake of outputs by industry, which is not assured. Range of existing events available	**Mod-low**: industry-organised events, including cross-border events are common and readily deliverable where market demand is indicated	**Mod**: proportionate but likely to be insufficient	Excluded
3: Micro-funding for innovation to facilitate the development of nautical and coastal tourism products and services amongst SMEs	Provision of funding (in the form of match funds) in the form of loans targeted at SMEs	**Mod**: there appears to be some degree of experimentation through existing funds, which could be developed further, but this could require reallocation of resources. Care will	**Mod-high**: there are strong examples of larger EU grants delivering good GVA returns but limited access to local funds, and isolated examples of experimentation	**Mod-high**: stakeholders point to limited engagement from national/regional funding sources and authorities – such a facility could help demonstrate the	**High**: targets a specific barrier to the development of nautical tourism as perceived by stakeholders (lack of awareness of potential commercial benefits) and	*Take forward*

Policy option	Role of COM	Acceptability/ease	Effectiveness	EU added value	Proportionality	Conclusion
		need to be taken to minimise administrative burden	and collaboration that could be scaled up	viability of such projects on a commercial basis and share best practice	supports innovation and competitiveness of the SME sector	
4: Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge about innovations and products	The platform would ideally be hosted by the Commission to ensure sufficient scale and profile, with complementary actions and events at the Member State level	**High**: existing web platforms and resources are in place in different regions: an EU platform could build and expand on these efforts	**High**: Several ad-hoc regional platforms have been seen to add value and support engagement	**High**: A common EU platform would help combat fragmentation and competing definitions and lend visibility and credibility to nautical tourism	**High**: such a platform could expand over time, addressing gaps such as skills and knowledge as well as supporting Member State promotional activities	*Take forward*

A6.6.4 Short-list of options taken forward for assessment

The options selected for detailed appraisal are:

- Option 1 – Micro-level funding for innovation to facilitate the development of nautical and coastal tourism products *(policy option 3 in Table 14).*
- Option 2 – Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge *(policy option 4 in Table 14).*
- Option 3 – Virtual platform and micro-funding support – package comprising Options 1 and 2

A6.6.5 Option 1: Micro-level funding for innovation to facilitate the development of nautical and coastal tourism products

A6.6.5.1 Implementation and effectiveness of the intervention

This option specifically aims to help address the perceived lack of access to funding for micro-enterprises seeking relatively small-scale funds for nautical tourism, and to raise awareness amongst potential project promoters and financiers of the benefits and commercial viability of combined products.

The fund would entail awards to small and micro businesses engaging in innovative combined product business activities. There are a number of existing EU funds to which the tourism sector has access (see Section A6.2.2), although their scale and the administrative costs of accessing them present barriers for small and micro businesses[334]. Implementation of the option could entail the provision of specific direction and/or allocation of one (or more) of these existing EU funds towards the topic of combined products, with a focus on smaller funding needs. It would not necessarily require additional money to be put into the chosen fund(s), but the inclusion of the thematic idea of combined products as a specified target area and the creation of a more streamlined application process (and hence application costs) commensurate with the lower value of funds being sought by applicants, whilst retaining a necessary level of oversight.

The option would directly address one of the main underlying causes of the problem, providing easier access for smaller sums of funding, addressing a current market gap in small-scale funding for tourism innovation. As such, it would be partially effective in resolving the problem.

A6.6.5.2 Direct and indirect effects of the intervention

The intervention, in the form of a new micro-level lending facility, would provide access to small sums of funding for tourism businesses and others seeking to develop combined products.

Those **tourism businesses** and other organisations would directly benefit from access to finance that could address issues such as the costs of developing partnerships within a fragmented market and lack of investment capital required to develop combined product concepts. This would enable increased development of both new goods and services and provide improved scope to experiment with new offerings and approaches. This would provide improvements to the nautical and coastal tourism offer thereby enhancing image and competitiveness and hence, overall performance.

Other stakeholders indirectly affected as a result are:

- **Tourists,** who would benefit from greater diversity and innovation in combined products, including the development of new tourist routes and thematic activities.

[334] Ecorys (2016). Study on specific challenges for a sustainable development of coastal and maritime tourism in Europe. European Commission.

- **Tour operators and travel agents,** who could benefit from a more diverse range of activities to add value to existing packages and destinations.
- **Local communities,** which could benefit from new combined products that induce existing or new visitors to spend additional time and money in the area (particularly outside of established tourist seasons), leading to additional GVA in hospitality, accommodation and other service sectors.

A6.6.5.3 Economic impacts

Performance and competitiveness

A micro-level funding facility could have positive impacts on the performance and competiveness of local businesses and the wider tourism economy. Existing projects financed under COSME and other funding facilities point to strong levels of return on investment in terms of GVA and indirect and induced spending (as high as 1:10 in the case of SURFINGEUROPE, although multipliers may be as low as 1:1). Such a facility would be suited to the development of complementary nautical tourism goods and services that add value to existing tourism activities. As such, a moderate impact on performance can be expected. Whilst robust quantification of the impact has not been feasible, it can be shown illustratively that a well-managed facility of €28 million could result in a €50m+ GVA impact (based on a 1:2 multiplier ratio), equivalent to around €100m impact on tourism revenues.

Public authorities

Such a facility could be effective in leveraging additional match funding from public authorities, as well as ensuring better allocation of public funds. There would be costs to the Commission for allocating or reallocating funds, as well as national governments in providing match funding (where required).

Position of SMEs

Previous research and communications by the European Commission and European Parliament have highlighted a lack of effort at the Member State level to ensure barriers to the competitiveness of SMEs are addressed and sufficient access to finance is ensured. A thematic facility targeted at small firms and projects would reduce such barriers.

Functioning of the Internal Market and competition

Despite the measures taken to improve access to the single market for SMEs in recent years, a number of challenges remain, most notably access to cross-border capital investment. A micro-level funding facility could contribute to strengthening access to finance and support cross-border procurement of combined goods and services by tourism and leisure operators, thus also strengthening consumer choice and the diversity of offerings.

Innovation and research

Nautical tourism represents an emerging area of tourism and destination marketing, particularly with regard to combined products. There is evidence of changing recreational patterns amongst established tourists in many coastal destinations. As such, some degree of experimentation and research is needed into success factors and best practice in the development and marketing of such combined products in different markets. A micro-level funding facility would be conducive to innovation and research.

Consumers and households

Enhanced availability of combined products stands to benefit consumers with regards to greater choice in the marketplace.

A6.6.5.4 Social impacts

Employment and labour market

Such a facility can support the development of 'value added' combined products, which induce existing or new visitors to spend additional time and money in the local community. The high GVA and indirect expenditure associated with previous EU funded nautical tourism projects points to significant job creation potential. These would be particularly significant where combined product development help to counter broader sectoral challenges such as the seasonality or low value of tourism, or the decline of established coastal communities.

Working conditions

A micro-level funding facility could help foster the development of combined products that could in turn contribute to increased local wages through high-value tourism. It could also help mitigate some of the issues around seasonality of tourist income, and help attract higher levels of skills and expertise, depending on the focus of the products developed.

Culture

Given that cultural tourism is estimated to account for 40 per cent of all European tourism and 4 in10 tourists choose their destination based on its cultural offering[335], the platform could provide a useful forum for partnering and access to information – as well as funding resources for the development of culture-based combined products. This could in turn strengthen local awareness and preservation of cultural heritage.

A6.6.5.5 Environmental impacts

All impact types

Depending on the nature of the combined products developed through the facility, resulting increases in additional tourists or time spent in the local area could result in additional environmental impacts. Ideally, the focus of the could be used to incentivise low impact forms of tourism and hence help promote a shift towards more 'low impact' forms of tourism – and dissemination of best practice in this regard.

A6.6.6 Option 2: Development of a virtual platform to facilitate partnership engagement and disseminate and share knowledge

A6.6.6.1 Implementation and effectiveness of the intervention

This option would entail the development of an online nautical tourism platform to facilitate partnership engagement and disseminate and share knowledge about innovations and products. The online nautical tourism platform could be implemented through a Commission-funded contract, to be delivered and operated by a commercial contractor or through an appropriate EU-wide tourism representative organisation. Investment costs for the platform could be in the region of €100,000 per year for external contracting of the platform (based on experience from the similar EU Business and Biodiversity Platform). Alternatively, existing platforms may be appropriate for hosting, with the potential benefit of reducing costs and increasing traffic – further dialogue with EU and regional industry representatives should be undertaken to determine the feasibility of such an approach.

The platform could be used to demonstrate the potential benefit of combined products to participating businesses and the wider tourism and general economy, facilitate partnering through online networking and 'match making' events, allow sharing of ideas, experiences and development of concepts, provide ready access to a live database of funding opportunities being constructed, and compile best practices in partnership and combined product development and marketing. As an online platform, the costs of participation are kept to a minimum, encouraging involvement across organisations with limited funds/time available for EU travel and networking. Its online

[335] http://ec.europa.eu/growth/sectors/tourism/offer/cultural/index_en.html.

nature also accentuates the importance of ongoing facilitation to ensure that the forum created is engaged and active.

In this way it could help to address three of the four underlying causes of the problem and would therefore be partially affective in its resolution.

A6.6.6.2 Direct and indirect effects of the intervention

The intervention could help support increased collaboration and knowledge exchange between developers of combined products. This could then lead to stronger collaboration in the nautical tourism sector as a whole and improved awareness amongst different stakeholders of the breadth of activities undertaken across the EU. Key impacts could include an increase in the development of combined products and activity in the nautical tourism sector more generally.

Stakeholders directly affected:

- **Tourism business** would benefit from ongoing access to skills, partnering resources and funding databases necessary to develop and market such combined products, and scope to experiment with new offerings and approaches that could address common challenges such as seasonality.
- **Tour operators and travel agents** could benefit from greater awareness and evidence of the benefits of combined products and access to product innovators.
- **Tourists** would benefit from greater diversity and innovation in combined products, including the development of new tourist routes and thematic activities, as well as better awareness and information about these opportunities via the platform.
- **Policy makers** could benefit from clear examples of commercially successful combined products and evidence of benefits, as well as a forum for linking promoters and funders and facilitating cross-border collaboration.
- **The European Commission** will also incur some costs associated with the development and ongoing promotion of the platform, ideally by an external contractor, although these costs could be expected to be moderate. The EU Business and Biodiversity Platform, for example (which has a similar scale and focus to the proposed platform) is currently tendered on an annual basis by the Commission at a budgeted cost of around €100,000 per year, which includes a number of technical work packages as well as ongoing promotional efforts and events.

A6.6.6.3 Economic impacts

Performance and competitiveness

Such a platform could yield benefits for the overall competitiveness of participating organisations, firms and localities, where it is successful in aiding organisation to development successful partnerships and products that enhance their competitive offering.

Public authorities

Some costs can be expected on public authorities as a result of time taken to participate and contribute to the platform, although the extent to which this imposes an opportunity cost is uncertain as some degree of ad-hoc networking is undertaken by many authorities active in nautical tourism and a common EU platform could enhance the efficiency and effectiveness of these processes. There would be specific costs to the EC of commissioning the platform and its ongoing facilitation, as identified above.

Position of SMEs

An online platform would provide an easily accessible option for reaching high numbers of geographically dispersed SMEs. Such a platform could yield benefits for SMEs, enhancing their geographical profile and highlighting examples of innovative and best practice across the EU. Having access to a centralised database of skills and resources as well as a funding database could help address perceived barriers to the development of combined products which Member State authorities appear insufficiently resourced to support SMEs with at present.

Function of the Internal Market and competition

By linking promoters and supporters of combined products at the EU level, the platform could help enhance cross-border trade in goods and services through combined products and help enhance the overall competitiveness of the nautical tourism sector.

Innovation and research

The platform could have particular benefits with regard to supporting innovation and research in the area of combined products, building on previous collaborative research projects such as those funded by COSME and INTERREG.

Consumers and households

Enhanced availability of combined products stands to benefit consumers with regards to greater choice in the marketplace.

Macroeconomic environment

The overall macroeconomic effect is anticipated to be relatively minor.

A6.6.6.4 Social impacts

Employment and labour market

Such a platform can support the development of 'value added' combined products, which induce existing or new visitors to spend additional time and money in the local community and hence support job creation. These would be particularly significant where combined product development help to counter broader sectoral challenges such as the seasonality or low value of tourism, or the decline of established coastal communities.

Working conditions

The intervention could help foster the development of combined products that could in turn contribute to increased local wages through high-value tourism. It could also help mitigate some of the issues around seasonality of tourist income, and help attract higher levels of skills and expertise, depending on the focus of the products developed.

Culture

Given that cultural tourism is estimated to account for 40 per cent of all European tourism and 4/10 tourists choose their destination based on its cultural offering[336], the platform could provide a useful forum for partnering and access to information – as well as funding resources for the development of culture-based combined products. This could in turn strengthen local awareness and preservation of cultural heritage.

A6.6.6.5 Environmental impacts

All impact types

New combined products emerging through the platform could result in additional environmental impacts where it results in additional tourists coming to coastal areas. However, the platform could also provide a forum to disseminate best practice in low-

[336] http://ec.europa.eu/growth/sectors/tourism/offer/cultural/index_en.html.

impact and sustainable forms of tourism that incentivise more efficient resource use and recycling, etc., limiting such environmental impacts.

A6.6.7 Option 3: Virtual platform and micro-funding support (Options 1+2)

A6.6.7.1 Implementation and effectiveness of the intervention

This option would entail a coordinated policy bundle, linking the micro-level funding resource and virtual platform. The implementation mechanics would be as described in the previous three options.

It is envisaged that these measures could be mutually reinforcing. A dual launch to aid publicity would be expected. The virtual platform will provide a facility for ongoing sharing of innovation and best practice, a targeted forum for collaboration and partnering and broader engagement between tourism organisations. The funding will ensure that momentum gained through the platform has an outlet, providing improved access to the necessary financial means for crystallising the partnerships and ideas emerging from organisations engaged through the forum. In turn the platform will be able to promote the funding mechanism to a wide range of eligible organisation (addressing issues of fragmentation and lack of awareness of such opportunities) and provide advice on how best to access the available funds.

The combined policy bundle would address each of the major causes of the problem and hence would be expected to have a high level of effectiveness. As the component parts are mutually reinforcing, the effectiveness is expected to be greater than the sum of the parts when considered independently of each other.

A6.6.7.2 Direct and indirect effects of the intervention

The direct effects would occur through the same stakeholder groups as identified for the individual options previously presented. The linkages between the elements of this combined option would be mutually reinforcing and hence support greater engagement and ongoing combined product development activities. For example, the online resources can aid the identification of multi-Member State partners required to access EU funds as well as advice on the nature of funding available and best practice in consortium and proposal development. The direct and indirect effects are therefore expected to be of a greater overall magnitude that under the individual options.

A6.6.7.3 Economic, social and environmental impacts

These can be expected to be largely in line with those presented previously for Options 1 and 2, albeit with a greater overall magnitude reflecting the mutually reinforcing nature of the two components.

A6.6.8 Summary level assessment

In summary, each of the options appear to have strong benefits for a range of stakeholders in terms of performance and competitiveness, moderate benefits for employment and labour markets/social concerns and uncertain impacts with regard to the environment.

Table 15. Summary level assessment of impacts

Impact type	Option 1: Micro-funding	Option 2: Virtual platform	Option 3: Bundle
Economic impacts			
Performance and competitiveness	+	+	++
Administrative burdens on businesses	0	0	0
Public authorities	--	-	-
Position of SMEs	+	+	++

Impact type	Option 1: Micro-funding	Option 2: Virtual platform	Option 3: Bundle
Functioning of the internal market and competition	+	+	+
Innovation and research	+	+	++
Consumers and households	+	+	++
Macroeconomic environment	+	+	+
Social impacts			
Employment and labour markets	+	+	++
Working Conditions	+	+	++
Effects on social inclusion	0	0	0
Public health and safety	0	0	0
Culture	+	+	+
Environmental impacts			
Resource use and waste			
Water quality and resources	-/+	-/+	-/+
Biodiversity, flora, fauna and landscapes	-/+	-/+	-/+
Sustainable consumption and production	-/+	-/+	-/+
Transport and the use of energy	-/+	-/+	-/+
Land use	-/+	-/+	-/+

Key: a -/+ 7 point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact and, 0 = no impact

A6.7 Conclusions and recommendations

Based on analysis of impacts, and considering the respective benefits and costs of different options, the following conclusions can be drawn.

A6.7.1 Effectiveness

The overall effectiveness of each option is relatively modest when considered independently:

- An online platform could support ongoing networking and partnering and address the lack of access to key skills and knowledge.
- A micro-finance facility could address the defined problem of lack of access to finance, whilst potentially unlocking more investment through demonstrating the commercial viability of nautical tourism combined products. It is estimated that such a scheme could generate strong returns on investment in terms of the additional GVA generated.

The combined effect of the options in a package is expected to be the most effective as it would target the key underlying causes of the problem, and each of the components of the intervention would be mutually reinforcing. They would help to kick-start and provide ongoing support for the development of combined products by raising awareness of the opportunities, facilitating collaborations and partnerships, and providing funding to support the development of combined products. It has not been possible to establish quantitative estimates of the scale of potential impacts.

A6.7.2 Efficiency

Each of the options presents an efficient response to existing barriers to combined product development (lack of awareness, skills, finance and sector fragmentation), with relatively modest implementation and participation costs. Some ad-hoc efforts are underway to address these issues at the regional level but a coordinated and targeted EU response offers the potential for greatest efficiency and economies of scale.

A6.7.3 Uncertainties

There are significant uncertainties associated with each of the proposed options. Engagement with the online platform is contingent on procuring a skilled contractor, preferably with existing links to key industry partners, and adequate promotion on ongoing facilitation to ensure continued activity within the forum. Take-up of the funding is similarly dependent on the degree of awareness of the funding as well as the administration burdens associated with application for funds.

The magnitude of impacts is highly uncertain. A lack of underlying data creates constraints to the quantification that is feasible. There are key gaps in the data, particularly relating to: the current scale of the market for combined products; the opportunities for growth; and the extent to which these could be realised by the proposed interventions.

A6.7.4 Recommendations

Each of the options represents a sensible proposition to tackle the underlying causes of the problem, with relatively modest costs weighed against potential benefits. Each of options 1 and 2 addresses specific barriers to development of combined products but neither addresses all of the barriers comprehensively. For this reason, it is argued that the combined bundle (option 3) is likely to provide the most effective and efficient option.

A6.8 Annex: Evidence sources

A6.8.1 List of stakeholders

Detailed interviews were conducted with the following organisations:

- Var Chamber of Commerce;
- Boulogne Developpement; and
- ICOMIA.

A6.8.2 References

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- Personal communication, Port of Toulon Authority/Var Chamber of Commerce.
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Annex 7 Boat recycling / end of life boats

A7.1 Introduction

This annex addresses the issue of end of life (recreational) boats (ELB) and the scope to improve recovery rates in Europe in line with the waste hierarchy. It aims to acknowledge the economic, social and environmental impacts of current practices and gaps with the desired situation taking into account the objectives of performance of the European Union.

The product category relevant to the study is recreational boats. These are defined in the Recreational Craft Directive as "*any watercraft of any type, excluding personal watercraft, intended for sports and leisure purposes of hull length from 2.5m to 24m, regardless of the means of propulsion*". Recreational craft include marine craft as well as vessels used in estuaries and inland waterways. It does not include commercial ships. The principal categories of recreational craft are:

- Dinghy: a type of small boat (generally under 5m) often carried or towed for use as a boat's boat by a larger vessel. Utility dinghies are usually rowboats or have an outboard motor, whereas sailing dinghies are primarily designed for sailing purposes only. Modern rigid dinghies are mainly made of synthetic materials such as glass-fibre reinforced plastic (GRP, also known as GFRP or fibreglass), polypropylene, aluminium, wood and UV-resistant polyurethane varnishes. Inflatable dinghies are usually constructed with fabrics coated with Hypalon[337], neoprene or polyvinyl chloride (PVC).
- Paddlesport boat, of which there are three main types:
  - Canoe: a type of light, narrow, open boat, propelled by one or more paddles, which is used for racing, white water canoeing, touring and camping, freestyle, and general recreation. In some European countries, such as the United Kingdom, the term canoe is often used for both canoes and kayaks. Canoes are traditionally made of bark, however construction materials have evolved to include canvas on a wood frame, aluminium, moulded plastic or composites such as fiberglass.
  - Kayak: a long narrow boat that is pointed at both ends and that is moved by a paddle with two blades. Kayak construction is as for canoes.
  - Racing shell: an extremely narrow, and often comparatively long, rowing boat specifically designed for racing or exercise. Construction materials are typically composite materials such as carbon fibre or fiberglass.

    "*Canoes and kayaks designed to be propelled solely by human power, gondolas and pedalos*" and "*watercraft intended solely for racing, including rowing racing boats and training rowing boats, labelled as such by the manufacturer*" are explicitly excluded from the scope of the Recreational Craft Directive.
- Runabout: any small motorboat holding between four and eight people, well suited to moving about on the water. Runabouts can be used for racing, for pleasure activities like fishing and water skiing, or as a boat's tender for larger vessels. Some common runabout boats are bow rider, centre console, cuddy boat and walkaround. Fibre reinforced plastic materials are now used extensively in construction of small runabout boats to reduce weight and maximize speed when racing powerboats.

[337] Hypalon is a trademark for chlorosulfonated polyethylene (CSPE) synthetic rubber (CSM) noted for its resistance to chemicals, temperature extremes, and ultraviolet light. It was a product of a subsidiary of DuPont. The Hypalon trademark has become the common name for all kinds of CSM regardless of manufacturer.

- Cabin cruiser: a power-driven pleasure boat having a cabin equipped for sleeping, cooking, and the like. Cabin cruisers with sterndrive power, sometimes called inboard/outboards, are popular in inland waters and range in length from 7 to 12m.
- Sailboat: the sailboat differs from other types of boats in that it is propelled partly or entirely by wind. The term sailboat covers a wide variety of sailing craft, each with its own characteristics and styles. In general, sailboats are distinguished by size, hull configuration, keel type, number of sails, use and purpose.

Recreational boats can be classified in many other ways depending on the source, such as inflatable boats, motorboats and sailboats.

The Recreational Craft Directive also covers personal watercraft, defined as "*a watercraft intended for sports and leisure purposes of less than 4m in hull length which uses a propulsion engine having a water jet pump as its primary source of propulsion and designed to be operated by a person or persons sitting, standing or kneeling on rather than within the confines of, a hull*".

This analysis uses the same scope as the Recreational Craft Directive, but also covers recreational boats of smaller lengths, such as dinghies, canoes, kayaks, surfboards, that are not included in the directive, whenever relevant.

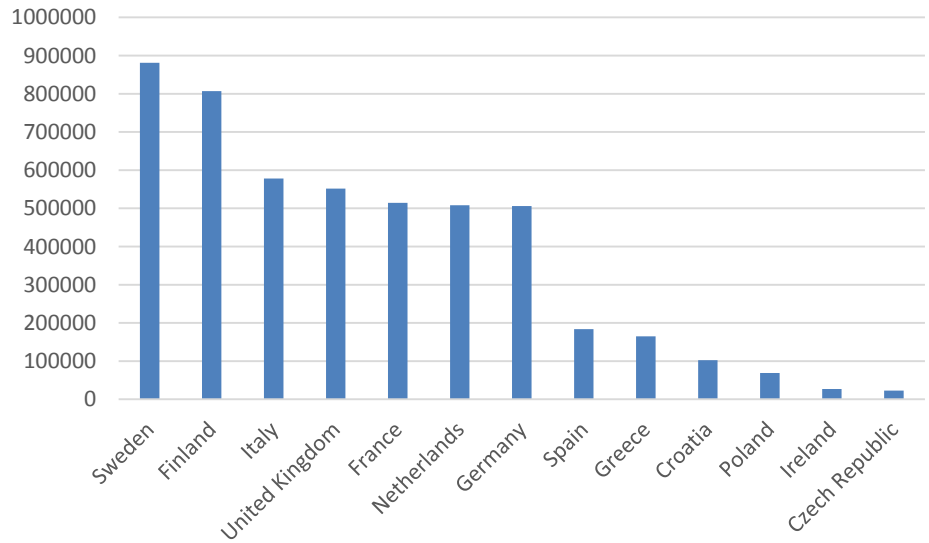
A boat reaches "end-of-life" status when it is considered no longer useful for its main activity – navigation or recreational purposes – or when the owner has decided to dispose of the boat[338].

A7.2 Topic and situation analysis

A7.2.1 Market size, scale and lifespan of current recreational fleet

There are an estimated 6 to 6.5 million recreational craft in the EU. Figure 12 indicates that Sweden and Finland host the largest number of such craft.

Figure 13. Number of recreational crafts in EU countries (2014)



Source: ICOMIA Statistics Book 2015

This fleet is composed mainly of small boats (i.e. craft of 2.5m to 7.5m in length). This category of recreational boats represents, on average, 74 per cent of the fleet of countries for which data are available according to this typology. It is estimated that

[338] Boat DIGEST guidelines, available at www.boatdigest.eu

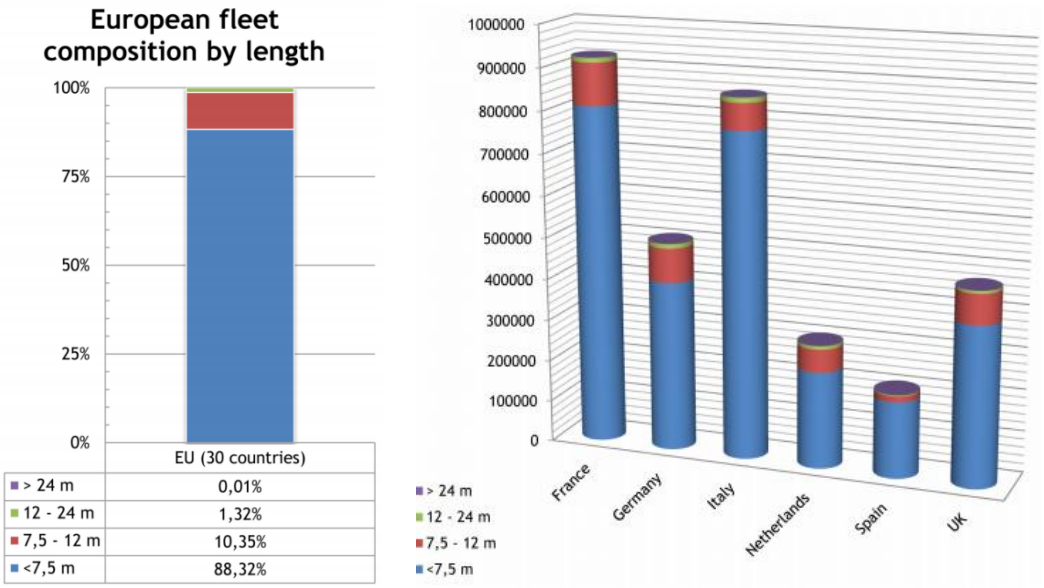
around 95 per cent of boats are less than 12m in length. Another study estimated that in 2009, boats smaller than 7.5m in length represented 88.3 per cent of the fleet of 30 European countries (more than 5 million) and boats smaller than 12m represented 99 per cent of the fleet[339]. While the study is older, it has data from more countries, and provides robust estimates.

Table 16. Number of recreational boats in the EU, by length of craft (for the countries where information is available; data derived from different sources)

Country	Recreational fleet	From 2,5m up to 7,5m	In %	from 7,5m up to 12m	In %	from 12m up to 24m	In %	above 24m	In %
Belgium	35 000								
Czech Republic	15 439	14	88%	1 679	11%	200	1%	5	0%
Denmark	55 000	20 300	36%	28 900	53%	58 000	11%		
Finland	737 000	633 300	90%						
France	924 000	923 506	72%						
Germany	500 000	241 000	48%	259 000	51%				
Greece	147 670	129 280	88%	16 030	11%	2 130	1%		
Ireland	27 000								
Italy	449 552								
Netherlands	523 000								
Poland	72 000								
Spain	128 796	115 916	90%						
Sweden	943 000								
UK	541 560	429 880	79%	92 815	17%	18 660	3%	205	0%
Total	**5 099 017**								
Averages			**74%**		**29%**		**4%**		**0%**

Source: DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

Figure 14. European fleet composition, by length



Source: Boatcycle project (2012) Diagnosis, state of the art of boat scrapping. Data obtained from the European Boating Industry and ICOMIA 2009

The data on fleet per country in Figure 13, derived from the European Boating Industry and ICOMIA (2009), differ from the ICOMIA figures in Figure 12 (for example, the fleet of the Netherlands is proportionately smaller). This shows the

[339] Boatcycle project (2012) Diagnosis, state of the art of boat scrapping. Data obtained from the European Boating Industry and ICOMIA 2009

diversity of data available in the literature and the difficulty in compiling reliable, harmonised data. This issue is further discussed in section A7.3.2.

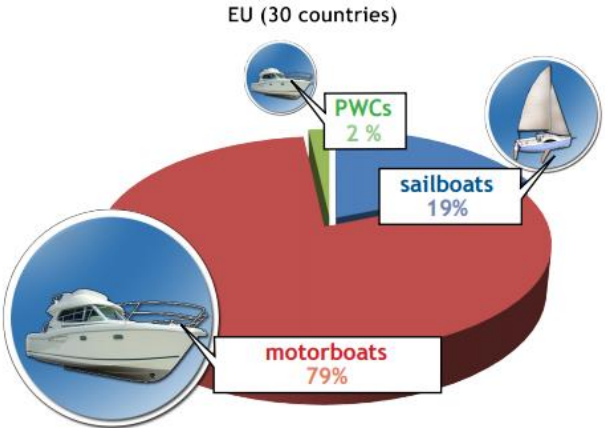
Table 17. Number of recreational boats in the EU per boat type (for the countries where information is available; data derived from different sources)

Country	Recreational fleet	Inflatable boats	In %	Other rigid boats including outboard motorboats	In %	Inboard/sten drive motorboats.	In %	Sailboats	In %
Belgium	35000								
Czech Republic	15439	6150	40%	4242	27%	2472	16%	2575	16%
Denmark	55000			1925	3,50%	21450	39%	31350	57%
Finland	737000								
France	924000							224000	25%
Germany	500000			115000	23%	190000	38%	195000	39%
Greece	147670	16143	11%	114397	77%	13330	9%	3800	2,50%
Ireland	27000								
Italy	449552								
Netherlands	523000			172590	33%	146440	28%	198740	38%
Poland	72000							68400	95%
Spain	128796							6583	5%
Sweden	943000								
UK	541560	78600	14%	155850	29%	94805	17,50%	212305	39%
Total	5099017								
Averages			22%		34%		25%		35%

Source: Data derived from different sources

According to a study prepared for DG Environment[340], the majority of the fleet is composed of motorboats, followed by sailboats and inflatables. The Boatcycle project[341] estimated that motorboats represented 79 per cent of the total recreational fleet across 30 European countries in 2009, while sailboats represented 19 per cent, and personal water craft (PWC) represented 2 per cent of the fleet[342]. However, the lack of information for many countries and the wide discrepancies among how data is reported make it difficult to make a robust assessment on the composition of the fleet at the EU level.

Figure 15. European fleet composition, by type of boat



Source: Boatcycle project (2012) Diagnosis, state of the art of boat and boat scrapping. Data obtained from the European Boating Industry and ICOMIA 2009

[340] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade
[341] The project Boatcycle (http://life-boatcycle.com/) was financed by the LIFE+ program over the 2010-2012 period, and was aimed at reducing the environmental impact of nautical industries by studying the different treatment modes for ELB
[342] Boatcycle project (2012) Diagnosis, state of the art of boat and boat scrapping. Data obtained from the European Boating Industry and ICOMIA 2009

The European Boating Industry (EBI) states that the average lifespan of individual craft in the recreational fleet is 30 years, although in some instances this may stretch to 40-45 years depending on the state/condition of the boat. Sailboats tend to be better cared for than motorboats[343]. The average lifespan of inflatable and semi rigid fleets is lower, at 15 years, due to the higher fragility of the materials they are constructed from[344]. While the typical lifespan of boats has been increasing due to the use of stronger materials, such as fibre reinforced plastic, this trend is expected to reverse to some extent because boats built today often have thinner hulls compared to the past[345].

A7.2.2 Market data on new sales of recreational vessels

There are no comprehensive statistics on recreational boat sales in Europe, in terms of units of boats[346]. Available data indicate that the sales of recreational boats in Europe have been affected by the global economic downturn in 2009. Since the financial crisis, registrations of new boats have declined by 40 per cent in the EU[323]. In Spain, sales of new boats decreased by 70% following the economic downturn of 2008[347]. This reflects the overall sensitivity of the EU shipping industry to market conditions e.g. fuel prices, prices of new boats. Recreational boats can be considered as a luxury good. Luxury goods are generally considered to have a high income elasticity of demand and price inelasticity. In other words, demand for such goods are not so much impacted by the purchasing price but by incomes - as people become wealthier, they will buy more and more of the luxury good. Inversely, should there be a decline in income its demand will drop, which can explain the decrease in overall new boat registrations since the economic crisis.

Eurostat Prodcom data suggests a smaller decrease of 12 per cent in boat production values between 2008 and 2013, although value added fell by around 30 per cent over a similar period. There were significant differences between Member States as production values fell by 71 per cent in the UK and by 82 per cent in Italy between 2008 and 2013[348]. Overall production values have fallen by less than demand from EU consumers because of the actions of EU boat-builders to shift their focus towards exports in light of the low levels of domestic demand. This strategy has already delivered some successes as export sales increased significantly in 2013, including a 47 per cent increase in exports to North America[349].

Data on the manufacturing, export and import of boats in the EU are displayed in the tables below. They show variations over time, with a clear decrease since 2010/11. In some countries, such as Germany, 80 per cent of boats for sale are pre-owned[350].

Table 18. Market data available on production, import and export of recreational boats

Production value of manufactured boats for pleasure or sports in million Euros

[343] According to experts attending a national workshop in Spain on April 28th and 29th 2011, in the framework of the study DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

[344] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

[345] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.

[346] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

[347] Consultoría Náutica, Interview with Jose Luis Fayos, 13/04/2016

[348] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

[349] *ibid.*

[350] ECSIP Consortium (2015), Study on the competitiveness of the recreational boating sector

Type of boat	2005	2006	2007	2008	2009	2010	2011	2012	2013
Motor boats	2,187	3,135	3,407	4,515	4,205	5,560	4,719	4,342	4,656
Sailboats	1,605	1,717	1,999	2,498	1,776	1,929	1,729	1,647	1,618
Inflatable vessels	61	52	54	354	294	236	283	208	205
EU total *	3,853	4,905	5,459	7,367	6,275	7,572	6,731	6,197	6,479

Source: Eurostat Prodcom data. Note: * over the years data is missing for various Member States due to absence of date (reported value is "zero") or confidentiality issues (e.g. Germany and Ireland).

Total (extra) EU export of all recreational craft in million Euros

Craft type	2007	2008	2009	2010	2011	2012	2013
Inflatable vessels	45,3	48,1	38,8	35,8	40,7	46	50
Motor yachts	3,181	3,431	1,995	2,594	2,601	2,430	2,455
Sail yachts	546,3	583,4	361,4	418,5	498,2	553,9	463,3
Total	**3,773**	**4,062**	**2,395**	**3,049**	**3,140**	**3,030**	**2,969**

Source: Eurostat international trade data retrieved via Comext, 2014.

Total EU import of all recreational crafts in million Euro

Craft type	2007	2008	2009	2010	2011	2012	2013
Inflatable vessels	65,3	64,1	49	59,4	64,4	63,3	58
Motor yachts	1,090	1,056	563,4	1,883	1,796	1,553	1,011
Sail yachts	261,9	217,9	194,5	274,2	218,5	202,6	109,6
Total	**1,417**	**1,338**	**807**	**2,216**	**2,079**	**1,819**	**1,179**

Source: Eurostat international trade data retrieved via Comext, 2014.

Source: ECSIP Consortium (2015) Study on the competitiveness of the recreational boating sector

A7.2.3 Trends and market data on end-of-life recreational boats

A7.2.3.1 Volume of ELBs

Few data or robust estimates exist on the quantities of end-of-life boats (ELB) arising in the EU.

The DG Environment study of 2011 estimated that the weight of ELBs requiring processing each year would be between 120,000 and 145,000 tonnes annually over the period 2015 and 2030. This was based on an average boat lifetime of 45 years (although European Boating Industry (EBI) advice suggests an average closer to 30 years).

The EBI estimates that the number of boats that reach end-of-life status is 80,000 per year. This represents approximately 1 to 2 per cent of the total current fleet of recreational boats. With an average weight of 1.5 tonnes per boat, this would equate to about 120,000 tonnes of waste per year. These figures correspond reasonably well to the data provided by the Boatcycle project (a LIFE+ project), which concluded that between 1.5 and 2 per cent of the total vessel fleet is dismantled every year, accounting for between 90,000 and 120,000 vessels (Boatcycle project, 2012).

A few country-based estimates are also available. In Norway[351] it was estimated that the number of ELBs could increase from 9,500 in 2013 to 17,000 in 2020 (+78 per cent). The weight of these ELBs is estimated to increase from 3,500 tonnes in 2013 to 18,300 tonnes in 2020 (+423 per cent)[352]. It is expected that the weight will increase until 2060, because of the effect of heavier boats that were produced in the 1990s and from 2000.

Table 19. Number and weight of end-of-life boats in Norway in 2013, 2020 and 2030

Category	Average lifetime	2013 units	2020 units	2030 units
Small boats	30	6 136	5 922	11 094
Motor/sailboats without cabin	40	2 687	6 579	6 234
Motorboats with cabin	50	521	3 363	4 976
Sailboats	50	172	1 174	1 035
Total		**9 515**	**17 038**	**23 339**
Category	**Average lifetime**	**2013 tons**	**2020 tons**	**2030 tons**
Small boats	30	429	405	589
Motor/sail boats without cabin	40	672	1 645	1 634
Motorboats with cabin	50	1 303	8 408	12 440
Sailboats with cabin	50	1 151	7 865	6 933
Total		**3 555**	**18 323**	**21 596**

Source: MEPEX, for the Norwegian Environment Agency (2014) End-of-life boats (ELBs) in Norway, environmental survey. The calculation is based on information from different sources in combination with estimations of lifetime.

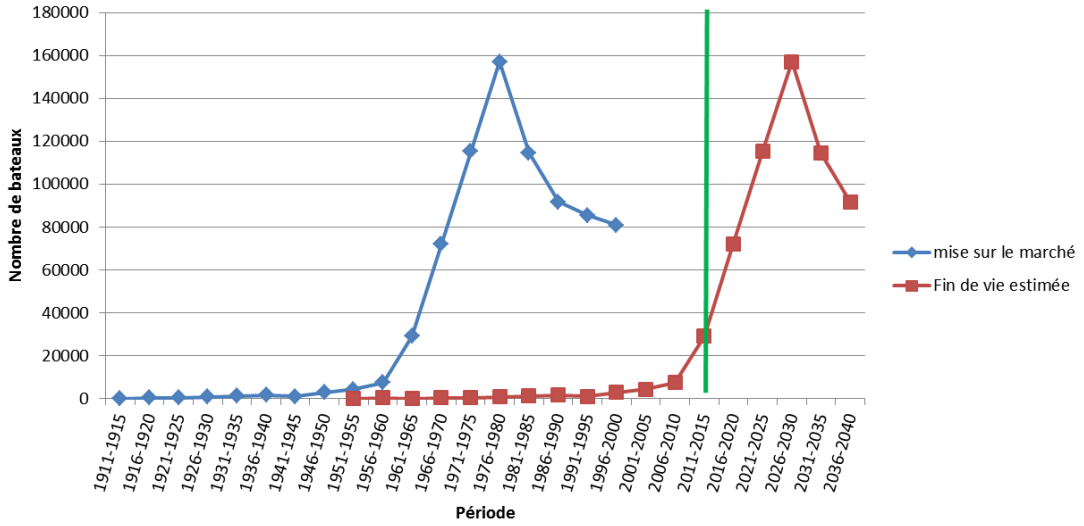
The ELB study carried out by the Norwegian Environment Agency concluded that it is more relevant to focus on larger and heavier boats because of their weight, rather than on all smaller categories. The total weight is expected to increase rapidly until 2020, with slower increases from 2020 to 2030. A separate (2014) study estimated that there are around 3 million recreational boats in the Nordic countries and that 6 per cent of that fleet (180,000 boats) is more than 40 years old[353].

In Finland approximately 3,000 boats are estimated to become ELBs annually. Figures have also been estimated for Sweden (2,000 ELBs/year), Spain (1,000 ELBs/year), Italy (6,000 ELBs/year) and the Netherlands (6,000 ELBs/year)[354]. An estimate for the Netherlands suggested it will have about 72,500 ELB units to treat between 2015 and 2030[355] (an average close to 5,000 ELBs per year).

[351] Despite not being an EU country, Norway has been studied as it has a significant recreational fleet with similar issues as EU countries. The Norwegian Environmental Agency has carried out work to compare the environmental effects of a take-back system for ELB as compared to having no system.
[352] MEPEX, for the Norwegian Environment Agency (2014) End-of-life boats (ELB) in Norway, environmental survey
[353] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.
[354] European Boating Industry, Presentation for Paris Nautic conference on 8 December 2015
[355] WA Yachting Consultants (2015) Number of End of Life Boats (ELB) and waste material flows in the Netherlands

A French study estimated that in France around 13,000 recreational boats reach the end of their life every year (representing 11,000 tonnes[356]) and there are 300,000 boats that have reached the end of their life but not yet been dismantled[357]. The number of ELBs arising is expected to increase as the boats put on the market in the 1970s reach their end of their life. Figure 15 below illustrates for the French market how the number of ELBs (red line) is estimated to follow the trend of boat production (blue line).

Figure 16. Boats put on the market in the past and estimated end-of-life



Source: Estimations by Econav, a French association promoting "eco-navigation"

Given the Boatcycle project conclusion that between 1.5 and 2 per cent of the of the EU fleet is dismantled each year, and the EBI estimate that between 1 and 2 per cent of the EU fleet become ELBs each year, this implies that the **scale of boat abandonment is likely to be relatively small**.

Information on abandoned boats is limited and may not be accurate because the figures are derived from different sources. The 2011 DG Environment study estimated the total number of abandoned craft at between 0.11 per cent and 0.4 per cent of the total fleet. Its calculations were based on Member State (MS) reports on boats reportedly abandoned in marinas. It suggests a figure of between 6,600 and 24,000 boats – although the data are based on a small number of Member States with perceived higher levels of abandonment compared to elsewhere. Spain and France report the largest number of abandoned boats. Finally, according to the DG Environment study, despite the seemingly significant figures on abandoned boats, the issue of abandoned boats did not arouse general concern among stakeholders during questionnaires and interviews for that study. The study estimated an adjusted range of between 6,000 and 10,000 cases of abandoned boats across the EU each year.

In the Netherlands, there are currently approximately 3,000 orphan boats (orphan boats are cases of abandoned boats where the owner is not known). This number is expected to grow to 12,500 within the coming five years[358]. This translates to a rate of 1,900 new abandoned boats per year. Aggregated across the EU Member States this could imply well in excess of the upper bound of 24,000 boats (estimated by the DG Environment study).

[356] An average mass of 850kg/boat was considered, based on data from FIN, the French Nautical Industry Federation. It is significantly less than the average weight provided by the European Boating Industry (1,5t)

[357] Région Guadeloupe (2014) Mission de conseil et assistance pour la mise en oeuvre de la filière BPHU

[358] Stichting Jacht Recycling, 2015, Advice Report: The prevention of fibre reinforced plastic boats from becoming orphan in Dutch waterbodies

To summarise, these different estimates indicate that the number of recreational boats reaching the end of their life is increasing, as is the number of abandoned boats. Based on the data that the project team was able to gather, the current number of ELBs arising in the EU per year is approximately 80,000 and is expected to increase over the short to medium term. The number of abandoned boats is estimated to account for 0.1 to 0.4 per cent of the current fleet (based on the source) and is estimated to be 10,000 vessels per year for the purposes of this analysis.

A7.2.3.2 Composition of boat materials

The largest component of this growing waste flow is fibre reinforced plastic (FRP).[359] This material represents approximately 60 per cent of the weight of motorboats and sailboats, as shown in the table below.

Table 20. Composition of recreational crafts

MATERIALS (VOLUME %)	MOTOR BOATS	INFLATABLE BOATS	SAILBOATS	OTHER BOATS
Fiberglass Reinforced Polyester (FRP)	60	2	60	65
Ropes	0	1	2	0
Wood	5	0	5	5
Metals	5	2	3	5
Glass	0,05	0	0,05	2
Plastics	0,3	20	0,3	2
PVC/ elastomers	0,5	56	0,5	2
Electric wires	0,05	1	0,05	1
Residual waters	0	0	0	0
Motors	10	10	5	10
Electric components	3	2	3	2
Appliances	5	0	5	0
Bathroom fittings	5	0	5	0
Furnitures	5	2	5	2
Sails	0	0	5	0
Oil	0,05	1	0,05	1
Refrigerants	0,05	1	0,05	1
Batteries	1	2	1	2
TOTAL % (MATERIAL/BOAT)	100	100	100	100

Source: DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

The industrial use of this material started in the 1970s. FRP boats are highly durable, which has a direct impact on their average lifespan. End-of-life disposal has, therefore, not been a major issue so far but it is likely to be in the future.

A7.2.3.3 Current disposal practices and the economics of end of life boats

When reaching the end of their useful life, recreational boats are usually disposed of in one of the following ways:

- Abandoned in marinas, yards, or at sea (sunk): due to high recycling costs, some owners may simply abandon their vessel. This means that these craft pose pollution risks and take up valuable space in marinas. They are not dismantled and the materials not recovered.

[359] Fibre Reinforced Plastic or Fibre Reinforced Polymer is a composite material made of a polymer matrix reinforced with fibres. The fibres are usually glass, carbon, or aramid, although other fibres such as paper or wood or asbestos have been sometimes used. The objective is usually to make a component which is strong and stiff, often with a low density (Introduction of Fibre-Reinforced Polymers – Polymers and Composites: Concepts, Properties and Processes, Martin Alberto Masuelli). The majority of reinforced plastic used in boat production is fibreglass.

- Brought to dismantling facilities: there is no consistent definition or standard for boat dismantling facilities, and thus no estimation on the quantities dismantled each year in the EU. However some data is available for some countries. The Boatcycle project concluded that between 1.5 and 2 per cent of the EU fleet is dismantled each year.

Data on dismantling facilitates that have been gathered so far on ELB practices in specific countries are presented in the table below.

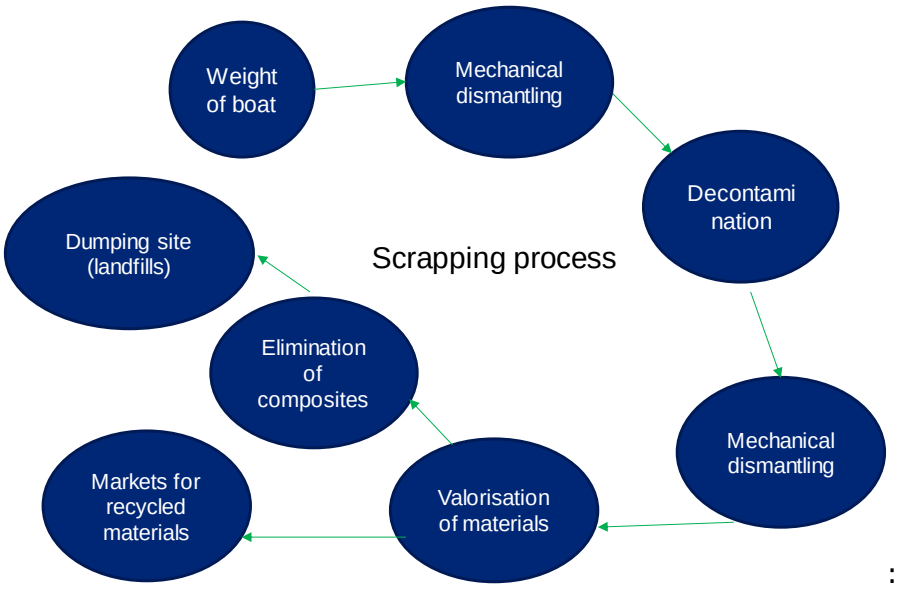
Table 21. Number of ELBs dismantled per country, based on data available

Member State	Number of dismantled ELBs
Finland	In Finland, more than 2,500 ELBs have been collected and recycled since 2005[360]. According to Kuusakoski Ltd., approximately 250 to 300 boats are recycled each year through its system; 80 per cent of the boats are made out of fibre reinforced plastic and ABS-plastic and 20 per cent are made out of metal and wood. A typical Finnish boat that is disposed of and/or recycled is small (approximately 4.5m long), made of fibreglass, and has an outboard motor[361].
France	In 2015, 500 ELBs were dismantled by APER, the French dismantling network created in 2009 by FIN, the French Federation of Nautical Industries. This is more than 5 times the number of ELBs that were dismantled in 2011. More than 1,000 ELBs have been treated by the APER network since 2009[362]. Of those dismantled, 38 per cent were motorboats, and 38 per cent were sailboats. Other ELBs include fishing boats, speedboats, semi-rigid boats and light sailboats. In terms of recovered materials, the network treated 76 per cent composites, 19 per cent wood, and 5 per cent metal. In 2014, the average length of ELBs was 8m, the average age was 35 and the average dismantling cost was €1,600. Given estimates of 13,000 ELBs per annum in France[363], this implies that nearly 4 per cent of ELBs are dismantled through the network. According to APER, it is likely that a significant number of boats are dismantled illegally. There are a number of illegal sites operating in the end-of-life vehicles sector that can also treat end-of-life boats as the treatment process is similar.
Sweden	Fewer than 100 boats are dismantled every year[364].
UK	Boatbreakers, a company that buys, sells and scraps boats, receives 40 to 60 boats a week to treat. This number does not necessarily include only ELB. The company extracts metals for recycling and sends fibre-reinforced plastics to landfill. It would like to use a machine to crush plastics to be used in cement kilns or road construction. The company is looking for funding. Wood components are sometimes given to artists or to wood recyclers. The company issues a certificate of

[360] European Boating Industry, Presentation for Paris Nautic conference on 8 December 2015
[361] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.
[362] APER, Presentation for Paris Nautic conference on 8 December 2015
[363] Région Guadeloupe (2014) Mission de conseil et assistance pour la mise en oeuvre de la filière BPHU
[364] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.

Member State	Number of dismantled ELBs
	destruction to prove the boat has been destroyed in an environmental sound manner.

Figure 17. Current ELB treatment process



Source: Boatcycle project: http://life-boatcycle.com/

The fact that components of recreational boats are often custom-made further reduces their potential for reuse. Further limiting factors are that the components may be outdated, damaged or the demand too low to justify their storage[365].

Although certain valuable elements may be separated and reused or recovered, FRP is usually not recovered and is instead landfilled or incinerated. FRP has a low recycling potential because it contains three or more components (fibre reinforcement, resin matrix and fillers and some cannot be melted or reformed)[366]. A number of R&D projects have looked at how to increase the recovery of FRP:

- APER carried out an experiment on the recovery of polyester composites and fiberglass in cement factories that enabled 67 per cent material recovery and 33 per cent energy recovery. In addition, the project was able to demonstrate that the use of this material by cement plants is already a viable recovery option (with no minimum volumes).
- A new process was developed by the CRITT in France by which the recycling of material composite enabled the production of new parts (and consequently two new product patents).
- A process was developed by IPCB/CNR (Istituto per i polimeri compositi e biomateriali) in Italy by which polyester composites and fibre glass chips are mixed with polystyrene to create a new material to be used by the plastic industry.

[365] Interview with APER, on 30/03/2016
[366] Recycling of fibre-reinforced plastics, published on July 22nd 2011: http://www.jeccomposites.com/news/composites-news/recycling-fibre-reinforced-plastics

- A project involving Veolia, SINTEF Materials and Chemistry, the Norwegian Composite Association, Reichhold and Nordboat developed a chemical process that makes it possible to separate the polyester and fibreglass so that both products can be reused[367].
- The EURECOMP project aimed to set up a new route to recycle fibre-reinforced thermoset composites by developing a process called solvolysis and to convert the organic phase of the processed parts into small molecules that could be reused by the chemical industry[368].
- A study carried out by Kroccan in partnership with MP industries (a company specialised in the manufacturing of products from recycled plastic composites) examined the transformation of composites in thermoplastics.
- In Sweden, the boat builder Ryds Battindustri AB started to manufacture boats with closed loop recycled scrap, which accounted for about 10 per cent of its layup production, and was able to produce small boats containing 20 per cent recycled fiberglass by weight[369].
- Some researchers analysed the possibilities of building cost-effective boats easily recyclable notably through simple shaped thermoplastic boats[370].

Despite the growing number of initiatives to increase the potential of material recovery of ELB, these technologies are not necessarily optimal because of the high energy consumption and/or high costs involved[371]. In addition, most of them are at low technology readiness levels[372]. It is also necessary to look at the whole lifecycle of boats: more recyclable materials may need more energy to be produced.

Further investigation is needed on the potential of energy recovery from FRP. With rising landfill costs and landfill bans in some countries (Germany, the Netherlands), energy recovery could be a suitable option for ELB treatment if it has high calorific value.

The dismantling of recreational boats typically has a high net cost compared to the possible benefits from recovering the materials. Costs range from €540 for 4m boats to €15,000 for 15m boats, including transportation to the dismantling site. The table below shows some of the costs provided by the literature, showing variation by the length of the boats.

Table 22. Costs for dismantling end-of-life vessels

Length of boat: Source of estimate	4m	7m	8m	9-12m	15m
ELB Network in France (2014)[373]	€540	€838	€1,822	€4,308	-

[367] Boat wrecks no more: Recycling old boats, published on June 21st 2011: https://www.sciencedaily.com/releases/2011/06/110609083228.htm
[368] EURECOMP (2012) Recycling Thermosets Composites of the SST
[369] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade
[370] ME Otheguy, Manufacture, repair and recycling of thermoplastic composite boats, PhD, Newcaste University, July 2010
P Papin, Etude et choix de matériaux polymères ou composites pour la réalisation d'une forme creuse - projet canoë biplace pour la randonnée (Study and selection of polymeric materials or composites for the creation of a hollow shape – two-seater canoe for excursions), Thèse de doctorat en Sciences des matériaux (sous la direction de Yves Bertin), Université de Poitiers (TS 97/POIT/2299), 1997.
Twintex® technical fabric from Owens Corning chosen for innovative vacuum bag moulded thermoplastic composite canoe, Owens Corning news release, 2008, accessed 15 February 2015.
[371] Shuaib, N., Mativenga P., (2016) Energy demand in mechanical recycling of glass fibre reinforced thermoset plastic composites
[372]Interview with University of Plymouth. Technology Readiness Levels (TRL) are used by the NASA. Low TRL describe research projects where basic principles have been observed and sometimes validated in laboratories but remain far from commercialisation (not tested in relevant environment for instance).
[373] APER, Presentation for Paris Nautic conference on 8 December 2015 (2014 figures)

BoatCycle (2012)	-	€800		€1,500	€15,000

The DG Environment study on the recovery of obsolete vessels not used in the fishing trade (2011) cited the same cost figures as the BoatCycle report in the table. The DG Environment study considered the following average prices for the dismantling of recreational boats:

- Sailing boats: 100 – 150 €/m
- Motor boats: 200 – 1,000 €/m

Actual costs vary widely depending on the length of boats and system in place in the countries. Finland has had a system in place for the collection and dismantling of boats for 10 years and is able to achieve low dismantling costs (see best practices). Dismantling costs can depend on the state of boats. For example, damaged boats are more expensive to transport as safety procedures may be necessary to avoid breakage during transportation.

The two main factors affecting the economics of recreational ELB recycling are:

- The cost of transporting the boat to a dismantling facility. High transport costs have been identified by several authors and stakeholders as the largest problem for recreational boat owners. In France, transport accounts for 30 per cent of the total cost of dismantling[374] (20 per cent waste management and 50 per cent decontamination (removal of oil for instance) and dismantling account for the remainder of the dismantling costs). In Norway transportation costs are reported to be high because the many road tunnels make the transportation of tall boats difficult. In Spain, marinas are allowed to scrap ELBs on site, thus reducing the costs for transportation.
- The material composition is also a significant problem particular to recreational boats. Most recreational boats are constructed with FRP. FRP is both difficult to treat (which increases dismantling costs) and has limited recycling potential (reducing revenue). Reduced revenues accentuate the costs of recycling for boat owners, as the full cost of the process will be passed on to them by the dismantling facilities. This compares to vessels in other fleets e.g. larger commercial vessels, whose hulls are mainly composed of metals. Treating metals compared to non-metal hulls is easier and there are clear markets for recycled metals. Therefore, end-of-life processing has lower relative costs and generates more revenues from their sale compared to recreational boats. In other words, metal-hull vessels are more often cash positive, whereas non-metal hull vessels are cash negative for ship owners. The vast majority of recreational boats are considered non-metal hull vessels.

  The combination of lower revenues and higher costs makes recreational ELB processing economically unattractive for owners and the recycling sector.

A7.2.3.4 Geographical and regional characteristics

The European Environment Agency[375] (EEA) estimates the length of Europe's coastline (20 coastal Member States, plus Norway, Iceland, Bulgaria and Romania) at almost 180,000km. The European coastal area extends to 560,000km^2 – some 13 per cent of the continent's total land mass.

Countries with longer coastlines are most concerned by the issue of irresponsible disposal of ELBs[376] e.g. the illegal dumping and abandonment of boats. France and

[374] APER, Presentation for Paris Nautic conference on 8 December 2015

[375] http://www.eea.europa.eu/

[376] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

Spain have recorded high levels of ELB abandonment. However, it is not clear whether this is because these countries actually have the largest abandonment issues or simply because they have better data on the issue than other countries.

France and Spain have the greatest number of facilities that are able recycle recreational boats. The project Boatdigest[377] provides an interactive map of dismantlers in Europe (although, as shown by additional evidence presented in Figure 17, this map is comprehensive):

Figure 18. Interactive map available on boatdigest.eu to identify dismantlers in Europe

Source: Boatdigest

In many countries, companies that are recycling or could be recycling boats also treat end-of-life vehicles (this is the case in Norway[378]) or are general waste management companies (e.g. in France). Recognition of this, and hence an expansion of the service offered by such existing companies to include recreational ELBs, could to some extent redress the lack of adequate facilities to dismantle boats seen in some countries. Furthermore, a project carried out in France demonstrated that the creation of specific facilities for the dismantling of boats is not economically viable[379].

Many of the countries with the largest recreational fleets (i.e. Finland, Norway, Sweden, and France) have, logically, been the first address to address the issue of ELB management, as the examples presented in the next section show.

A7.2.3.5 Existing policies and initiatives on the management of ELB

Directive 2008/98/UE sets obligations regarding the management of waste. Most Member States do not have specific public policies on the dismantling and recycling of end-of-life recreational boats. France, however, is quite advanced in this domain. In 2015, the French Law for Energy Transition and Green Growth (LTECV) introduced

[377] The project Boat DIGEST (Boat Dismantling Insight by Generating Environmental and Safety Training: http://www.boatdigest.eu/) was led over the 2013-2015 period and has the objective of improving norms regarding health, safety, and environment in the boat dismantling and recycling industry.
[378] Interview with the Norwegian Environment Agency, on 15/03/16
[379] EME, ECONAV (2012) Projet d'étude: les bateaux de plaisance en fin de vie

new obligations for the dismantling of recreational boats, including a financing mechanism based on the principle of Extended Producer Responsibility (EPR). In early 2016, the French Environmental Agency launched a study to assess the current situation and prepare for the implementation of these new provisions. France could require producers to pay a fee when a boat is put on the market.

Catalonia (Spain) also introduced an environmental licence for boat dismantling facilities. The Catalan Waste Agency set the procedure to obtain the licence to dismantle recreational craft, the documents to be provided and where to submit them.

Apart from the one due to be implemented in France, there are no ELB management regulations at the EU or Member State level, however some voluntary initiatives and best practices to tackle this issue have been identified. Examples are:

- France: a boat dismantling network called APER was launched in 2009 by the French boating industry working together with dismantling facilities (see best practices below).
- Finland: Finnboat,[380] together with Kuusakoski (a recycling company) have promoted responsible boat recycling in Finland since 2005, and organised several boat recycling campaigns.
- Sweden: Sweboat[381] , together with Båtskroten Sverige AB and Stena Recycling AB (boat scrapping and recycling companies), launched a project with the aim of building a nationwide system for recycling of recreational boats in 2015.
- Italy: UCINA, the Italian Marine Industry Federation, has been working on a feasibility study on the recycling of ELBs and components in a sound financial and environmental way and was involved in a working group inside UNI (the Italian Organisation for Standardisation) aiming at defining specific requirements to "design for recycle" yachts[382].
- Norway (not an EU Member State but included for comparison): in 2009 Veolia carried out a project during which 26 boats were dismantled using different techniques to identify materials, their chemical composition and the best dismantling methods to separate them[383]. The Norwegian Environment Agency published a report in 2014 estimating the potential negative environmental effects today and in the future without a take-back system for end-of-life boats, compared with the benefits of a system[384].
- Research projects: Two EU funded research projects: Boatdigest and Boatcycle (as seen above) address the issue of boat recycling.

Box A7.1 Best practice regarding ELB management

In Finland, Kuusakoski Ltd. has made a good start in recycling ELBs, especially boats made out of fibreglass and other plastics. Kuusakoski has 22 collection sites in Finland. At the collection site, boats are identified and measured. The batteries, oils, explosive materials (fire extinguishers) and other hazardous materials are removed and neutralised. The boats are then transported to one of Kuusakoski's crushers. The boats are crushed in groups that consist of only boats. If they are crushed with cars, the level of material that can be recycled is lower

[380] The Finnish Marine Industries Federation, Finnboat, is the umbrella organisation for Finland's marine industry and trade
[381] Sweboat, The Swedish Marine Industries Federation, is the trade organisation representing the Swedish Marine Industry
[382] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade
[383] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade
[384] MEPEX, for the Norwegian Environment Agency (2014) End-of-life boats (ELB) in Norway, environmental survey

because the separation of the materials is based on electrical conductivity, material density, magnetism and different colours[385].

In France, APER is the association in charge of the organisation and animation of the ELB management scheme, and was set up by the French Nautical Industry Federation in 2009. APER brings together 20 companies on the French coast, with 52 dismantling sites able to dismantle all types of recreational boats. These facilities have to comply with APER specifications. APER informs boat owners on the dismantling solutions at the national level. It also created APER PYRO, a sister organisation that will manage the destruction of expired pyrotechnics e.g. expired emergency distress flares, on a free of charge basis.

In Sweden, the first ELB scrapyard, located in Stockholm, recycles and sells used boat parts. It has an on-going project in which it is recycling seven different types of plastic boats to learn more about how to dismantle leisure boats and to test the scrapyard's process for environmentally correct recycling[386].

The Convention on the collection, deposit and reception of waste produced during navigation on the Rhine and inland waterways (CDNI) (see Box A7.2) does not cover ELB management, but provides a good best practice example of how the management of ship-related waste among several Member States can be coordinated. Best practices are considered for the different policy options and selected intervention to address ELB management in Europe.

Box A7.2 CDNI: best practice regarding management of ship-generated waste for Inland vessels

The CDNI establishes requirements on the collection, deposit and reception of waste produced during navigation on the Rhine and inland waterways. It was signed in Strasbourg in 1996 by Germany, Belgium, France, Luxembourg, the Netherlands and Switzerland. Following ratification by all the signatory states it came into force on 1 November 2009.[387]

It aims to improve control over the production of waste by applying the "polluter pays principle". The payment system used to finance the reception and disposal of oily waste is based on a fixed fee (or disposal charge), which is paid when gas oil is bunkered.

The convention applies on inland waterways of the following countries (fully or partly): Germany, Belgium, France, Grand Duchy of Luxembourg, Netherlands and Switzerland and only applies to inland waterways vessels and excludes seagoing vessels. All vessels travelling within the territorial scope of the CDNI and bunkering tax-free gas oil are regarded as belonging to the shipping industry and therefore are required to pay the corresponding disposal fee (based on the type of waste delivered). Such ships include ferries, service and patrol vessels, floating cranes, dredgers, and inland vessels from third countries.

All of the waste collection and treatment costs for Part A waste (oily waste) are covered by the fees collected at bunkering stage. The contracting parties to the Convention agreed to establish a fixed fee to be paid by ships when bunkering oil, based on the costs to deliver and treat the oil grease and oil waste generated from vessel operations. The fee amount is reviewed every year but has not changed since it was introduced (2011). The party liable for paying the disposal charge is the vessel operator. The national institution that oversees the reception of the waste in their country reports to the CDNI with the cost figures on the reception and disposal of oily waste. The national institutions shall present their annual

[385] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.
[386] Eklund, B. (2014) Disposal of plastic end-of-life-boats, TemaNord, Nordic Council of Ministers, Copenhagen K.
[387] http://www.cdni-iwt.org/en/

accounts for the previous year to the secretariat of the International Clearance and Coordination Body no later than 15 October of the current year. At its ordinary meeting, the International Clearance and Coordination Body shall determine the financial clearance for the previous year.

The international clearance body analyses all of the reported figures in order to determine the redistribution of the funds, which is proportional to the costs – minus any revenues generated through the sale of recovered waste oil. The international financial clearance system established by CDNI even covers areas where there is less vessel traffic. The objective of the clearance system is to ensure an equal fee throughout the CDNI area, even if it is cheaper to deliver in some ports than in others. To this extent, there is no competition between delivery sites and no incentive for ships to dispose waste anywhere else than in the designated CDNI sites.

Some countries have implemented policies that indirectly affect the end-of-life management of boats. Germany and the Netherlands have regulations restricting the disposal of FRP to landfill. Recycling is therefore encouraged[388]. Energy recovery may also be a viable option for FRB, however further investigation is needed on this.

Another significant difference between Member States regarding ELB management is the legislation applicable to boat abandonment. In some countries the authorities need specific authorisation to remove a boat that has been abandoned because of property rights (typically based on Roman law)[389]. The authorities in these countries face complex procedures when attempting to take care of a boat that has been abandoned. In Catalonia and France, for instance, abandoned boats are sold at public auctions by authorities after a procedure has been followed to locate the owner and notify him of the alleged state of neglect. If the boat is not sold at auction, the boat is sent for dismantling. In Catalonia, this procedure usually lasts more than a year[390].

On the other hand, in countries such as the Netherlands (based on Anglo-Saxon law), a boat can be simply removed after an appropriate notice is placed on the boat. This makes it easier for local authorities to manage abandoned boats, but also for the owner to abandon them. Anecdotal evidence[391] indicates that such actions take place in the UK. This is thought to encourage boat abandonment as a cost-free way for boat owners to dispose of boats, with local harbour authorities thereby having to absorb the cost of disposal. In the US, abandonment of boats can be seen as an environmental crime and significant efforts are made to identify the boat owner.

There are differences in the registration requirements that Member State impose on boat owners. Registration of boats is required in most countries but they follow different rules. In 2011, many countries registered all craft from 2.5m in length but exclusions from registration requirements varied[392]:

- Exemption for L < 2m: Greece
- Exemption for L < 2.5m: Cyprus, France
- Exemption for L < 5-5.5m: Finland, Hungary, Slovenia
- Exemption for L < 7m: Luxembourg, Romania
- Exemption for L < 8m: Spain
- Exemption for L < 10m: Italy

[388] End-of-life disposal: a looming issue for the composites industry, September 9th 2013: http://linset.it/it/news/scheda.php?id=71&st=1&k=End-of-life-Boat-Disposal-Looming-Issue
[389] Interview with the European Boating Industry, on 22/03/2016
[390] Boatcycle project (2012) Diagnosis, state of the art of boat and boat scrapping. Data obtained from the European Boating Industry and ICOMIA 2009
[391] Interview with the British Marine Federation, on 02/03/2016
[392] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

- Exemption for L < 12m: Latvia, Estonia
- Exemption for L < 15m: Germany

The engine power could also be a condition for boat registration and varied from P=7.35kW in Luxembourg to P=15kW in Finland. Denmark used the Gross Register Ton as criteria (registration > 20 GRT), while the Netherlands referred to the speed (registration > 20km/h).

The differences in boat registration processes (voluntary or mandatory, requiring the registration of different types of boats) make it difficult to obtain comprehensive boat registration data at the EU level. The reliability of data is also uncertain, as it is expected that the registers are not necessarily updated when (for instance) ownership of the boat. It is therefore difficult to track the owner when a boat is abandoned.

A7.3 Problem definition

A7.3.1 Problem statement

There are an estimated 6 to 6.5 million recreational boats in the current EU fleet. One to two per cent of these boats reach the end of their life every year.

The statistics gathered on annual dismantling of recreational ELBs, suggest that a large number[393] of ELBs are not dismantled, nor their parts recycled. Instead they are sent to landfill, incinerated or abandoned in ports and marinas, private premises, yards, etc. or sunk. It is estimated that 10,000 boats are abandoned each year, representing 12.5 per cent of the annual 80,000 ELB total.

The abandonment of boats can cause negative local impacts that include pollution from oils and hazardous substances, hazards to navigation, nuisance and marine litter. Further discussion of these impacts is provided in section A7.3.4. Port and marina authorities can be faced with high costs and lengthy procedures when vessels are abandoned by irresponsible owners. The economic loss for the recycling industry and costs of environmental pollution are difficult to assess, but are to be put in parallel of the current high dismantling costs that lead to boat abandonment. The financing of boat dismantling is therefore the major issue.

Projections of the future volume of obsolete recreational boats indicate that the dismantling and disposal of ELBs needs to be addressed if the abandonment and landfilling of much larger volumes of ELBs and ELB-derived material is to be avoided[394].

Current ELB management practices are thus unsatisfactory from an environmental, social and economic perspective.

A7.3.2 Causes of the problem

Causes of the problem are grouped by categories below:

Recyclability of materials found in ELBs is low and recycling complex:

- Recreational craft contain 60 per cent of fibre reinforced plastic on average. This is a material for which there are currently very few recovery options. There are some emerging technological solutions but these are not yet economically viable. Recreational ELBs contain a high volume of specialist components, many of which have no resale value. Therefore, there is currently limited opportunity to recycle ELBs in the EU.

[393] It has not been possible to identify any data or any informed opinion about the proportion of ELB that are not dismantled.
[394] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

High costs of boat dismantling:

- The size, weight and complexity of the ELB waste flow require specific treatment processes which can be costly.
- Transportation accounts for a significant part of the costs associated with ELB management. This cost is further increased when a boat is abandoned as this often happens in places where the owner cannot be seen and which are difficult to access.
- The recycling of the materials found in end-of-life recreational boats generates a complex waste flow. This is because ELBs are composed of various materials (metals, composites, wood, plastics, electronic equipment, liquids, dangerous waste, etc.) of different sizes and weight. Their complexity has been increasing since the 1970s when new materials adopted because of the increased safety and comfort they provided.

High net costs / low returns from ELB recycling

- The dismantling and recovery of recreational vessels typically has a high net cost. Dismantling costs are not compensated by revenue generated from ELB materials recycling, which further increases the net cost (i.e. the costs paid by boat owners). The lack of revenue generated from ELB recycling and therefore the absence of a market for recovered ELB materials discourages dismantling facilities from investing in more efficient processing technologies.
- The high costs drive some boat owners to abandon their ELBs rather than making sure that it goes through a proper dismantling process.

Absence of established collection and treatment systems:

- There is no official system in place for the collection and treatment of ELBs in most countries. Only Finland, France and recently Sweden have a nationwide system for managing ELBs. In some countries, there is a lack of proper service and infrastructure to manage ELBs.
- The lack of a harmonised registration system for boats at EU level make it difficult to trace owners of boats to ask for and enforce their removal and proper treatment by a dismantler and hence enforce any requirement
- The volumes of ELBs that are currently generated are still relatively low compared to other waste streams and, therefore, the management of ELBs has not been a priority for policy makers and stakeholders. Recyclers have not been encouraged to invest in facilities or national authorities have not implemented specific regulations.

Lack of awareness:

- There is a low level of awareness among boat owners about the environmental and social consequences risks associated with boat abandonment and well as the solutions available for boat dismantling.

Lack of incentive for owners to send their ELBs to dismantling facilities:

- There is little legislation, at the European Union or Member State level, regarding the management of end-of-life recreational craft. Therefore, there is little incentive for:
  - Manufacturers to apply eco-design methods in boat construction in order to ensure that they are made with materials that maximise recycling opportunities;
  - Boat owners to ensure their end-of-life boats are properly dismantled;

- Boat dismantlers to reuse or recycle materials instead of landfilling low value materials;
- Member State public authorities to monitor and enforce ELB recycling.
- Local and harbour authorities are also dealing to some extent with abandoned boats and "paying the bill". Abandonment may therefore be seen as a feasible disposal route for some owners[395].

Absence of reliable and harmonised data on ELBs:

- The quantities of ELBs arising and the capacity of the ELB recycling market are difficult to assess due to the following factors:
  - The lifespan of recreational boats is long: from 30 to 60 years, sometimes more, depending on the boat composition, maintenance, use and storage conditions.
  - Boats usually have a number of different owners (on average 6 and 7 during their life).
  - Recreational boats are seen as 'leisure' products that are subject to consumer behaviours that are not necessarily 'rational' in the conventional sense. Old boats that some would consider 'waste' can achieve a value on the secondary market. The age and state of a boat cannot be used in all cases to determine whether it is waste.
  - New sales provide an indication of ELBs arising since we can estimate when the new boat would reach its end of life based on the age of the boat.
  - When a boat is dismantled, a replacement new boat is rarely bought. In addition, as sales of new boats are declining, manufacturers lack the incentive and the financial means to pay for the dismantling of boats.

A7.3.3 Key actors affected by the problem

Various actors are involved in the boat recycling value chain. They all have a role in ensuring a boat goes through the right process at its end-of-life:

- **Boat manufacturers** are the first in the chain, and have a responsibility in the design of the boats to favour reuse and recycling. They can also raise awareness about the solutions for disposal of ELB.
- **Boat owners** are responsible for the proper disposal of their boats.
- **Boat owners' associations and nautical federations** are in a position to inform their members of solutions for the disposal of boats. Boating schools and skipper training centres have the same responsibility and can further teach and test future boat users and owners.
- **Marinas/port authorities** often have to deal with abandoned boats. They are in a complicated legal situation in terms of having to address unpaid bills as well as long administrative processes to identify and locate owners of abandoned boats. They can play a proactive role in fighting boat abandonment, by detecting abandoned boats at an early stage, keeping records of the cases and informing owners of their responsibility. They can also dismantle boats at their facilities and require additional and voluntary commitment from their clients.
- **Municipal authorities** may also find themselves responsible for abandoned boats.

[395] Interview with the British Marine federation, on 02/03/2016

- **The tourism industry** suffers from the pollution (visual and environmental) of abandoned boats. The industry could play a role in setting up voluntary initiatives, agreements and criteria for stakeholders to comply with in order to be able to participate in local nautical activities e.g. boat owners have to sign a certain agreement with a lake or beach that they will not abandon vessels or that they will dismantle their boats responsibly.
- **NGOs and local communities** can raise awareness about the social and environmental impacts of irresponsible disposal practices of ELBs on health and the environment.
- **Insurers** cover the costs of end-of-life disposal if the boat has been damaged and cannot be repaired.
- **Dismantlers** ensure decontamination and proper treatment of ELBs.
- **Recyclers and companies in the second hand market** benefit (or could benefit) from the components and materials extracted from ELBs.

Authorities dealing with abandoned boats are the first affected by the current lack of an organised system for the management of end-of-life boats. The last owners of boats have also to pay the full price today for the treatment of ELBs and dismantlers face significant costs with low revenue potential from the recycling of boats. However the whole industry is affected to some extent, as its reputation can be damaged because of the environmental damage that can arise with boat abandonment.

The consequences of today's practices are discussed below.

A7.3.4 Consequences of the problem

A7.3.4.1 Environmental impacts

ELBs often contain hazardous substances that can pose a health and environmental threat if the craft is disposed of irresponsibly (e.g. illegally dumped or sent to sub-par dismantling facilities). The Mepex study in Norway estimated the environmental risks, considering the possible effects of dumping of boats on land and in sea/freshwater and open burning. These risks are presented in Table 23 where the score of 5 represents a high risk.

Table 23. Hazardous compounds in ELBs with environmental risk

Compound/compound group found in ELB	Content in ELB 2013-2030	Risk of leaching	Environmental effect	Total assessment
Mercury	1 (-)	4	5	Medium to low risk, decreasing
Cadmium	2	1	4	Low to medium risk
Lead (Tetroxide a.o)	2	3	3	Low to medium risk
Copper (I) oxide	4	4	2	Low to medium risk
Short chain chlorinated paraffins (SCCPs)	2 (++)	2	4	Medium risk, will probably increase a lot.
Polychlorinated biphenyl (PCBs)	2 (-)	2	5	Medium to high risk, will decrease
Aliphatic hydrocarbons	4	5	2	Medium risk in wooden boats
Polycyclic aromatic hydrocarbons	3	2	4	Medium risk in wooden boats, will decrease
Bis (2-ethylhexyl) phthalate (DEHP)	3	1	3	Low to medium risk
Tri-n-butyltin (TBT)	3 (-)	4	5	High risk, will gradually be reduced

The list of hazardous substances listed in the Table 23 above may not be exhaustive. In addition to the harmful compounds listed in the table, other important environmental risk factors associated with irresponsible disposal of ELBs are:

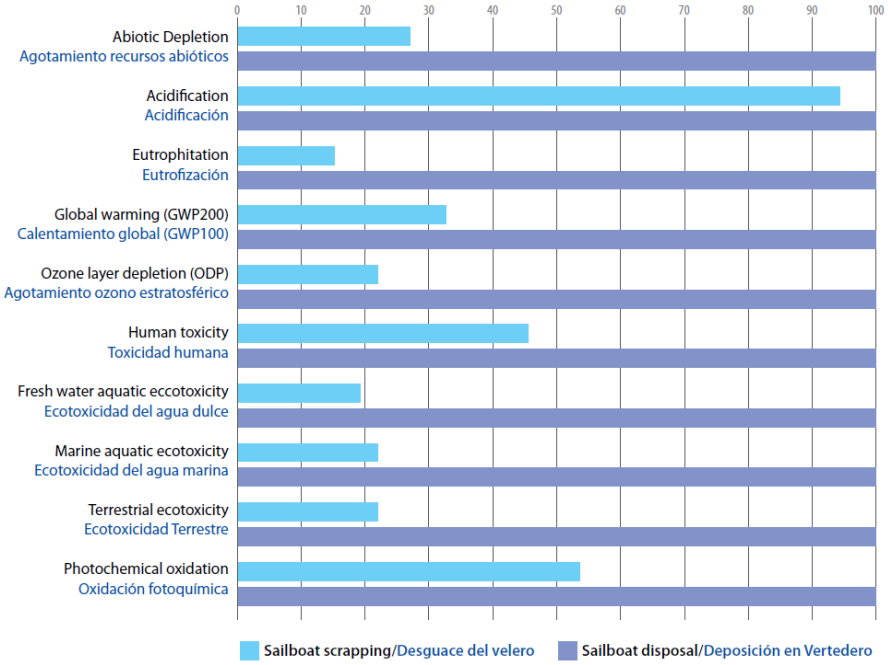
- Use of Freon with Chlorofluorocarbon (CFC) in PUR-foam;
- Content of WEEE, including fridges;
- Content of fuel, oil, gas, fire extinguisher;
- Content of different flame retardants/

Uncontrolled combustion of both composite boats and wooden boats will result in the generation of very toxic fumes from components in waste, such as heavy metals, but can also create dioxins and furans. The fumes from uncontrolled burning of ELBs represent a high risk in terms of negative effects on human health and for the environment. This is also the case for boats with a low content of hazardous compounds. The pollution components are spread to air, soil and water, and can results in long term effects.

Problems associated with abandoned boats (on land, floating or sunken) are (1) leakage or spills of liquid wastes (hydrocarbon, oil and liquid from batteries, sewage), and (2) the detachment of solid wastes (parts/pieces of the boat containing other hazardous substances, furniture, plastics, etc.) These may harm the environment and be dangerous for marine life. Furthermore, boat paint often contains chromium, lead, mercury and other toxic chemicals, therefore as an abandoned vessel deteriorates in the water, the coating flakes off and settles on the sea floor or river bottom, where fish can swallow it.

In addition to the environmental threats caused by boat abandonment, the low recycling rate of boats today results in lost environmental benefits. The Boatcycle project compared the environmental impacts of two waste related scenarios: disposal and scrapping. Scrapping boats in order to recycle their components has lower environmental impacts than boat disposal.

Figure 19. Comparison between disposal and scrapping (sailboat)



Source: BoatCycle project's results: http://life-boatcycle.com/

A7.3.4.2 Economic impacts

The economic impacts of ELB management include:

- The high costs for dismantling (transport, depollution, landfill of non-recoverable materials, etc.). As noted earlier, costs range on average from €800 for boats up to 7m to €15,000 for 15m boats. The DG Environment study of 2011 estimated that dismantling costs, based on the projected number of ELBs arising per year, would amount to between €100 and €400 million per year[396]. The study also estimated that landfilling these ELBs could easily cost €30 million per year, while incineration could cost €45 million.
- The high costs for marina and municipal authorities that have to deal with abandoned boats. The costs incurred by authorities to remove abandoned vessels are generally much higher than the dismantling costs than the cost that boat owners would need to pay to send their ELBs to suitable facilities. Unfortunately, reliable data was not available on the costs for authorities to take care of abandoned boats in the EU. Online research located a few details on boat abandonment costs for authorities, but these figures should be considered with caution as the data are not always up to date, from a reliable source or comparable with the EU context. In California, removing one sunken sailboat can cost a maximum of $12,000 (€10,500), and taking away larger vessels is even more expensive. The state is considered to be the second-largest boating state behind Florida with almost one million registered boats. It spends about $500,000 (€440,000) each year removing deserted recreational boats[397]. Other sources state that removing abandoned boats can cost from €1 000 to €4000 for authorities (which as subsequently passed on to taxpayers)[398]. Again, it should be repeated that these are highly approximate

[396] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

[397] "*In bad economy, boat owners abandon their vessels*", USA Today, 11/13/2008 "http://usatoday30.usatoday.com/news/nation/2008-11-13-3260304352_x.htm

[398] "Abandoned sailboats cost taxpayers thousands" January 13, 2015, http://fox5sandiego.com/2015/01/13/abandoned-sailboats-cost-taxpayers-thousands/

estimations based on the little information that was found on costs of boat abandonment.

- Finally, boats abandoned in marinas occupy valuable space and so can reduce profits. The high costs for dismantling stressed in the point above are thus in addition to the costs to be faced by public authorities to treat abandoned boats.
- Unrealised profits from untapped potential of the dismantling market and the recycling market and spare parts market from ELB components. This potential has not been assessed in the literature, but focusing on this potential would be consistent with a circular economy strategy. Recreational boats contain at least 5 per cent of metals that are recoverable, some components are interesting to reuse, such as motors, and new outlets are to be found for other components. This would be facilitated by increased volumes of materials entering the recycling value chain.
- Costs to the tourism industry if the environmental quality of marine areas is degraded as a result of the environmental effects of boat abandonment and inappropriate disposal.

In addition, the economy of the sector can be affected by an unequal playing field for actors in the EU if Member States adopt their own policies related to ELB management. This may result in unequal sectoral development across Member States and/or affect producers' desire or ability to access particular markets.

A7.3.4.3 Social impacts

Boats that are abandoned, dumped, or burnt can have an impact on human health due to water and air pollution. This can affect the quality of life of local communities along coastal areas. Further, abandoned boats can cause an immediate hazard as an obstruction to swimmers and other boaters.

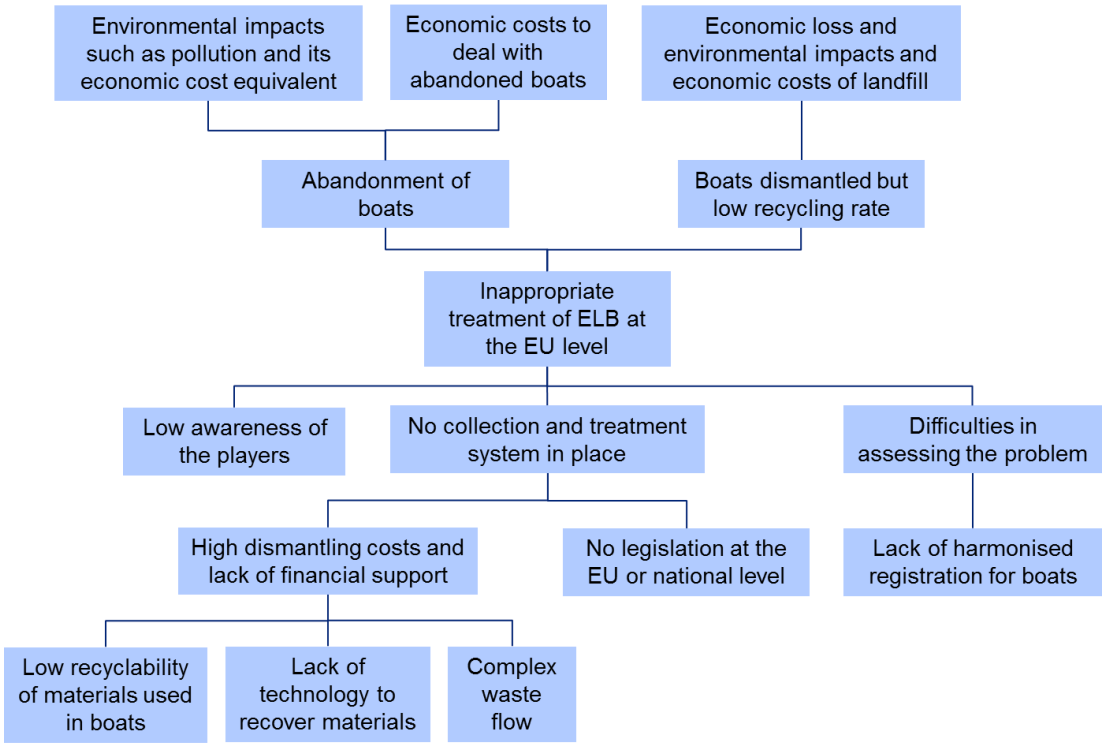
Another social impact is the foregone employment opportunities associated with the development of the boat recycling and dismantling market. Dismantling is a largely mechanised process so the potential of job creation is limited. A facility dismantling 100,000 tonnes per year would employ between 10 and 100 persons depending on the polluting materials contained in boats. Decontamination is the treatment process that requires the most manpower[399]. As the weight of boats expected to be dismantled is around 120,000 and 145,000 tonnes annually over the period 2015 and 2030[400], the sector could create a maximum of 145 jobs.

A7.3.5 Problem tree summary

Figure 20 summarises the main problem related to boat recycling, its causes and its consequences. It should be read from the bottom to the top, from root causes and intermediate causes to the problem itself, leading to intermediate and ultimate consequences at the top.

[399] EME, ECONAV (2012) Projet d'étude: les bateaux de plaisance en fin de vie
[400] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

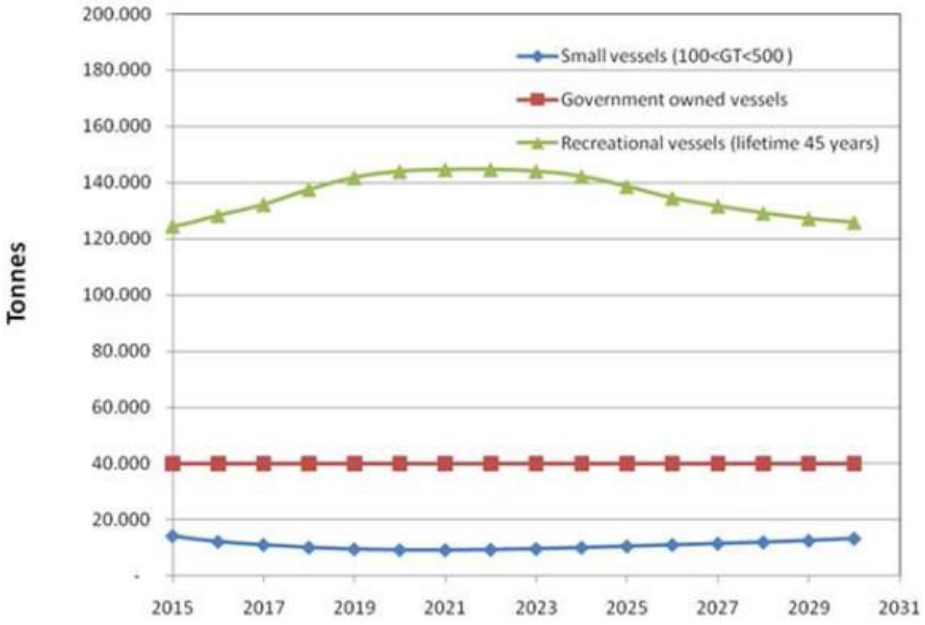
Figure 20. ELB management problem tree



A7.4 Baseline scenario

The DG Environment study of 2011 assessed the number of boats that will be dismantled in the coming years, as shown in Figure 21.

Figure 21. Projected recycling volumes of several vessel types in the EU



Source: DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

The number of abandoned vessels is included in the dismantling numbers of the individual vessels types. The study estimates that in a worst case scenario, approximately 10,000 primarily recreational vessels will be abandoned per year in the EU.

The figure above is taken from a study that assessed the "future recycling volumes of the various vessel types". The future volumes of ELBs that will actually be dismantled can, however, differ from the volume of boats that are considered to have reached end-of-life status. Several factors will affect the actual number of ELBs that are dismantled e.g. the effectiveness of the collection system or the possibility of regulatory changes such as an EU ban of landfilling of composite materials (such as FRP). If we consider that 80,000 boats reach the end of their life every year with an average weight of 1.5 tonnes (EBI estimates), the volume of boats reaching their end-of-life would be around 120,000 tonnes. The study most probably assumes that the future volumes of ELBs that will be dismantled are equivalent to the future volume of boats that have reached their end-of-life status. However, we know that currently most ELBs are sent to landfill and not to dismantling facilities.

The study on Nordic countries estimated that 6 per cent of boats in these countries are older than 40 years old. In France, the number of ELBs is expected to grow by 5 per cent every year[401]. The nautical industry has taken first steps in Finland, France and Sweden to organise the management of ELB. Similar initiatives can be expected in countries that have a significant fleet, notably Italy and Spain. However, as long as the costs for dismantling are high and are borne by the last owners of boats, boat abandonment is likely to remain an issue.

In the baseline scenario, it is therefore assumed that:

- **The quantity of ELBs arising increases slightly in the EU in the coming years:** the lowest assumption of 80,000 ELBs arising per year in the EU is adopted, with an increase of 2 per cent per year. Most of the stakeholders interviewed for this study considered the available estimates too high therefore more conservative figures are used here. Based on the average composition of boats and an average weight of 1.5 tonnes per vessel, 72,000 tonnes of FRP waste will have to be treated, 3,600 tonnes of metals and 6,000 tonnes of wood, with a 2 per cent increase per year.
- **A small part of these are properly treated by dismantlers:** the amount is still uncertain, as the amount of ELBs currently dismantled by treatment facilities in the EU is unknown. However, based on the few Member States reporting ELB data (i.e. Finland, France and Sweden reported the treatment of fewer than 1,000 ELBs in 2015), it can be assumed that fewer than 2,000 ELBs are currently dismantled in the EU28 (i.e. approximately 2.5 per cent of the estimated number of ELBs per year). It should be noted that the 2011 study considered the future recycling volumes of ELBs as relatively high (between 120,000 to 140,000 tonnes per year), probably because no distinction was made between boats that have reached end-of-life status and boats that will be dismantled. Most FRP waste will be directed to landfill, metals to recycling and wood to energy recovery.

  The sector improves its organisation and recycling technology, with decreasing dismantling costs, but these costs remain significant: the ongoing research and development on the recycling of composites may lead to new markets for the materials recovered from ELBs. However, the materials found in ELBs in recent years are more complex than before and it may be more difficult to recover them. An average cost of €1,000 per boat is assumed, with a 1 per cent decrease annually over the next 10 years. If we consider that 2,000 ELBs are currently dismantled in the EU, the dismantling costs of these ELBs would be around €2 million. These reduced costs, and national efforts to encourage improved ELB management, could result in a relative increase in the number of boats going to such facilities.

[401] Région Guadeloupe (2014) Mission de conseil et assistance pour la mise en œuvre de la filière BPHU

- **The rest of ELBs are abandoned, stored by last owners, sent to landfill or incinerated**: this would be very similar to the current situation: between 6,000 boats (conservative assumption) and 10,000 boats (worst case scenario) are abandoned every year in the EU, with the rest being stored by boat owners and/or claimed as awaiting sale to a suitable buyer. The costs of dealing with these boats are higher than the costs of dismantling if brought directly to a treatment facility. Based on the few figures found in the literature, we assume that the cost for authorities to remove abandoned boats is at least 2 times higher (i.e. €2,000 per boat) than the normal dismantling costs paid by the boat owner (approximately €1,000 per boat). This would mean an annual cost of €12 to €20 million for public authorities to take care of abandoned boats. In some areas, such as in California, the cost incurred by authorities in dealing with abandoned boats can reach €10,000 per boat.

Table 24. ELB summary of quantitative estimates and assumptions

Key ELB statistics	Best estimates and assumptions
Numbers of ELBs	
Number of ELBs/year	80,000, growing at 2%/year
Number of ELBs appropriately dismantled	2,000, growing at >2%year
Number of abandoned ELBs	10,000/year, growing at 2%/year
Number of ELBs stored / disposed of through other means	68,000 (i.e. net of the above figures)
Costs of ELBs	
Costs of appropriate dismantling	€1,000/boat with 1% decrease/year
Costs of dealing with abandoned boats	€2,000/boat

A7.5 Justification for EU intervention

Although the issue is recently receiving more attention, and various initiatives from industry have been established, there is still a high level of uncertainty about the current scale of ELBs arising and what happens to these boats once they reach end-of-life status. EU intervention to properly assess the extent of the problem may be justified, but there are few reliable and quantified data that describe the situation across the EU. The economic, social and environmental consequences of boat abandonment or low recycling rates have not been measured extensively in the literature, though it is known that due to their composition, abandoned ELBs may pose threats to human health and the environment. The risks associated with the improper treatment of larger vessels are better documented in the literature. However, if social and environmental risks are more clearly demonstrated, EU intervention may be needed, because of its competence in this area.

The estimates of the number of ELBs arising in the EU are based on available statistics and extrapolations from average lifetime of ELBs and estimations of the current fleet. The problem may be overestimated, however without robust data this cannot be certain.

ELBs are currently considered waste. Unlike for end-of-life vehicles (ELVs), there are no existing end-of-life waste criteria[402] at EU level for ELBs. As such, the market for the recovery of ELB materials is virtually non-existent. ELB treatment is costly and

[402] End-of-waste criteria specify when certain waste ceases to be waste and obtains a status of a product (or a secondary raw material). Article 6 (1) and (2) of the Waste Framework Directive 2008/98/EC specifies that certain waste shall cease to be waste when it has undergone a recovery (including recycling) operation and complies with specific criteria to be developed in line with certain legal conditions.

currently paid for by the last owner of the boat. There is little incentive, nor related legislation to ensure that owners and manufacturers handle ELBs properly and thereby avoid the potential negative environmental and health effects of alternative means of disposal. The potential value of materials that are not recovered today is lost, which is not coherent with EU ambitions for a transition to a circular economy. In addition, the costs of dealing with abandoned boats are significant for public authorities and usually higher than the costs of dismantling the boats. Therefore, in some cases, taxpayers are currently paying for the management of ELB, instead of the "polluter".

The lack of an overreaching EU initiative on the sound management of end-of-life recreational boats can explain in part the low recycling performance of the sector. Directive 2013/53/EU on recreational craft and personal watercraft mainly addresses issues related to boat production but does not mention end-of-life management or recycling. The EU Ship Recycling Regulation 1257/2013 addresses specifically the recycling of boats but only applies to large commercial vessels. Recreational boats are out of scope.

In the absence of a specific EU initiative on the end-of-life management of recreational boats, Member States have adopted their own legislation and initiatives. France is preparing for the implementation of an Extended Producer Responsibility Scheme. Germany and the Netherlands have already banned the landfill disposal of reinforced glass fibres, which is used extensively in boats. Safety and tax requirements vary among Member States and this has caused some boat owners to register under a foreign flag to comply with less rigorous obligations (this situation has been observed in Poland for example[403]) and this could become a risk if the dismantling requirements are reinforced in some countries and not in others.

Dismantling sites may also use unsound waste management methods in the absence of common minimum treatment standards. As such, there may be internal market issues and inequalities that develop as divergent rules and practices are developed in Member States that could affect many stakeholder groups e.g. boat owners, boat manufacturers and boat dismantlers. The rationale for EU action would therefore be to ensure more consistent rules and regulations and hence avoid potential inequalities (e.g. for boat owners) and enhance the functioning of the internal market.

ELBs include components that may be covered by an existing Extended Producer Responsibility (EPR) scheme: batteries, furniture, electrical and electronic equipment. Therefore, an EU instrument to ensure proper end-of-life management of recreational boats would ensure more consistency and coherence with other EU policies.

A7.6 Intervention options

A7.6.1 Objectives

The overall objective of the policy options is to address the problem of ELBs arising in terms of reducing the potential environmental, economic and social impacts of poor management of ELBs. Specific objectives of an EU intervention would be to:

- Ensure that a level playing field is established in the EU for ELB management. Analysis of the current situation in Europe indicates large variation in terms of the different ways that Member States are dealing with their ELBs. This ranges from the existence of established collection and treatment systems and differences in the boat registration process, to having to deal with the costly and negative environmental consequences of abandoned boats.
- Increase recycling and recovery of ELBs and reduce boat abandonment.

[403] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

Actions that could be taken at EU level to improve current ELB management practices are:

- Establish a mechanism that holds boat owners responsible for the proper disposal of their ELBs in designated facilities rather than abandoning them;
- Ensure boat owners have access to an adequate collection and treatment system for their ELB;
- Encourage boat manufacturers to integrate eco-design in the construction of new boats using materials that can be more easily recyclable;
- Increase awareness of all stakeholders of the need to properly treat ELBs and of the available solutions for disposal;
- Encourage all stakeholders to take actions by creating the appropriate regulatory framework and market incentives.

A7.6.2 Long list of options

Based on the analysis carried out above, the following policy options have been identified to address the identified problems:

- Policy option 1: Development of guidance documents for key actors in the recreational boat sector that includes information on best practices in boat dismantling and waste management.
- Policy option 2: Development of a voluntary initiative involving industry and Member States authorities, boat owners and other relevant stakeholders to encourage sound end-of-life management of recreational boats.
- Policy option 3: Development of a harmonised registration and deregistration system.
- Policy option 4: Development of an ELB management fund to help cover ELB treatment costs.
- Policy option 5: Development of an Extended Producer Responsibility (EPR) scheme (mandatory or non-mandatory).
- Policy option 6: Research to boost the development of the recycling market. This could include research on potential substitutes or increase the recycling of polymer plastics.
- Policy option 7: Amendment of the current Directive 2013/53/EU on recreational craft and personal watercraft to include requirements and guidelines on eco-design and sound end-of-life management of recreational boats.
- Policy option 8: Establishment of a new legislation on the eco-design and end-of-life management of recreational boats.

The table below maps out the different policy options in terms of the problems they aim to address, their objectives and the time-frame the policy option could be implemented.

Table 25. Policy options summary

Problem addressed	Objectives	Time-frame	Policy options	
Low awareness	Raise awareness on the ELB issue	Short term	• Development of guidance documents (as part of an overall awareness raising campaign)	• Amendment of the current Directive 2013/53/EU • Establishment of a new legislation on the end-of-life management of recreational boats • Voluntary initiative involving all relevant stakeholders
The existence of "free riders" and uneven playing field	Assign responsibility to assist in compliance and enforcement	Short to medium term	• Development of a registration system. • EPR scheme	
	Ensure level playing field			
Low incentive for dismantling, recycling and recovery	Provide necessary tools for realistic implementation	Medium term	• Focus research on the development of the recycling market. • An ELB management fund • EPR scheme	
	Increase recycling of ELBs and reduce boat abandonment			
	Monitoring and enforcing activities	Medium to long term	• Registration system	

The policy options are further described in the tables below and include the following information:

- The nature of the measure envisaged under the option.
- The objectives and problems to which it is aligned.
- Relevant implementation procedures and time lines.
- Which stakeholders would be involved and what their involvement would be (this should consider the European Commission as well as beneficiaries).
- Whether any complementary actions are necessary.
- Description of how the intervention is expected to deliver change.
- Any potential challenges.

The policy options outlined below should not necessarily be seen as "stand-alone" instruments. Some of the options could be combined in ways that would improve their efficacy. Policy option "packages" are discussed in section A7.6.3.

Policy Option 1	Guidance documents for key actors in the recreational boat sector
Nature of the measure	Voluntary
Relevant objectives & problems	• Problem addressed: low awareness of key stakeholders • General objective: To stimulate performance and competitiveness; • Specific objective: increase awareness of the issue of key actors in order for them to make better informed decisions on how to dispose of their boats
Implementation procedures	The guidance documents could be developed by DG ENV, experts and local authorities and include: • Description of the problems and consequences associated with inappropriate management of ELBs e.g. abandonment of ELBs, unsound dismantling • Best practice examples of good management of ELBs, including quantified benefits and positive impacts • Recommendations and solutions on sound management of ELBs e.g. list of environmentally sound boat dismantlers, information on access to recycling markets, etc. The guidance documents could be developed as part of an overall awareness raising campaign e.g. related to waste management or protect marine environments for example. The guidance documents could be distributed to key stakeholders in the sector (manufacturers, boat owners, dismantlers) as well as local authorities. It should be noted that similar guidance documents have been developed to some extent in the framework of the Boat DIGEST project which will be further investigated to determine its relevancy with this option.
Complementary actions	Complementary actions would include ensuring that the guidance document is effectively disseminated to the key stakeholders and the importance of regularly updating the guidance documents may be necessary to ensure effective implementation. Availability of the guidance document in all EU languages would also be essential to increase effectiveness.
Intervention logic	• The outputs – the guidelines would be developed by local, national and EU authorities and experts that would include best practices • The outcomes – the existence of a guidance document would inform key stakeholders of the problem and consequences as well as solutions and recommendations to addressing the problem • The impacts – ideally, the existence of a guidance document would encourage boat owners to better manage their ELBs in a responsible manner because they would be aware of the negative environmental, health, social and economic impacts of their actions if they were to improperly dispose of their boats. Furthermore, by including best practice examples in the guidance, this could stimulate performance and

Policy Option 1	Guidance documents for key actors in the recreational boat sector
	competitiveness.
Potential challenges to consider	The development of a guidance document could be an effective way of informing key stakeholders about the problems and best practices associated with management of end of life recreational vessels but does not guarantee that stakeholders will actually implement recommended actions, especially if the actions are of a "voluntary" nature and not mandatory. Nonetheless, raising awareness is an essential first step in terms of the overall intervention logic and the eventual implementation of "harder" policy instruments.

Policy Option 2	Partnership between industry and public authorities on sound and safe management of ELBs
Nature of the measure	Voluntary initiative
Relevant objectives & problems	• Problem addressed: Unsound management of ELBs and unreliable data on ELBs arising in the EU • General objective: Achieve sustainable management of ELBs • Specific objective: Improve national and EU wide data on current fleet of recreational boats and arising ELBs
Implementation procedures	The voluntary initiative would involve industry and Member States authorities, boat owners and other relevant stakeholders such as trade associations and NGOs to encourage sound end-of-life management of recreational vessels. The aim of such an initiative would be to promote increased recycling of ELBs, encourage knowledge exchange, especially on best practices and provide guidance on how to overcome key challenges. Leadership of the initiative could be organised on a rotational basis (leadership under a specific Member State every year for example) with regular reporting and meetings to discuss and carry out the activities and objectives of the initiative. Leadership on rotational basis would also help to ensure active participation by all members. A permanent secretariat could also be established. In order to fund the initiative e.g. to run the harmonised vessel registration system for example and the secretariat, members would pay an annual fee.
Complementary actions	It would be important that the initiative establishes realistic objectives, including quantifiable targets e.g. recycling or dismantling of a certain percentage of ELBs per year where relevant to allow for measurement of progress and performance. Regular meetings and workshops are essential to ensure effective knowledge exchange e.g. annual or bi-annual meetings, including ad hoc working groups to work on specific topics. Dissemination of key documents such as newsletters etc. would also be important to keep members up to date with current events and to encourage active participation.
Intervention logic	• The outputs – a voluntary initiative with clear and realistic

Policy Option 2	Partnership between industry and public authorities on sound and safe management of ELBs
	objectives, structure and roles of members • The outcomes – collective action from both private and public sector would not only improve the current management of ELBs in the EU but could also encourage more actors to join the initiative and increase awareness – include priority from policy makers on the issue. • The impacts – the initiative could stimulate improved performance and competitiveness of the sector as well as result on more reliable data on ELBs in the EU thanks to the creation of a registration system.
Potential challenges to consider	Ensuring that the most important key stakeholders and Member State are actively involved in the initiative.

Policy Option 3	Development of a harmonised registration and deregistration system
Nature of the measure	Voluntary or mandatory
Relevant objectives & problems	• Problem addressed: decrease boat abandonment by facilitating owner identification and can be used to collect fees for ELB management from the different owners of the boat over its life (the last owner would no longer be the only one to pay for dismantling). • General objective: to ensure proper treatment of boats when reaching end-of-life. • Specific objective: it can also be used by various stakeholders: insurance companies, police, salvage companies to identify owners of wrecks (boats lost at sea). According to the Norwegian Environmental Agency, these stakeholders would be interested in the register and this solution has therefore been studied in Norway.
Implementation procedures	This policy option could be integrated with other policy options (e.g. voluntary industry initiative, with new legislation on ELB management) and not necessarily be a stand-alone option. The policy option would require every boat meeting certain criteria (e.g. below 5 metres in length) to be registered (as is done for motor vehicles). The registration would need to be updated when ownership changes. It may be necessary to provide for a fine to be levied when the owner fails to register the boat. Boats of smaller length could be given to municipalities at drop-off points (create a system for collection), for example on the condition that they can be transported above cars.
Complementary actions	Collaboration with other stakeholders could make it more efficient. Insurers for instance could require registration before

Policy Option 3	Development of a harmonised registration and deregistration system
	delivering insurance contracts.
Intervention logic	• The outputs – comprehensive data on the number of boats in use in the EU, age, current owners, etc., and harmonised between countries. • The outcomes – Identification of boat owners in order to ensure they are made responsible for ELB management (financing, delivery to an appropriate facility instead of abandonment) • The impacts – reduction in boat abandonment and increase in boat recycling leading to economic, social and environmental benefits for the sector
Potential challenges to consider	This would add bureaucracy and it may be costly to maintain data in the system over a long period of time given the lifespan of boats. As for vehicles, registration may need to be proven, with a registration number, marked on the boats and easily identifiable for instance, or through official documents issued by public authorities. This may mean more paperwork to handle for owners and public authorities. The implementation of such obligation may be a requirement in the recreational craft directive, regulating the design of boats.

Policy Option 4	Development of an ELB management fund
Nature of the measure	Mandatory or non-mandatory
Relevant objectives & problems	• Problem addressed: abandonment of boats • General objective: improve the management of ELBs • Specific objective: help finance the costs of ELB treatment and reduce boat abandonment.
Implementation procedures	This option includes the establishment of an ELB management fund. The funding needed to cover ELB treatment costs is estimated at least €80m/year. The fund would be implemented at MS level. The funds collected would help to pay for ELB treatment costs. The fund would be financed by boat manufacturers and/or boat owners. In the case where both manufacturers and boat owners contribute to the fund, a shared responsibility principle would be established. The "disposal fee" would be collected either through existing fee systems applied only to boat owners e.g. through existing port fees, registration fees etc. and/or applied at the purchase of new boats, which would require the involvement of boat manufacturers. In this case, manufacturers would need to decide whether they would transfer the entire disposal fee to the boat purchaser, pay it themselves or split the fee. In all cases, the addition of a disposal fee on new boat purchases would increase the overall purchasing price of the boat. The fund would

	be financed by boat manufacturers and/or boat owners. The disposal fee amount to be collected through the fund could also be set based on the recycling potential of the boat to further promote eco-design and recyclability. The feasibility of a financial instrument to facilitate safe and sound ship recycling is currently being studied in the framework of the Ship Recycling Regulation (SRR) 1257/2013 (article 29). The SRR only applies to large commercial seagoing vessels flying the flag of an EU Member State and to ships flying the flag of the third country calling at EU ports. Therefore, ELBs are currently not covered by the SRR. Nonetheless, should a financial instrument be implemented for sea-going vessels, the scheme could be analysed to determine the applicability for recreational boats. For instance, one option that is currently being considered is a tax at harbour entry, which would be given back to the owner based on proof that it was disposed in an approved facility. A similar system could be applied to ELBs, where funds are set aside and only redistributed back to the owner once the ELB is brought to a designated treatment facility. The possibility of enlarging the scope of the Ship Recycling Regulation to include smaller recreational boats is unlikely due to several important challenges related to the very distinctive characteristics of each sector. For example, sea-going vessels and inland vessels (recreational boats) in the EU do not often call at the same ports. Therefore, it is uncertain whether ELBs could be sent to existing EU ship recycling facilities, especially if they are located at seaports that are not often used by operators of recreational vessels. Further, the recycling/dismantling capacity of such facilities for ELBs would need to be investigated due to the characteristics of the waste materials to be treated e.g. ships under the SRR have a larger potential to be recycled and recovered materials re-sold due to valuable steel materials, which is currently not the case for FRPs which is the main material component of ELBs. This factor is also directly linked to the waste treatment cost factor (cost of waste treatment, revenues generated from re-sale of recovered materials, etc.), which would also need to be examined in detail.
Complementary actions	It would be necessary to ensure that funds are collected and distributed appropriately and coherently across the EU to avoid potential market distortions or creating an uneven playing field.
Intervention logic	• The outputs – establishment of an ELB management fund with clear roles (financial and operational responsibilities) for the actors involved • The outcomes – the fund could help pay for dismantling costs and for research on recycling technologies. • The impacts – improved management of ELBs, increased awareness of the issue, increased incentives to send ELBs for dismantling.
Potential challenges to consider	Important to ensure that the system to collect funds does not negatively impact EU competitiveness and the internal market. Further it should be implemented in a coherent way – whether at national and/or EU level, the ELB management fund should create a fair playing field for all stakeholders. Finally, adequate disposal facilities should be made available to boat owners in the case of

	significantly increased number of ELBs sent to facilities.

Policy Option 5	Development of an Extended Producer Responsibility scheme
Nature of the measure	Mandatory or non-mandatory
Relevant objectives & problems	• Problem addressed: low recyclability of boats (by encouraging eco-design to decrease costs), abandonment of boats and the lack of a collection and treatment system for ELBs. • General objective: the establishment of a collection and treatment system of ELBs in the frame work of an EPR scheme could help to decrease the number of abandoned ELBs, therefore increasing dismantling and/or recycling of ELBs. • Specific objective: improve the management of ELBs
Implementation procedures	This option would be implemented at national level and could be either mandatory or voluntary in nature. The extended producer responsibility (EPR) scheme could include a "shared" responsibility scheme, which involves shared financial and operational responsibilities among different stakeholders (e.g. manufacturers and owners). Given the specificities of recreational boats (especially their long lifespan), the optimal solution may be to depart from a strict EPR scheme (i.e. where the net costs are fully covered by the obligated industry). For example, in France, the financing of the proposed EPR obligation will be covered only partially by the manufacturers, the rest being covered through an (existing) tax on boat owners. A key part of the EPR scheme could be to establish a non-mandatory recycling fund for leisure vessels (through the funds collected). By requiring involvement from manufacturers, an EPR scheme will encourage eco-design, assuming that the EPR scheme would favour such practices e.g. reduced financial contribution if eco-design criteria is used in new boat construction. Manufacturers will be incentivised to use recyclable materials as they will be partly responsible for covering treatment costs. Further, if recyclers can earn revenue from boat recycling, they would pay less for treatment as the revenues generated from recovered materials would offset disposal costs.
Complementary actions	It may be necessary for Member States that do not have the necessary infrastructure (appropriate dismantling facilities and transport services) to work closely with their neighbours to allow for cross-border cooperation for use of dismantling facilities and transportation services to transport ELBs.
Intervention logic	• The outputs – establishment of an EPR scheme with clear roles (financial and operational responsibilities) for the actors involved • The outcomes – this could create new jobs in establishing an efficient collection and treatment system and boost dismantling and recycling market if funds from EPR scheme are used effectively towards this goal. • The impacts – improved management of ELBs, increased

Policy Option 5	Development of an Extended Producer Responsibility scheme
	awareness of the issue, creation of new jobs
Potential challenges to consider	Acceptance from both (or more) parties of an appropriate "shared" system as part of the EPR. Potential challenges associated with lack of infrastructure e.g. no dismantling facilities or funds to create necessary infrastructure.

Policy Option 6	Research to boost the development of the recycling market
Nature of the measure	National and EU level
Relevant objectives & problems	• Problem addressed: Low recycling rate of ELBs due to absence of technology • General objective: Improve sound management of ELBs • Specific objective: Increase recycling market of ELBs
Implementation procedures	EU and MS research funding could be allocated to priority research on improving the recycling of polymer plastics (through new processes/outputs) or/and work on using materials in the construction of new boats that can be more easily recycled and recovered at their end-of-life (ex: bio-based materials), with the objective of encouraging eco-design principles for new boats. The technologies currently at low TRL (Technology Readiness Level) should be further researched to move higher in the waste hierarchy instead of "downcycling" materials from ELBs. There is a need to optimise current technologies and scale them up to handle industrial quantities of waste composites. Another area that could be investigated is the environmental impacts of different recycling options, notably through life cycle assessments, to discuss the advantages and disadvantages of each option. Better knowledge on design and recycling opportunities would boost the recycling market. In addition to the funding from current research programmes, funds collected from an EPR scheme (see option above) could also be considered to finance more research in this area.
Complementary actions	• Development of indicators/monitoring and reporting system to ensure that the research carried out will have concrete results that can be applied to the market. • Use existing research funding scheme (such as H2020) to encourage R&D in the area of polymer plastics, and develop recycling options with the lowest environmental impacts.
Intervention logic	• The outputs – funding scheme to further research in the recyclability of ELB materials to help boost the recycling market parts. • The outcomes – recyclers will be encouraged to invest in facilities and manufacturers to eco-design new boats with greater potential to be recycled • The impacts – increased recreational boat recycling market

Policy Option 6	Research to boost the development of the recycling market
	potential and share. Could also encourage innovation and competitiveness in the boat manufacturing sector.
Potential challenges to consider	Boat manufacturers need to be involved to ensure they integrate the results of R&D on recycling into the design of new boats. The results of research can be long and not always guaranteed.

Policy Option 7	Amendment of the current Directive 2013/53/EU on recreational craft and personal watercraft
Nature of the measure	Mandatory – EU level
Relevant objectives & problems	Problem addressed: Unsound management of ELBs. General objective: Reduce negative impacts of management of ELBs
Implementation procedures	Directive 2013/53/EU would be amended to include requirements and guidelines on the eco-design and sound end-of-life management of recreational boats. A standard process for reviewing and proposing amendments to existing EU legislation would need to be followed. The amendment would include, for example: • A list of actions to eco-design boats • A list of certified dismantlers where ELBs could be sent • A list of certified recyclers for ELB materials • Reporting and monitoring process to ensure transparency of all processes.
Complementary actions	It would be important to include all relevant stakeholders in the amendment process to ensure maximum stakeholder acceptance.
Intervention logic	• The outputs – new amendment on eco-design and sound management of ELBs under Directive 2013/53/EU • The outcomes – mandatory amendment would ensure that ELBs are managed in a more transparent and environmentally acceptable manner • The impacts – reduced ELB abandonment, increased market potential of boat recycling market and revenue/more jobs for boat dismantling sector as well as overall improved management of ELBs
Potential challenges to consider	Administrative burden and potential low stakeholder acceptance to amend an existing EU level instrument.

Policy Option 8	New legislation on end-of-life management of recreational boats
Nature of the	Mandatory – EU level

Policy Option 8	New legislation on end-of-life management of recreational boats
measure	
Relevant objectives & problems	• Problem addressed: Unsound management of ELBs. • General objective: Reduce negative impacts of management of ELBs
Implementation procedures	New EU legislation on managing ELBs would be adopted. All relevant stakeholders would need to be included in its development to maximise acceptance. The instrument would include similar elements as the policy option described above (amendment to Directive 2013/53/EU) plus: • Clear enforcement actions, defining the roles of competent authorities, and requirements on sanctions and penalties for boat owners who illegally abandon their boats • Clear guidelines on the registration and deregistration process of recreational vessels • Monitoring and reporting plan
Complementary actions	Important to include specific objectives, including key performance indicators and monitoring and reporting and enforcement actions to ensure effective implementation on the ground.
Intervention logic	• The outputs – new legislation on the end-of-life management of recreational boats • The outcomes – mandatory amendment would ensure that ELBs are managed in a more transparent and environmentally acceptable manner • The impacts – reduced ELB abandonment, increased market potential of boat recycling market and revenue/more jobs for boat dismantling sector as well as overall improved management of ELBs
Potential challenges to consider	Significant administrative burden and potential low stakeholder acceptance to establish a new EU level instrument. Time constraints associated with establishing and implementing a new legal instrument at EU level in relation to the urgency of treating the issue as soon as possible.

A7.6.3 Screening of options

Figure 21 illustrates the array of problems currently associated with the end of life management of recreational boats and which problem areas the policy options address. The red arrows indicate the problem areas that the policy options directly address. The figure assumes that the policy option "EU Legislation on ELB management" includes all of the individual policy options, therefore it would be the most effective option in terms of the potential to address all identified problems. However, this does not mean that the option would be highly acceptable or easy to implement (as the results of the screening criteria indicate). It is also assumed that the option "voluntary initiative on ELB management" would not be very effective due to the characteristics of ELB management e.g. high costs of ELB treatment, low recyclability of ELB materials, which could present barriers to the participation of stakeholders.

It was concluded that no individual policy option could fully resolve all of the problems related to end of life recreational boats. For example, the policy option "harmonised registration/de-registration system" would be able to address the problems related to difficulty in identifying the last owner of the boat as well as problems related to an uneven playing field but would be less effective in directly addressing problems related to high dismantling costs or abandonment of boats without the support of other policy measures or actions.

Figure 22. Mapping of the drivers, problems and policy options

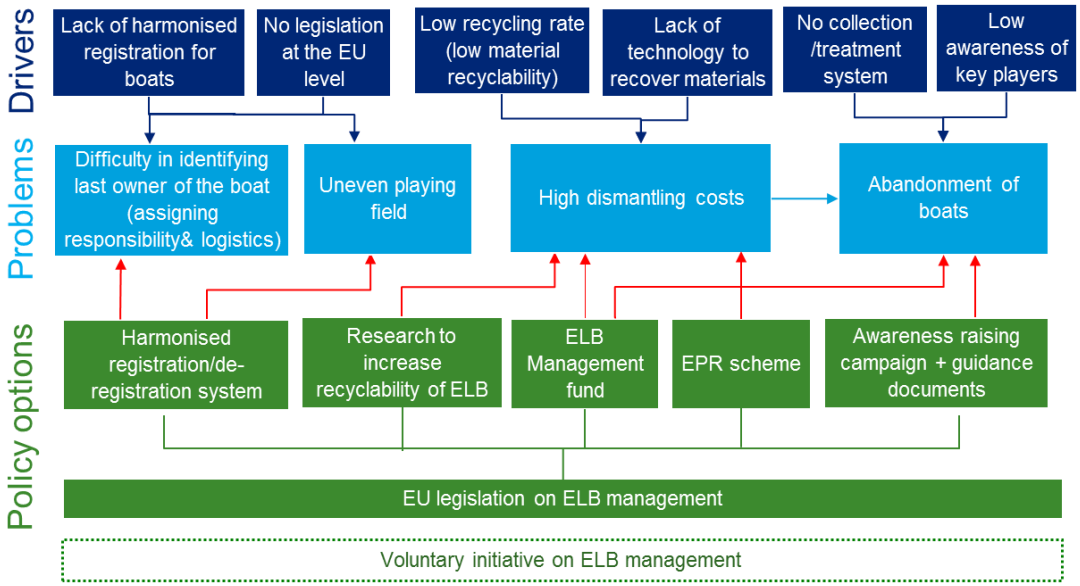


Table 26. Screening exercise for the long list of policy options relating to boat recycling

Option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
1. Development of guidance documents for key actors in the recreational boat sector that includes information on best practices in terms of boat dismantling and waste management.	The Commission could help in gathering support and raising awareness of key stakeholders organising workshops to discuss and develop the guidance documents as well as help in disseminating the final deliverables.	**High** This option would be easily implemented and acceptable as information and knowledge raising tools are relatively less costly with lower administrative burden than other types of policy measures.	**Low** This option would need to be coupled with other complementary options in order to increase effectiveness in resolving all aspects of the problem.	**High** This option would be more effective at EU level to ensure that guidance provided is accessible to all key stakeholders and MS. This would ensure increased harmonisation and coherence of practices across the EU.	**Low** This option has low proportionality in terms of addressing the scale of the problem and its consequences because it only addresses one element (e.g. low awareness of key players).	*Option taken forward in package.* Although this option has high acceptability, it would be not be very effective in resolving the problem without complementary measures.
2. Development of a voluntary initiative involving industry and MS authorities, boat owners and other relevant stakeholders to encourage sound end-of-life management of recreational boats.	The Commission would have a minimal role in this option because of the voluntary nature of the option. The key actors concerned would be MS and industry stakeholders, who would be responsible for managing the day to day operations of the voluntary scheme.	**High** As a voluntary measure, it is assumed that all members of the scheme have accepted a role in the initiative and therefore adhere to its principal objectives and functions.	**Low** The effectiveness of this option in resolving the problem would depend on the extent to which participants consistently apply the main requirements of the scheme and the number and representativeness of participants. Because of the high costs of ELB treatment, a voluntary scheme would need to have a clear net benefit for the participants to encourage participation and commitment.	**Medium to High** This option would be most effective if applied at EU level to ensure that all key actors are involved. However, the voluntary nature of the scheme does not guarantee that participants will be representative of the situation at the EU level.	**Low** The proportionality of the option would depend on the representativeness of the participants and level of commitment from those involved.	*Option excluded.* Since costs of ELB treatment are high, a voluntary approach is unlikely to work without enforcement. There would be a risk of inconsistent application across the EU.
3. Development of a	The role of the	**Low to Mod**	**Mod**	**High**	**Mod to high**	*Option taken forward*

Option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
harmonised registration and deregistration system.	Commission would depend on whether the register is implemented under a voluntary or mandatory measure. As a mandatory measure, the Commission would probably need to be involved in the monitoring and enforcing of MS to ensure that the registers are coherent and kept up to date across the EU.	Some MS already have similar national registration systems either on a voluntary or mandatory basis. However, some have shown resistance to establishing such a system.	The effectiveness of this option would depend on whether the register is implemented under a voluntary or mandatory measure. A mandatory measure would most likely result in increased effectiveness as it would ensure consistent application across EU. Additional measures would be needed to address all aspects of ELB management.	This option has high EU added value since it would be most effective if applied in a consistent way across the EU.	A harmonised registry across the EU could imply increase of administrative burden and costs in order to maintain data over a long period of time given the lifespan of boats, however it would address one of the most fundamental sources of the problem: difficulty in tracing the last owners of the ELB.	*in policy package* This option would be able to address one of the main issues related to ELB management (identification of last owner), however would need to be complemented by other options to address all aspects of the problem.
4. Development of an ELB management fund	It would be important for the Commission to ensure that the mechanics of the fund is applied coherently across the MS and provide relevant guidance on how to establish an effective funding scheme e.g. who would operate it? How would fees be set up and distributed, etc.	**Low to Mod** The acceptability of this option would probably be low to medium due to the costs and administrative burden associated with implementing it. Stakeholder resistance could be expected depending on how funds would be collected e.g. recycling fee paid by the manufacturer and/or the new boat owner when purchasing a boat and how it would affect the stakeholder groups concerned e.g. impact on new recreational	**High** Assuming that this option is effectively implemented in a harmonious way across EU MS, it would be highly effective in encouraging boat owners to send their ELBs to dismantling facilities instead of abandonment.	**Mod to High** This option has high EU added value since it would be most effective if applied in a consistent way across the EU, particularly due to the cross-border nature of recreational boats (boats calling at different national ports, sailing in countries not registered under the boat, etc.)	**High** This option has high proportionality in terms of addressing the scale of the problem and its consequences because although the initial costs to set up the ELB management fund could be high, if effective the fund would be able to help finance the currently high dismantling costs.	*Option taken forward in policy package* It is proposed that this option is further analysed due to its potential to address the barrier of high dismantling costs and introduce some aspects of producer responsibility.

Option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
		boat sales.				
5. Development of an Extended Producer Responsibility (EPR) scheme (mandatory or non-mandatory).	Under this option, the role of the Commission would most likely be to support MS in implementing the scheme, especially those who have less experience with EPR schemes e.g. new MS or those who lack the necessary infrastructure (see comment in next column).	**Low to Mod** The acceptability of this option would probably be low to medium due to the costs and administrative burden associated with implementing it and the lack of necessary infrastructure in some MS (appropriate dismantling facilities and transport services). Furthermore, acceptance from both (or more) parties of an appropriate "shared" system is necessary for an effective EPR scheme.	**High** Assuming that this option is effectively implemented in a harmonious way across EU MS, it would be highly effective in addressing most of the problems related to ELB management.	**Mod to High** This option has high EU added value since it would be most effective if applied in a consistent way across the EU, particularly due to the cross-border nature of recreational boats (boats calling at different national ports, sailing in countries not registered under the boat, etc.)	**High** This option has high proportionality in terms of addressing the scale of the problem and its consequences because although the initial costs to set up the EPR scheme could be high, the principle of a "shared" responsibility scheme, involves shared financial and operational responsibilities among different key stakeholders.	*Option taken forward in policy package* It is proposed that an EPR scheme be embedded in EU legislation (see option 7) similar to the ELV Directive due to the specificities of recreational boats (e.g. their long life-time and cross-border nature).
6. Targeted research for the development of the recycling market[404].	The role of the Commission under this option would be to encourage research on recycling by publishing specific research calls in this area and making research funds available.	**High** A focus on research is likely to be well accepted as the stakeholders in the market usually invest in innovation.	**Mod** Some technologies are already researched and could be improved with further research to further exploit or minimise future waste streams. Research in this area could also encourage industries	**Mod to High** The advantage of research taking place at MS level is being able to focus on specific local and national contexts. At the EU level, EU research funds in this area could be part of its responsibilities to	**High** This option has high proportionality because of the potential for research to find technology solutions to counterbalance the current high costs of ELB treatment, boosting the recycling	*Option taken forward* This option targets one of the key issues related to ELB management (i.e. low recyclability of the materials found in ELBs), however this would need to be complemented by other options to

[404] Financial instruments include: (1) Funding for research on eco-design for new boats to ensure that new boats are made of increased recyclability of materials and research on technologies to recycle ELBs and (2) A scheme to finance treatment of ELB e.g. charging a tax on new recreational boats that would go towards ELB treatment

Option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
			to invest more in research and newly developed technologies	develop competitiveness and sustainability in the EU.	market.	address all aspects of the problem (e.g. low awareness, collection and treatment systems, etc.)
7. Amendment of the current Directive 2013/53/EU on recreational craft and personal watercraft to include requirements and guidelines on sound end-of-life management of recreational boats.	The Commission would have to play a significant role in implementing this option as it concerns the amendment of an existing Directive.	**Low** Low stakeholder acceptance is expected as the Directive targets manufacturers directly, and not other responsible actors such as boat owners. The directive imposes pre-sale requirements. It does not address the use and after-sale treatment of boats by the users. The competence of the directive to treat the end-of life issue is questionable.	**Low** See comments under conclusion column.	**N/A** See comments under conclusion column.	**N/A** See comments under conclusion column.	*Option excluded.* The policy option would place all responsibility on manufacturers and therefore isn't feasible. Further, the objective of the RCD is limited to providing information to manufacturers about boat characteristics to ensure safety, therefore the RCD would not be the appropriate channel for addressing ELB management.
8. Establishment of EU legislation on the end-of-life management of recreational boats	The Commission would need to draft the legislation and submit it through the standard process for new legislations e.g. impact assessment, vote of the Parliament, etc.	**Low to Medium** As with any new mandatory measure, some resistance from certain stakeholder groups could be expected. For example, boat manufacturers and boat owner associations may be more resistant (due to stricter requirements on their activities) compared to the boat recycling	**High** Assuming that this measure includes all relevant sub-options e.g. registration system, financial/EPR system and applied consistently across EU MS, it would be able to resolve all of the problems associated with ELB management.	**High** This option would be most effective if implemented at EU level to ensure coherency and consistent implementation.	**Medium to high** This option has the potential to address all aspects of ELB management, however could entail significant initial costs and administrative burdens.	*Option taken forward.* Due to the relatively high costs of ELB treatment, it is likely that a mandatory EU wide measure is required in order to ensure that all aspects of the problem are addressed.

Option	Role of COM	Acceptability / ease	Effectiveness	EU added value	Proportionality	Conclusion
		sector and environmental associations who would likely welcome such an option.				

A7.6.4 Short-list of options taken forward for assessment

A set of policy options / option packages have been identified based on the mapping and screening exercise above. The packages represent differing levels of ambition and strength of EU intervention. They are constructed on the following basis:

- Option A: Enhancing knowledge and awareness

  This policy package would include the following sub-options:

  - Registration system
  - Awareness raising materials such as guidance and best practice documents

  The policy package addresses the main issues in to ELB management (identification of last owner, difficulty in assessing the situation and low awareness of the environmental impacts of ELB abandonment). It would involve minimal EU intervention.

- Option B: Providing direct support and non-legislative direction through the establishment of an ELB management fund and targeted research

  In addition to a registration system, this policy package includes the establishment of an ELB management fund, financed by boat manufacturers and/or boat owners. The ELB management fund would collect funds through a "disposal fee" that could be applied through existing fee systems e.g. through existing port-service fees, boat registration fees, etc. and/or at the purchase of new boats. It would be implemented at MS level. A financial instrument to ensure sound ship recycling in the context of the Ship Recycling Regulation is currently being studied. However, in-depth analysis would be needed to determine the applicability of the financial instrument for ELBs due to the very different specificities of seagoing versus inland vessels.

  The funds collected would help to pay for dismantling costs and fund targeted research on the recyclability potential of ELBs. For example, research on recycling processes/opportunities for polymer plastics and new materials to replace polymer plastics and life cycle analysis assessments (LCA) to address the relative merits and disadvantages of the various boat disposal options.

- Option C: Additional legislative action

  This policy package would be the most ambitious and require the most significant amount of EU intervention. It would integrate elements of all of the sub-options included in the policy bundles above, including key elements of an EPR scheme. A mandatory, EU-wide approach is likely to be required or at least the most effective in addressing the problems behind the current situation of ELB management because the costs of ELB treatment are high.

A summary table of the final section of intervention options to be assessed is provided below:

Table 27. Short-listed intervention options

Option A – information based	Harmonised registration system Awareness/informative documents
Option B – supportive actions	Harmonised registration system Targeted research ELB management fund
Option C – additional legislative weight	Includes all above sub-options plus elements of an EPR scheme

A7.7 Assessment of impacts

The assessment of the impacts of the selected policy options are described in the following sections and are assessed against the baseline scenario, which is described in section A7.4.

A7.7.1 Option A: Enhancing knowledge and awareness

A7.7.1.1 Implementation and effectiveness

As part of option A (to enhance knowledge and awareness of responsible ELB management) guidance documents and a registration system are assessed in further detail below, in terms of their overall impact on enhancing knowledge and awareness and addressing some of the identified issues related to ELB management in Europe.

Guidance documents

The suggested implementation process involves:

- Development of the documents by the Commission, in collaboration with experts and national authorities. This would require the organisation of workshops, the editing, publishing and translation of the documents, and any necessary updates. As several technical guidelines are already provided by ILO, IMO and Basel Convention on safe and environmentally sound ship recycling, as well as from Boat Digest, this option would not duplicate these efforts, rather update and add new information for the vessels concerned.
- Communication to key stakeholders. The EC could communicate the documents to federations of boat manufacturers, federations of waste management companies, associations of boat owners and nautical federations (including boating schools and skipper training centres), associations of marinas, environmental NGOs, insurance companies, government of Member States, etc. In order for the guidelines to reach the key stakeholders, a translation into all EU languages would probably be necessary. Key stakeholders would be boat owners as well as manufacturers of small vessels, which account for a very diverse group of stakeholders to be reached in terms of the language coverage needed across the EU.
- Dissemination of the documents. Key stakeholders will be responsible for communicating the documents to their members, local authorities or the general public. It could be done through websites, newsletters, conferences, etc. preferably as part of an ambitious communication campaign. With this in mind, reaching out to national authorities and/or boating associations about dissemination activities would be advised as they are in a position to communicate more directly with the appropriate target groups via websites, newsletters, conferences etc.

The European Boating Industry gathers a majority of these stakeholders: boat manufacturers, marinas and service providers, including schools and insurers. It has direct contact with over **7,000 companies** in the EU[405]. It would therefore be an important partner in the dissemination of guidance documents, as emphasized in the previous paragraph.

Europe has approximately **36 million boaters,** i.e. people enjoying boating activities, whose awareness of the need to handle properly boats at their end-of-life needs to be addressed. A survey of recreational boat owners in France, Italy, Spain, UK and Turkey carried by Boat Digest found:

- 68 per cent were not willing to pay anything for recycling or dismantling their recreational boat;

[405] European Boating Industry, Facts & Figures : http://www.europeanboatingindustry.eu/index.php?option=com_content&view=article&id=4&Itemid=119

- 16 per cent of boat owners have previously abandoned their boats;
- 37 per cent of the boat owners do not know that there is a problem regarding the disposal of ELBs within the EU[406].

The magnitude of effectiveness of this option will depend on the **number of persons receiving the information,** and **following the recommended procedures**. The expected impacts are:

- Compared to the baseline scenario, a higher number of boat owners bringing their ELBs to a recycling facility, reducing the costs and environmental burdens associated with boat abandonment. Such benefits are further assessed below.
- Compared to the baseline scenario, a higher number of recyclers recognising the importance of responsible ELB management and following sound environmental practices during treatment, with a potential increase in revenue due to higher volumes/better processes.

Indirect effects may be:

- An improved image for the sector, which can lead to new boat acquisition and memberships;
- Space currently used to store old boats could be saved by boat owners, marinas, schools, etc. This would sometimes result in money savings that can be reinvested in other products.

However, because the number of people likely to change their behaviour once informed is unknown and assumed to be low as there is no further incentive from the baseline scenario to change one's behaviour, **the effectiveness of this option is estimated to be low** (=0, that is no impact).

Harmonised registration system across EU Member States

The registration system could be:

1. Implemented by each MS, based on an harmonised framework
2. Updated by each boat owner, when they acquire, sell or send a boat for end of life treatment
3. Require boat owners to register in order to obtain insurance for their boats
4. Used by insurers to collect fees to ensure recycling at the boat's end-of-life

Some MS already have registration systems. The efficiency of these systems should be improved to make sure they can be used to reduce the risk of boat abandonment (options to be discussed with MS authorities). They could, for instance, be coupled with legislation facilitating the handling of abandoned boats by local or harbour authorities (a simplified procedure to identify the last owner through the registration system, ask for removal or get the property rights to dispose of the boat). This tool would be most effective if applied in a systematic and harmonised way across the EU e.g. with the same requirements and similar costs to avoid "de-flagging" or de-registration.

The implementation (or improvement) of a registration system will mainly affect public authorities and boat owners, but the information may also be used by insurers, the police, etc. In the case it is used along with insurers, e.g. requiring boat owners to register and update their registration information in the system to obtain boat insurance, the cooperation of insurers would be essential. Insurers may also have the responsibility of ensuring boat owners set aside a provision for boat treatment (form to be discussed). Registration of boat owners is therefore very important to ensure compliance with this obligation. Insurers may also be interested in the information

[406] Stichting Jacht Recycling (2015) Advice Report: The prevention of fibre reinforced plastic boats from becoming orphan in Dutch waterbodies

available in the registration system, such as boat ownership, duration of use, occurrence of incidents requiring deregistration, etc.

The study carried out in the Netherlands on limiting orphan boats[407] recommended the implementation of a registration system. However to avoid potential taxation associated with the implementation of a governmental register, the authors suggested a private registration system managed by the water sports industry, possibly with subsidies from municipalities. However, a privately operated registration system could be difficult to harmonise at the EU level and it would probably meet resistance from certain stakeholder groups.

A harmonised registration system across the EU would result in the following behavioural changes:

- Authorities dealing with abandoned boats (local, harbour authorities, etc.) would be able to retrieve the boat more rapidly, thus reducing the costs incurred and potential hazards to the environment (the benefits are further assessed below).
- Boat owners would be less likely to abandon their boats and the number of boats transferred to authorised facilities will increase, especially if the registration system is mandatory. However, the effect on boat owner behaviour in terms of choosing the preferred disposal option (dismantling or recycling) may be minimal due to the lack of legislation requiring them to transfer ELBs to authorised dismantling facilities. Other disposal options such as storing their ELBs, landfill and incineration still represent the least costly disposal option compared to dismantling and recycling.

Indirect behavioural changes may be:

- Boat owners avoiding registration (assuming that the registration system is in place in all MS and in a coherent manner), for instance by registering under a foreign flag, especially if conditions of registration are different in third countries.
- Insurers, authorities, recyclers, etc. adapting their services based on available information on the current fleet.

In this option, it is assumed that the abandoned boats recovered would be transferred to dismantling facilities and a percentage of the current fleet will be directly given to these facilities by their last owners who wish to avoid registration (if there are registration fees or if it requires insurance contracts). In addition, the quality of boats provided to recyclers will improve (ELBs would most liked be deposited at an earlier stage of degradation), therefore their revenue from recycling treatment should increase. **This option is therefore considered to be moderately effective.**

For the purposes of establishing quantitative estimates of the impacts of the option, it is assumed that this equates to a 75 per cent decrease in boat abandonment (i.e. from 10,000/year to 2,500/year).

A7.7.1.2 Economic impacts

Performance and competitiveness

The performance and competitiveness of dismantlers will increase as we assume that there would be higher volumes of ELBs to be treated (although such a disposal route is not guaranteed). While they may need to invest in specific equipment, and incur higher costs, such as for transportation, they may achieve economies of scale, get access to valuable materials and optimise some of their processes. This may encourage innovation in the dismantling and recycling process, with R&D looking for

[407] Stichting Jacht Recycling (2015) Advice Report: The prevention of fibre reinforced plastic boats from becoming orphan in Dutch waterbodies

better outputs for materials extracted from ELBs. The image of the sector will also improve. However to benefit from the increase in ELBs it may be necessary that only a few dismantlers specialise in ELB management.

Assuming that the 75 per cent of abandoned boats (7,500 abandoned boats) are sent directly to dismantling facilities, this would translate to approximately €7.5m[408] in dismantling revenue received from boat owners. However, as other disposal methods become cheaper, only a proportion of that potential €7.5m is expected to be realised. Further, some of the previously abandoned boats would have been sent for dismantling by the public authorities responsible for their disposal. Hence the net effect on the industry is likely to be relatively minor.

This issue is considered as particularly relevant to develop nautical tourism in Europe. Benefits in this area will have more weight in the overall comparison of options.

Administrative burdens on business

The implementation of a registration system would impose additional administrative costs on the sector. Boat owners, including boating associations, may be reluctant to follow the registration process. Dismantlers may need to provide documents to prove the destruction of boats to ensure deregistration. More documents may be needed to ensure the traceability of boats. On the other hand, the easier identification of boat owners should reduce burdens elsewhere (e.g. procedures for removing abandoned boats).

Public authorities

National authorities may face additional costs to maintain the registration system (that can yet be covered through registration fees). However the costs faced today because of boat abandonment would be greatly reduced. Information has been identified that provides an indication of the costs of such a registration system. For example, EUCARIS, is a European car and driving licence information system, based on data-exchange regarding vehicle registration, driving licences, and the accompanying personal data. Each country is responsible for its own registry of vehicle and driving licence information and its own registration procedures. Other government institutions can request information from national registration authority e.g. vehicles from another country. Estimated annual management and development costs are around €400,000.[409]

The costs of communicating the guidance documents also need to be taken into account. See the figure below which provides an indication of the potential costs of developing and disseminating guidance documents.

The DG Environment study of 2011 assessed the following costs for developing and disseminating guidance documents (see Figure 22 below).

[408] Based on an average disposal cost assumption of €1,000.

[409] https://joinup.ec.europa.eu/community/epractice/case/eucaris-european-car-and-driving-licence-information-system-0

Figure 23. Estimated costs of developing and disseminating guidance documents

Table 8-2 Costs of translating the three guidelines prepared as part of this study into the 23 official EU-languages and communicating them in a minimum model on existing websites, newsletters etc. and a large campaign involving various communication channels like TV etc.

Activity	Cost, EUR
Translation of guidelines	26,400- 54,800
Minimum communication campaign: communicate the guidelines via existing websites, newsletters etc.	67,500
Large communication campaign: communicate via various channels like TV, fliers in ports etc.	13,500,000 - 27,000,000

Source: DG Environment (2011), Recovery of obsolete vessels not used in the fishing trade

Because of the information available through the system, it is assumed that this option will have an overall benefit for public authorities in terms of being able to identify easily the last owner of the boat, despite the costs incurred.

Under this option, we assume that the guidance documents and campaign would cost about €20 million (a one-time cost) and that the registration system would cost about €400,000 a year to operate. We assume also that the costs of the registration system would be covered by the annual registration fees. Further, we assume that the registration system is mandatory for all boat owners and that it results in a 75 per cent decrease in abandoned boats. This means that approximately €15 million would be saved by public authorities each year (7,500 less abandoned boats at €2,000/year cost of disposing of abandoned boats), leaving about €5 million left to pay for the guidance documents and campaign.

Cost savings: other cost savings could also be expected from the cost savings from less pollution to be treated (due to reduced number of abandoned boats).

Innovation and research

As seen above, the increase in ELBs to be dismantled is likely to encourage innovation, to decrease the costs of treatment and earn revenue from material recycling. Innovation will not be stimulated to its full potential however, because of the need for funding.

Consumers and households

Option A raises awareness of boat owners about ELB management to encourage them to surrender ELBs to authorised facilities. This will have economic consequences for them as they will have to pay for the dismantling process. It may have an impact on the market for boats, especially the secondary market. Costs of abandoned boats are paid today by public authorities (and therefore by the taxpayer).

Assuming that the 75 per cent of abandoned boats (approximately 7,500 abandoned boats) are sent directly to dismantling facilities, they would trigger dismantling costs of approximately €7.5 million[410], which would be paid by boat owners. This would in effect represent a transfer of cost burden from the general taxpayer (currently paying via public authority actions to dispose of abandoned boats) to the final boat owners.

[410] Based on an average disposal cost assumption of €1,000.

Table 28. Summary of quantified economic impacts for Option A

Key ELB statistics	Best estimates and assumptions
Dismantling and recycling industry performance	Limited impact - no estimate possible
Public authority costs of implementation	€20m one-off for awareness campaign €0.4m/year for registration system maintenance
Public authority savings from reduced abandoned boat management costs	€15m/year
Consumer (boat owner) costs of increase in boat dismantling (rather than abandonment)	€7.5m/year
Consumer costs of boat registration	€0.4m/year

A7.7.1.3 Social impacts

Employment and labour markets

The increase in dismantling activities (due to fewer abandoned boats) could have a positive impact on employment – in section A7.3.4.3 it is demonstrated that the forecast annual tonnage of ELBs could sustain 145 Full Time Equivalent (FTE) around 14 (FTE) only. However the DG Environment study suggests that current facilities could absorb the increase in ELB volumes and hence the employment impact could be smaller. In France, the association APER also considers that the sector would not create jobs but instead complement other activities such as the treatment of vehicles[411]. In the medium to long term, an increase in the number of ELBs could prompt the establishment of new treatment facilities in specific locations and additional job opportunities.

Working Conditions

The working conditions of dismantlers may be improved if good practices on dismantling are communicated through guidance documents. Informing boat owners of authorised dismantling sites may also decrease the number of dismantlers treating boats illegally.

Public health & Safety

Boats contain hazardous components that can be released in the environment when a boat is abandoned. Therefore, a fall in the number of abandoned boats should deliver public health and safety benefits.

A7.7.1.4 Environmental impacts

Environmental benefits will arise from the reduction in the number of abandoned boats, which are estimated to fall from 10,000 per year to 2,500 per year.

Resource use and waste

Increasing the higher number of ELBs that are properly dismantled would have environmental benefits. Boats would be properly decontaminated, and materials directed to recycling or reused whenever possible.

Water quality and resources

Abandoned boats are responsible for water pollution. The reduction in abandoned boats would therefore provide benefits in terms of water quality.

[411] Région Guadeloupe (2014) Mission de conseil et assistance pour la mise en œuvre de la filière BPHU

Sustainable consumption and production

Making consumers responsible for the management of their ELB may encourage the purchase of eco-designed boats, assuming that manufacturers invest in this opportunity.

A7.7.2 Option B: Providing direct support and non-legislative direction through the establishment of an ELB management fund and targeted research

A7.7.2.1 Implementation and effectiveness

In option B, direct support through the establishment of an ELB management fund and targeted research are assessed in further detail, considering their overall impact on promotion and enabling of more responsible ELB management.

ELB management fund

The ELB fund would be financed by boat manufacturers and/or boat owners. The fund would cover the cost of ELB treatment in order to ensure its sound disposal and support research into implementing eco-design principles in new boat construction and more efficient ELB dismantling and recycling processes.

The fund would be implemented at MS level. The effectiveness of the ELB fund would increase as the number of MS involved rises (it would ideally include at least the maritime MS) due to the transnational nature of recreational boats. It would also be important that the implementation of the fund is harmonised and coherent across the MS involved e.g. using the same approach to calculate the contributions to be paid by boat owners across the MS in order to avoid creation of an uneven playing field and internal market distortion. The EU could assist in providing guidance on setting up the fund and carrying out information and dissemination campaigns to promote the best practices reflected by the ELB management fund for addressing ELBs.

The funding needed to cover ELB treatment costs is estimated to be at least €80 million a year (based on the assumption that it cost approximately €1,000/per ELB to be treated and around 80 000 ELBs need to be treated and disposed of every year).A further €10 - €20 million is suggested to fund innovation[412]. A total fund of close to €100m/year is proposed. As the fund would be financed by boat manufacturers and/or boat owners, the "disposal fee" would entail approximately €700 per new boat sale per year; or €16 per existing boat owner. For new boats, the disposal fee could be applied at the purchase of new boats and for existing boats, the disposal fee could be paid through marina or port fees when the boats call to port.

The fee could be scaled to the size of the boat to help ensure proportionality. The disposal fee amount could also be set based on the recycling potential of the boat to further promote eco-design and recyclability. For example, the disposal fee could be reduced based on eco-design characteristics of the boat that make it more "recyclable" at the end of its life compared to other boats on the market. The eco-design principles for the construction of new boats would use materials that can be more easily recycled or recovered. Here we assume that the recycled or recovered materials offset some of the treatment costs due to revenues generated from the re-sale of recovered materials. Therefore, in this context, the waste fee is established to reflect as accurately as possible the cost for treatment[413]. The eco-design adjustment factor would need to be modelled carefully and monitored – a rapid shift to more recyclable

[412] Targeted research on the increased recyclability of ELBs and the use of eco-design in the construction of new boats. For example, research on recycling processes/opportunities for polymer plastics and new materials to replace polymer plastics or to commission life cycle analysis assessments (LCA) to address the relative merits and disadvantages of the various boat disposal options.

[413] It would be important to carry out an in-depth economic modelling exercise, using robust and reliable data on costs, new boat sales, recycling markets, etc. to ensure that the calculation of the disposal fee is fair and justified.

boats (attracting lower fees) could lead to a deficit in the income needed to support the processing of the legacy stock of non-recyclable ELBs.

In the case where both manufacturers and boat owners contribute to the fund, a shared responsibility principle could be established. Manufacturers would need to decide whether to transfer the entire disposal fee to the boat purchaser (as a change in price), absorb the cost themselves or split the fee. In all cases, the addition of a disposal fee on new boat purchases would increase the overall purchasing price of the boat. The other option is to apply the disposal fee to boat owners only, in which case, the disposal fee would be collected either through existing fee systems e.g. registration fees, through existing port fees, etc. For example, some MS implement a disposal fee at ports for the delivery and collection of ship-generated waste.

With the above in mind, it would be important to set up a "clearance" body, whose key role would be to establish the disposal fee to be paid and to oversee the monitoring and accurate reporting of the funds collected from port authorities/manufacturers. The clearance body would need to carry out regular e.g. annual reviews of the reported data (costs of treatment and funds collected) to determine whether the amount of fees applied need to be modified. This would require treatment facilities (or ports/marinas) to report to the clearance body to ensure that costs information are regularly updated. In the case several MS are involved in the scheme, the clearance body would need to ensure that the costs of ELB disposal and associated disposal fee do not differ significantly across the MS to avoid creating an uneven playing field and competition risks e.g. boat owners preferring to pay the disposal and use the disposal facilities of a particular MS because the fees are significantly lower compared to other MS. A notification system would also need to be established to track which boats have paid the disposal fee and those which have not. See Box A7.2 in the Annex section A7.2.3.5 for a description of how the CDNI model calculates similar fees to cover the costs of ship-generated waste treatment from inland vessels.

More robust and updated information on the number of ELBs to be dismantled and treatment costs would also be needed in order to determine the most effective way to set up a ELB management fund in terms of: how funds should be collected, the amount needed, by whom, how the funds would be re-distributed, etc. As the previous sections have highlighted, robust data on ELBs in terms of the quantity that is actually being dismantled, abandoned and recycled in the EU is currently lacking. In addition to more robust data, the following suggestions could also assist Member States and the Commission to identify the best way to set up the fund.

1. Assess the amount that the fund would need to cover all or part of ELB treatment costs (either at Member State or EU level). This suggestion is linked to the previous statement on the need for more reliable data on the ELB sector. The DG Environment study assessed that given the number of ELBs to be dismantled in the coming years, the total costs which should be covered by the fund on an annual basis would be somewhere between €100 and €400 million. With a funding mechanism in place, an equal amount of money should be transferred to the fund every year (if the objective of the fund is to cover **all** ELB waste operation costs)[414].
2. Establish an appropriate fee system based on appropriate criteria e.g. fixed fee based on size of boat, reduced fees for eco-designed or "green" boats.
3. Work with key stakeholders to identify financial leverages.
4. Set rules for the implementation of the ELB management fund to ensure maximum harmonisation between Member States.
5. Implement an effective enforcement mechanism (e.g. use of sanctions or reporting requirements) to ensure funds are used and distributed properly.

[414] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

Some examples from the literature can be highlighted to illustrate how the fund could work in practice. For example, financial instruments to encourage the recycling of large commercial sea-going ships by approved European facilities are being studied in the framework of the Ship Recycling Regulation 1257/2013. Potential financial instruments considered include a levy on ships calling at EU ports, which would be transferred to an EU level recycling fund, a ship Life Insurance, collected by insurance companies to cover the additional costs of recycling the ship in a responsible way (the insurance contract would be needed to enter an EU port), or a Ship Recycling Account required for each ship calling at EU port where yearly payments could be made to cover the costs of recycling[415]. All these options foresee the refund of the additional costs of responsible ELB treatment to the ship owner after demonstrating that the recycling took place in an EU–listed facility.

Similar systems could be implemented to establish a fund for the treatment of ELBs covered by this study. Nonetheless, certain aspects would need to be considered specific to recreational boats such as:

- Ensuring that there is sufficient capacity within the EU or in authorised facilities to adequately address a potential increase in the volume of ELBs to be safely treated and dismantled.
- The potential impacts on stakeholders who would be concerned by both larger vessels and recreational boats (e.g. increased financial and administrative burden).
- The impacts on new boat sales in the case that the disposal fee is added on to the purchase price of new boats
- Regional specificities of ports, harbours and marinas in terms of existing infrastructures (or lack thereof) for ship recycling, existing port services fees, etc.

The direct effects that can be expected are:

- A higher number of ELBs dismantled and materials recovered, compared to the baseline scenario, as the costs of these processes would be recovered.
- Increased revenues for the ELB treatment sector.
- Competition between treatment facilities as a driver for increased efficiency of ELB treatment processes
- A significant reduction in the number of boats abandoned.

Indirect effects that can be expected are:

- A potential decrease in the competitiveness of European boat manufacturers compared to non-European boat manufacturers, if they are required to cover a share of the disposal costs. These economic impacts are explored further below.

Overall this option is considered to be moderately effective. By addressing the problem of high ELB dismantling costs, it ensures that boat owners are incentivised to dispose of their ELBs at dismantling facilities, rather than abandoning them or disposing of them through other means (e.g. landfill, incineration).

Targeted research

Funds collected through a dedicated ELB management fund as described above could be used to finance targeted research on increasing the recycling potential of ELB. Current research schemes could also be exploited to further encourage R&D in the

[415] Profundo (2013), Financial mechanisms to ensure responsible ship recycling, a research paper prepared for the NGO Shipbreaking Platform

sector. H2020 work programmes and calls for projects could be used. Examples of relevant H2020 projects are:

- H2020 call: "Affordable weight reduction of high-volume vehicles and components taking into account the entire life-cycle". A similar call could be launched for ELBs or it could use the results of this call.
- H2020 call "Development of equipment for composite recycling process of uncured material" that address the recycling and recovery of carbon fibre.
- H2020 work programmes supporting projects in the area of 'Climate action, environment, resource efficiency and raw materials', and research on 'Nanotechnologies, Advanced materials, Advanced manufacturing and processing, Biotechnology', or 'Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy'. Other relevant projects currently supported by H2020 are:
  - The REFORM project (Resource-Efficient Factory Of Recyclable Manufacturing composite components) aims to develop clean and resource-efficient technologies for the manufacture and disposal of composite material, looking at each individual production stage[416].
  - The project "Bringing recycled fibre products to market based on composites waste" has the objective of challenging the existing composites industry by introducing products made from recycled fibres that can replace virgin fibres[417].

Research in this area could be further strengthened by:

- Identifying gaps in the research evidence that need to be filled.
- Listing the stakeholders that could participate in the research, their means, and needs for support.
- Providing a clear framework for how these stakeholders could gain support from the Commission.
- Suggesting objectives and targets for R&D projects, deliverables and deadlines, including metrics that allow measurement of the progress and performance of projects in meeting targets and objectives.
- Ensuring the results are disseminated and used by the industry and other relevant stakeholders e.g. researchers, civil society, policy makers, etc.

Potential impacts could be:

- A higher recycling rate of ELBs compared to the baseline scenario. The research funds should ensure it results in environmental benefits by encouraging life cycle assessments (some recycling technologies can indeed have a negative effect on several environmental indicators).
- A lower cost of dismantling compared to the baseline scenario. However, new technologies for recycling composites, for instance, can be costly at least at the beginning stages of their uptake. The overall cost of dismantling (e.g. new recycling technologies) or use of new recyclable materials is therefore assumed to remain significant even if some dismantling costs fall. It is likely that the boat owner will still have to pay for dismantling, and the number of ELBs brought to dismantling facilities is not expected to increase dramatically.

[416] Clean Manufacturing cluster project, REFORM, sparks interest at EWEA 2015, March 2015 : http://www.focusonfof.eu/downloads/news/focus-press-release-ewea2015.pdf
[417] Bringing recycled fiber products to market based on composites waste (RECYCLED FIBER): http://ec.europa.eu/environment/eco-innovation/projects/en/projects/recycled-fiber

However, new technologies could also drive the development of new markets for recovered ELB materials, which could offset dismantling costs.

Indirect effects would be:

- Innovations emerging that improve the image of the sector and benefits to other related sectors e.g. sectors related to the new technologies and/or processes discovered for ELB recycling. The recycling rates of other related waste streams could also increase, for example in the aircraft industry, which also produces a high amount of FRP waste.
- Landfill of materials could be reduced and jobs created in the recycling market. These potential benefits are explored further below.

In summary, the implementation or reinforcement of research funds dedicated to ELB recycling could have some effect on the recycling of low value components but this largely depends on the industry's willingness to experiment and use new technologies and new materials. The cost of these technologies/materials as compared to the revenues to be gained is also relevant. The effectiveness of this option is therefore considered to be **positive but relatively small in scale**, compared to the baseline scenario.

A7.7.2.2 Economic impacts

Performance and Competitiveness

Covering the costs of boat dismantling will increase the competitiveness of the recycling industry, which doesn't have the means and sufficient ELB volumes today to invest in boat recycling activities. On the other hand, costs faced by other stakeholders (e.g. manufacturers and boat owners) may increase as they will be key actors in financing the system.

Operating costs of boat manufacturers will increase if they are required to contribute to the financing of ELB recycling through a dedicated fund. The 2011 study assessed the cost of dismantling ELBs in the coming years to be €100 to €400 million per year. Evidence presented in this annex on dismantling costs indicate that total cost could be slightly less than €100m. This would represent a cost of €700 per new recreational boat sold (assuming the sale of new boats equals the number of vessels that will require dismantling). Alternatively, distributing the total anticipated costs of dismantling equally between boat owners (at the point of registration), means that the annual disposal fee to be paid by the owner of a boat could be marginalised to around €16[418] (although this would also require the establishment of a comprehensive registration system).

As indicated above, this option would lead to a higher number of ELBs being dismantled. Compared to the baseline scenario, the total costs for ELB dismantling would increase, but would do so in parallel with the avoided costs of having to deal with abandoned boats and the costs of environmental pollution, as discussed below.

Assuming that 50 per cent of the 78,000 boats not currently dismantled are disposed of through appropriate dismantling and recycling, this could potentially generate €78 million of additional revenue for the dismantling industry.

However, the net effect would be diminished as other sectors may be negatively affected. This could be the case for boat manufacturers if the disposal fee is applied at the purchase of new boats and results in decreased new boat sales (because of increased price of new boats).

Nonetheless, manufacturers will be incentivised to use recyclable materials in the case they are partly responsible for covering treatment costs and could obtain a reduced disposal fee rate. Further, if recyclers can earn revenue from boat recycling, they will

[418] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

pay less for treatment as the revenues generated from recovered materials would offset disposal costs. Increased recycling of ELB materials could result in a reduction in activity in other disposal treatments (e.g. incineration) although these are typically lower cost/value. It is therefore suggested that the net effect would remain moderately beneficial.

There would also most likely be impacts on competition between ELB disposal facilities (assuming that there is an increase in ELB dismantling activities). Competitive dynamics, suitable harnessed, can help to reduce costs. It is important that the financial instrument creates a fair playing field and that there are establishment of minimum standards for disposal. This potential competition could also encourage increased recycling performance of facilities e.g. lower disposal costs through more efficient technologies

Finally, there is also the potential for further development of a market for recovered materials (assuming that there are improved processing and recovering technologies). The funds could be invested in researching opportunities to reduce dismantling costs and increase recycling-based revenue opportunities. Boat manufacturers could be encouraged to use eco-design criteria in the construction of new boats through a reduced disposal fee to be applied to new boat purchases. Eco-design can also be used as a competitive advantage for them to target consumers that are more receptive to eco-friendly boats.

Administrative burdens on businesses

The establishment of an ELB management fund would have significant administrative impacts, to track contributions, ensure payments, put in place the system, enforcement and monitoring, etc. A solid mechanism will be needed to ensure it is not abused by non-contributing owners[419].

Public authorities

The ELB management fund should provide an incentive for boat owners to send their boats to an authorised dismantling facility instead of abandoning it. The burden of handling abandoned boats for public authorities will thus be reduced. This advantage is expected to overcome the administrative workload faced by public authorities if they are in charge of managing the fund.

The costs of managing the fund needs to be considered and are assumed to be equivalent as managing a registration system (min €400,000/year), which is also to be implemented. On the other hand, boat abandonment is likely to be greatly reduced (close to zero) and we can therefore estimate €12 to €20 million cost savings for public authorities.

Functioning of the internal market and competition

The functioning of the internal market is expected to be negatively affected if the financing system of the fund is not implemented in a harmonised way across the EU – or neutral if implementation is harmonised. However, as described under the section on performance and competitiveness above, potential positive impacts include increased competition and development of a market for recovered ELB materials.

Innovation and research

Research can foster innovation in eco-design and recycling. The industry and policy makers would need however to commit to R&D, and not only researchers.

[419] Profundo (2013), Financial mechanisms to ensure responsible ship recycling, a research paper prepared for the NGO Shipbreaking Platform

Consumers and households

According to the DG Environment study, distributing the total anticipated costs of dismantling equally across all (registered) boat owners, through an annual tax, would result in an additional cost of €16 to €67 per year, with the expectation that it would be towards the lower end of the range. However, costs would be higher if distributed solely on new boat sales – approximately €700 per new boat purchase[420].

Table 29. Summary of quantified economic impacts for Option B

Key ELB statistics	Best estimates and assumptions
Boat manufacturing and sales / consumers (boat owner) costs of contribution to the ELB fund	€100 million/year contribution to ELB fund. Representing an average of €700 per new recreational boat sold / year; equivalent to 1.3% of total value of EU new boat purchases[421] Or €16/year per boat owner, if applied to all boat owners (not just new purchases) (Under both options the costs are expected to fall ultimately on consumers. Elasticity of demand for boats and thus impact on demand is undetermined)
Dismantling and recycling industry improved performance	Moderate impact Indicative estimate of €78 million/year of additional revenue.
Public authority savings from reduced costs of managing abandoned boats	€15-20million/year
Public authority fund management costs + registration system maintenance	€0.8million/year
Consumer costs of boat registration	€0.4million/year

To summarise the economic impacts under Option B, we assume that the costs of dismantling will be covered by the fund, which would require the collection of around €100 to €400 million a year, through a disposal fee implemented through new boat sales, registration fees or from other existing port fees. This assumption is based on figures provided by the DG Environment study. The amount of funds required could be at the bottom end of this range (at least €80 million / year), if we consider that 80,000 ELBs are currently generated each year and the cost of dismantling is around €1,000/boat, which would result in a required amount of around €80 million for the fund. In addition, the funds would also be invested in researching opportunities to reduce dismantling costs – by boosting the recycling market through new and improved technologies. It is assumed that the research fund (we assume at least €10 million subsidy from the EU) could decrease the costs of dismantling by two per cent per annum by identifying new outlets for materials.

[420] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

[421] Based on 2013 PRODCOM data: €6,479 million of new boat production in the EU (excluding exports) + €1,179 million of new boat imports. See Section A.7.2.2 for production statistics.

A7.7.2.3 Social impacts

Employment and labour market

A dedicated ELB management fund will have a positive effect on the dismantling and recycling sector, probably generating employment opportunities. The potential for job creation is marginal based on the estimated job/throughout ratio. The increase in dismantling activities (due to fewer abandoned boats) could have a small positive impact on employment – in section A7.3.4.3 it is demonstrated that the forecast annual tonnage of ELBs could sustain 145 Full Time Equivalent (FTE) jobs - an increase to 50 per cent of ELBs sent to dismantlers would therefore equate to just over 70 FTE jobs. However the DG Environment study suggests that current facilities could absorb the increase in ELB volumes and hence the employment impact could be smaller. In France, the association APER also considers that the sector would not create jobs but instead complement other activities such as the treatment of other vehicles[422]. In the medium to long term, an increase in the number of ELBs could prompt the establishment of new treatment facilities in specific locations and additional job opportunities.

Working Conditions

The working conditions of dismantlers are likely to improve if they are led to treat higher volumes of ELB.

Public health and safety

The increase in boat recycling will reduce boat abandonment and the associated health and safety problems.

A7.7.2.4 Environmental impacts

Resource use and waste

An ELB management fund will ensure dismantling of a large proportion of the 80,000 ELB per year occurs in an environmentally sound manner. It is therefore likely to have a significant impact on resource use and waste.

Water quality and resources

An ELB management fund will reduce the environmental impacts of boat abandonment, the number of which may be reduced by up to 10,000 per year. It will therefore support minor improvements in water quality.

Sustainable consumption and production

The targeted research is expected to support the development of new recycling technologies, and may also influence the eco-design of new boats, and is therefore expected to generate moderate impacts for sustainable consumptions and production.

Transport and the use of energy

The increase in boats provided to dismantling facilities can generate transportation needs that will create negative environmental impacts. New technologies for recycling can also require a high amount of energy that is not necessary when landfilling. These outcomes may generate minor negative environmental impacts compared to the baseline scenario.

Land use

The move from landfill to recycling will help to reduce pressures on land use.

[422] Région Guadeloupe (2014) Mission de conseil et assistance pour la mise en œuvre de la filière BPHU

A7.7.3 Option C: Additional legislative action

A7.7.3.1 Implementation and effectiveness

Option C integrates elements of options A and B plus key elements of an EPR Scheme.

An EPR scheme for boats could apply good practice from the EPR scheme on end-of-life vehicles (ELVs), such as requirements on eco-design to facilitate dismantling (e.g. use of more recyclable materials in the construction of new boats). However, the scheme would need to take into account the differences seen between the two sectors (ELVs vs. ELBs):

- ELVs comprise 70-80 per cent metals – therefore most components are recyclable and recyclers earn money from ELV treatment;
- ELVs are smaller, and can be transported and shredded more easily (thus contributing to a lower treatment cost);
- Every year, ELVs generate between 7 and 8 million tonnes of waste in the EU, compared to 200,000 tonnes for ELBs (of which only around 6o% is estimated to be FRP). It is recognised that other non-boating products also use FRP which may increase the volume of waste and hence size of the market. Whist the market for FRP across all (including non-marine) products types is growing, end of life waste volumes are small. For example, in the UK, across all product types, carbon-fibre reinforced polymers and glass reinforced polymers are estimated to result in around 2,500tonnes/year and 15,000tonnes/year respectively[423]. On this basis it may be tentatively assumed that other non-marine products are currently unlikely to add significantly (in the context of the ELV volumes) to the FRP waste volume estimated for ELB.

The same dismantling facilities can be used to treat both ELVs and ELBs because ELVs and ELBs go through a similar process of depollution, dismantling and shredding of materials before they are sent to recycling, incineration or landfill. Some requirements of the ELV Directive on treatment could therefore apply to ELB recycling.

In the ELV Directive, the last owner can bring its ELV directly to the dismantling site and the latter will charge no fee for its treatment. This would be more difficult to require for ELBs given the dismantling costs, but could be applied if separate financing of the recycling process is anticipated.

Many stakeholders interviewed for this assignment agreed that the responsibilities for the treatment of ELBs cannot be borne by boat manufacturers only, particularly as new boat sales are not expected to match the volume of ELBs that will be generated in the coming years.

In France, an EPR scheme is currently being discussed. It is likely to be supported by a collective scheme tasked with organising the collection and treatment of ELBs. This collective scheme will bear the costs of treatment and a part of the collection costs, to be incentivised to optimise these costs. The last owner will also have to make a contribution to the cost, to decrease the overall costs of the scheme if the owner has the capacity to transport the boat to a drop-off point. The contributions of boat manufacturers to the scheme will vary depending on the costs of ELB treatment and on eco-design criteria.

It is therefore suggested that an EPR Scheme on ELBs could be implemented by:

- Setting roles and responsibilities of each stakeholder throughout the boat life cycle. Responsibilities can be operational, financial, and linked to communication or control;

[423] S Job, G Leek, PT Mativenga, G Oliveux, S Pickering and NA Shuaib (2016). Composites Recycling: Where are we now? Composites UK.

- Providing a legislative framework at the EU level stating how the EPR scheme can be implemented by Member States (guidelines);
- Setting clear objectives for the sector and reporting rules from Member States to monitor the achievement of these goals;
- Specifying enforcement rules and sanctions.

Direct effects would include:

- A higher number of ELBs effectively dismantled (assumed to be very close to the number of ELBs generated) and fewer abandoned boats.
- A significant increase in the recycling rate, because of higher volumes of ELBs, increased efforts from all stakeholders to optimise processes and a higher number of boats constructed with eco-design principals. In addition, the R&D projects encouraged by Option B through research funding will also contribute to increase this recycling rate. R&D projects are likely to be even more effective because of the larger incentive from boat manufacturers to work on eco-design and recycling.

Indirect effects might also be expected to include:

- Boats manufacturers unable to meet the costs and going out of business.
- An increase in new boat prices, which could deter boat acquisitions and reduce revenues for boat manufacturers, distributors, retailers, etc.

This option would be expected to address most of the problems related to ELB management and is therefore assumed to be **highly effective.**

A7.7.3.2 Economic impacts

Performance and Competitiveness

The organisation of the sector through an EPR Scheme would encourage stakeholders to collaborate and may enhance the performance of the sector as a result. The ELB sector could also become a pioneer in the recycling of composites.

The dismantling costs paid by boat owners could be reduced by 10 per cent due to enhanced technologies, resulting in total revenues for the dismantling industry of €70 million per year. Revenues could be enhanced due to the additional value gained through the reuse/resale of recycled materials.

The implementation of an EPR scheme would increase costs for boat manufacturers, as they would have to finance, partly or fully, the collection and treatment of ELBs and would also have to invest in eco-design. If the intervention results in boat manufacturers being unable to subsume the costs, or an increase in new boat prices, this may affect sector performance. However this effect is highlight uncertain due to the price inelasticity of boat demand and is unlikely to be significant. Alternatively, they may be able to optimise their costs and increase the prices of their boats without affecting demand because of product differentiation on eco-design.

The net effects on nautical tourism sector performance cannot be determined.

Administrative burdens on businesses

The implementation of an EPR scheme would generate reporting requirements for all stakeholders. There would also be a need to adapt current legislation within Member States. The administrative impacts of such a policy option are therefore likely to be very high compared to the baseline scenario.

Public authorities

Public authorities are expected to benefit from reduced levels of boat abandonment. Under this option, boat abandonment is likely to be close to zero, generating a saving

of €20m/year (assuming 10,000 abandoned boats and costs of disposal of €2,000) to public authorities.

Functioning of the internal market and competition

European legislation can provide a clear and stable competition framework for EPR schemes by: making public calls for tender mandatory for operations; imposing non-discrimination of SMEs, introducing specific provisions for social economy organisations; and requiring minimum transparency requirements to producers, etc.[424] Implementing an EPR scheme at the EU level could also decrease discrepancies between Member States regarding ELB treatment.

Innovation and research

Option C would be the option most likely to foster innovation, as it would provide both the framework for R&D projects to be supported by the Commission and the incentive for the industry to innovate to limit costs or earn revenue from recycling.

Consumers and households

Compared to the baseline scenario, the costs to be paid by boat owners for ELB treatment would be lower, as the costs would be shared with new boat owners and other actors. However it is expected that they will still need to contribute, either when purchasing a new boat (manufacturers will probably transfer some costs to the consumer or the tax payer) or at the time of collection, as they can be asked to transport the boat to a dismantling facility.

Table 30. Summary of quantified economic impacts

Key ELB statistics	Best estimates and assumptions
Dismantling and recycling industry performance	Moderate impact Indicative estimate of €70million/year of additional revenue, increased further by revenue generation from an increase in recycled material.
Boat manufacturing and sales	Total costs of the EPR Scheme at least €100 million. Potential moderate negative impact on other areas of industry e.g. boat manufacturing and sales, where costs impact on new boat sales or profitability.
Public authority savings from reduced abandoned boat management costs	€20m/year

It is assumed that option C will completely remove the issue of boat abandonment, providing cost savings of up to €20m for public authorities. A reduction in dismantling costs could also be achieved as a result of investments made by the sector, most notably through eco-design measures. The dismantling costs paid by boat owners could also be reduced by 10 per cent for instance, leading to a total costs for dismantling of €70m per year – and in turn, €70m of revenue for the dismantling sector. On the other hand, the costs of an EPR Scheme are expected to be greater than for the ELB Management fund (i.e. >€100 million), because EPR Schemes usually include costs for public information and awareness campaigns, waste prevention actions, and the monitoring and surveillance of the scheme. These costs could not be quantified, but are assumed to be significant. They may affect new boat sales, with a

[424] DG Environment (2014) Development of Guidance on Extended Producer Responsibility (EPR)

detrimental effect on boat manufacturing and related sectors, although given the price inelasticity of boat demand it is not clear whether this effect would be significant.

A7.7.3.3 Social impacts

Employment and labour market

Whilst the increase in dismantling is likely to have only a minor impact on job generation (as detailed under option 2), the development of a boat recycling sector (and the management and monitoring of the EPR scheme) is expected to generate new direct employment. Depending on the significance of any decline in demand due to increases boat prices, there may be jobs losses in the boat manufacturing sector – however this effect is highly uncertain and unlikely to be significant. The aggregate employment effect on the employment is expected to be positive.

Working Conditions

Working conditions of dismantlers may improve if the sector is more closely monitored.

Public health and safety

The reduction of boat abandonment will reduce impacts caused by hazardous substances.

A7.7.3.4 Environmental impacts

Resource use and waste

Within the framework of the EU Raw Materials Initiative, EPR is a key tool to facilitate more efficient use of resources, to keep secondary raw materials within the EU boundaries, and to provide improved access to strategic materials[425]. The EPR scheme can also promote the waste hierarchy, stressing reuse and not only recycling or energy recovery, thus further preserving the value of resources.

Water quality and resources

As in other options, reduced boat abandonment should reduce risks of water pollution.

Sustainable consumption and production

Option C puts a stronger emphasis on sustainable production as boat manufacturers will be more strongly incentivised to apply the principles of eco-design to new boats.

Transport and the use of energy

The increase in supply of boats to dismantling facilities is likely to increase transport-related emissions. Current technologies for recycling also require a high amount of energy that is not necessary when landfilling. Future research would need to focus on limiting these impacts.

Land use

The move from landfill to recycling will reduce consumption of scarce landfill void space but may be offset to some extent by increases in demand for land for recycling and material recovery activities.

A7.8 Summary level assessment

The results of the summary level assessment are presented in Table 31 below. It suggests that the options provide relatively strong environmental impacts, particularly in terms of reducing resource use and waste and increasing sustainable consumption and production. The options also provide moderate economic and social benefits, but do generate some significant costs for businesses.

[425] DG Environment (2014) Development of Guidance on Extended Producer Responsibility (EPR)

Table 31. Summary level assessment of impacts

Impact type	Option A	Option B	Option C
Performance and competitiveness	+	++	++
Administrative burdens on businesses	-	--	---
Public authorities	+	++	+
Position of SMEs	0	0	0
Functioning of the internal market and competition	0	0	+
Innovation and research	+	++	+++
Consumers and households	-	-	+
Macroeconomic environment	0	+	++
Employment and labour markets	0	0/+	+
Working Conditions	+	0	+
Effects on social inclusion	0	0	0
Public health and safety	++	++	++
Culture	0	0	0
Resource use and waste	++	+++	+++
Water quality and resources	++	+	+
Biodiversity, flora, fauna and landscapes	+	+	+
Sustainable consumption and production	+	++	+++
Transport and the use of energy	0	-	-
Land use	0	+	+

Key: a -/+ 7 point scale (--- / -- / - / 0 / + / ++ / +++) representing significant/moderate/low negative or positive impact and, 0 = no impact

Option A is likely to have the most positive benefits on public authorities, public health and safety, and resource use and waste, as it specifically targets boat abandonment.

The implementation of research funding schemes in Option B is expected to provide a particular boost for innovation and competitiveness in the industry. The whole policy package would have a positive impact on resource use and waste by improving ELB dismantling and recycling practices through the provision of funding.

Option C integrates elements of options A and B and offers the greatest potential for addressing the problems identified with ELBs in the EU. However, this option would also be the most costly to implement for the different actors concerned. The following section discusses the extent to which these options would achieve the objectives, as well as the implications of potential costs and uncertainties or limitations that would justify the choice of one option as compared to another.

A7.9 Conclusions and recommendations

A7.9.1 Effectiveness

Option A (comprising the publication of guidance documents, an awareness campaign and implementation of a harmonised registration system) would achieve higher traceability of boats but would be costly for boat owners who would be expected to pay a registration fee. With this in mind, this option is not likely to be effective if it is voluntary or not linked to financial instruments to ensure boat owners update their information in the registration system and bring back their ELBs to a dismantling facility. Furthermore, this option would impact boat owners the most in terms of costs as they would be expected not only to pay for the registration system (through registration fees) but also for the dismantling costs. Nonetheless, the option would result in cost savings for public authorities since there would be fewer abandoned boats to recover as well as generating increased revenues for the dismantling sector as more ELBs would be sent to dismantling facilities. To maximise its effectiveness, option A would need to incentivise owners to ensure that they use the registration system.

Option B (establishment of an ELB management fund) has the advantage of providing an incentive for boat owners to bring their ELBs to a dismantling or authorised treatment facility. This would result in a decreased number of abandoned boats (and associated cost savings for public authorities) as well as helping to offset some of the high costs associated with dismantling (depending on how the funds are distributed). However, for this option to be effective, the financing mechanism would need to set up so that there are sufficient funds and a level playing ground is created for all stakeholders. Finally, due to increased funds on research and investment, the efficiency of ELB recycling should also be improved (e.g. the amount of ELB materials that can be recycled). Although option B (and option A) could be effective in decreasing the number of abandoned boats and increasing the number of ELBs sent to dismantling facilities, it would not address the issue of identifying responsibilities for financing the treatment of ELBs. Furthermore, it would also be necessary to consider whether the fund would be able to finance the additional collection and treatment infrastructure needed to cope with increased demand for dismantling services. Therefore, it is unlikely that these options, considered as stand-alone instruments, would be able to addressing all aspects of the problem effectively. Further, as manufacturers and/or boat owners would be the ones most responsible for paying the dismantling costs, wide stakeholder acceptance would be needed.

Option C (implementation of an EPR scheme) is likely to be the most successful in increasing the number of boats treated properly at their end-of-life as well as addressing the other identified problems related to ELB management (e.g. responsibility of producers to eco-design boats). It is also an option that foresees the collaboration of all stakeholders and can be seen as a major transformation from the existing situation.

Option C is expected to be the most effective in addressing the problems of ELB treatment, followed by Option B, and is more likely to be able to influence the desired stakeholder behaviours.

A7.9.2 Efficiency

The most important cost savings that could result to varying degrees from the policy options include:

- Cost savings from reduced amount of abandoned boats for public authorities to treat (annual costs estimated at up to €20 million a year for public authorities).
- Cost savings from reduced pollution to treat as there are less abandoned boats.
- Increased revenues and employment opportunities for the dismantling and recycling sector (i.e. revenues of up to €70 million per year, plus additional

revenues from the increased reuse and resale of recycled materials, and up to 145 FTE jobs).

The main cost implications that result to varying degrees from the policy options include:

- Costs of developing guidance documents and awareness campaigns (one-off cost of €20 million).
- Costs of establishing and operating a harmonised registration system (€0.4 million per year).
- Administrative costs and burdens related to setting up and operating an ELB management fund and EPR system (€0.4million per year).
- Costs for boat owners to dismantle their ELBs (between €7.5 and €70 million per year).
- Fee paid by new boat manufacturers or new boat owners to finance an ELB management fund (€16 per year per boat owner, or one-off costs averaging between €700 on new boat sales).

Compared to the baseline scenario, option A would require additional costs from boat owners as well as additional efforts from public authorities to develop and manage the harmonised registration system. The other costs (e.g. communicating guidance documents) are reasonable compared to the other options. Further, there would be an expected decrease in the number of abandoned boats, which would result in cost savings for public authorities. However, this option is considered the least effective of the three and the overall efficiency of this option is expected to be low.

Option B could be efficient as some of the funding mechanism of the ELB management fund could be voluntary and funds collected could be used to help boat owners pay for the high dismantling costs. Although this option could be highly beneficial from the boat owner perspective (based on how the funds are collected), it would be likely to create significant administrative burdens at the national level to operate and monitor the scheme. Funds allocated to research on ELB recycling could be integrated in existing schemes. Nonetheless, the ELB management fund would need to be carefully designed and implemented across the EU to ensure maximum efficiency in terms of collecting the funds required to cover the dismantling costs and selecting the most appropriate process of collection (e.g. through the sale of new vessels, or from existing boat related tax, etc.).

Option C is assumed to be very costly to implement as it would require the most significant changes compared to the current situation (e.g. adaptation of regulations, organisation of the sector, introduction of reporting obligations, etc.). However, because it will be the most effective in addressing the problem, the efficiency of this option is expected to be moderate.

A7.9.3 Uncertainties

The implementation of an EPR Scheme is more coherent with European policies on waste (i.e. polluter pays principle), however the potential impacts on Member States with small fleets and the lack of sufficient collection and treatment infrastructures for ELBs would need to be assessed.

The long lifetime of boats is also a challenge for a potential EPR scheme as boat manufacturers may no longer exist when boats reach the end of their lives. The incentives for eco-design in boat manufacture can therefore be weak[426]. The long life time of boats also means there are a large number of "historic" boats to be treated, and therefore the design of new boats will not necessarily have an influence on the

[426] DG Environment (2011) Recovery of obsolete vessels not used in the fishing trade

costs of dismantling for a very long time. That said, this aspect could be set as a specific objective of the EPR scheme in order to incentivise better design (even if the total costs will not be correlated). Specific rules on the contribution for each actor would need to be set up to ensure the scheme functions efficiently.

In addition, there is a need for further research of the costs to be borne by boat manufacturers and if they would have the financial capabilities to bear them, as the number of ELBs generated in the EU is still uncertain.

A7.9.4 Recommendations

Despite the many advantages offered by the introduction of an EPR scheme on ELBs, there are still some uncertainties regarding its feasibility. Introducing other policy options first, such as the implementation of a harmonised registration system in the EU would make it easier to implement an EPR scheme at later date if required.

Few quantitative data could be obtained on the issue of ELBs (e.g. environmental impacts of boat abandonment), which to some extent hampers the choice of the best policy option. The fact that the current number of dismantled ELBs is unknown at the EU level is also a barrier to assessing the cost effectiveness of the different policy options. The implementation of a registration system therefore appears necessary, and enforcement measures need to be put in place to make sure it effectively tracks boat acquisitions and destructions at the EU level as a first step.

The study highlighted that high dismantling costs and low recycling revenues from ELBs are the main barriers to overcome since these factors prevent boat owners from sending their vessels to treatment facilities and prevent increased development of the boat recycling sector. The use of financial instruments thus appears unavoidable, in order to ensure that ELB treatment is financed upstream and to support investments on research and technologies to increase the recovery potential of ELBs. Further research could investigate the form of these financial instruments through a wider concertation with stakeholders.

A7.10 Annex: Evidence sources

A7.10.1 List of stakeholders

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- Boat breakers, Interview with Steve Frankland, 22/03/2016
- Consultoría Náutica, Interview with Jose Luis Fayos, 13/04/2016
- DG Environment, Interview with Emilien Gasc (ship recycling) and Artemis Hatzi (ELV), 27/05/2016
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