

ANNUAL REPORT ON

THE IRISH FISHING FLEET FOR 2017

**Department of Agriculture, Food and the Marine
Ireland**

**ANNUAL REPORT TO THE EUROPEAN COMMISSION ON THE IRISH FISHING FLEET
FOR 2017 (Pursuant to Article 22 of Regulation (EU) No 1380/2013 of the
European Parliament and of the Council of 11 December 2013 on the Common
Fisheries Policy)**

1. Summary

This report gives a description of the Irish fishing fleet in relation to fisheries developments during 2017, the impact on fishing capacity of fishing effort reduction schemes, information on the compliance with the entry/exit scheme, a summary report on the weaknesses and strengths of the fleet management system together with a plan for improvements and information on the general level of compliance with fleet policy instruments as well as any information on changes of the administrative procedures relevant to the management of the fleet.

2. MS opinion on balance of fleet capacity & fishing opportunities

The technical indicators as currently set down do not allow for the highly diverse nature of the fleet or the range of natural variation within these segments. For example, the polyvalent segment of the fleet is diverse in terms of size of vessels, geographical spread of activity and species targeted. Also certain specified areas carry effort restrictions, or are subject to seasonal/monthly patterns. It is difficult when dealing with such a wide variety to compare them all on the same basis so, while the assessment in relation to technical indicators has been carried out, it cannot give an accurate picture until such time as these natural variations can be allowed for within the assessment.

With regard to economic indicators, the results show a very positive outlook for the Irish fleet with the trawling fleet (DTS) passing both indicators for the last two years in all length classes. The pelagic trawl segment both show positive results for 2016 along with most other fleet segments. Only two segments fail the indicators in 2016, however these also show an improving trend throughout the time series therefore specific measures are not deemed necessary at this stage. This situation will be kept under review.

With regard to biological indicators, of the 13 fleet segments for which the 2015 Sustainable Harvest Indicator (SHI) was considered meaningful to assess balance or imbalance, 7 fleet segments are in balance with their fishing opportunities. The Stock at Risk (SAR) indicator was available for all the 32 active fleet segments in 2015, 25 of which may be in balance with their fishing opportunities. The report undertakes a detailed analysis of the main stocks targeted by these fleets. This analysis indicates that the diversity within the fleet does not support the view that the fleets are out of balance.

Taking all factors and indicators into consideration, Ireland is of the view that based on the analysis herein; a structural imbalance does not exist with the fleet.

3. Section A

(i) Description of the fleet segments

The Irish fishing fleet is largely a coastal fleet made up of 1,994 vessels, varying in size from in excess of 24 metres to under 12 metres. The fleet operates over five segments: pelagic, polyvalent, beam-trawl, specific and aquaculture. An outline of the 5 fleet segments in the Irish fleet in respect of 2017 is provided below:

(a) **Refrigerated Seawater (RSW) Pelagic Segment:** This segment comprised 23 vessels with a total capacity of 24,410 GT and 47,109 kW.

(b) **Beam Trawler Segment:** This segment comprised 8 vessels, which are dedicated to beam trawling, with a total capacity of 884 GT and 2,020 kW.

(c) **Polyvalent Segment:** This segment comprised 1,726 vessels, the vast majority of vessels in the fleet, with a total capacity of 32,384 GT and 116,489 kW. These vessels are multi-purpose and include small inshore vessels (netters and potters), and medium and large offshore vessels.

This segment also includes vessels licensed and registered under the Scheme for the Licensing of Traditional Pot Fishing Boats in the Irish Inshore Fleet. The scheme for the registration of previously unregistered traditional potting boats in the inshore fleet was completed in 2007. These potting vessels may only fish for non-quota species exclusively by means of traps/pots. They are ring-fenced within this segment and the capacity of these boats may not be used elsewhere in the segment for the purposes of compliance with the entry/exit regime.

(d) **Specific Segment:** This segment comprised 140 vessels, with a total capacity of 2,150 GT and 11,774 kW, which are permitted to fish for bivalve molluscs and aquaculture species only.

(e) **Aquaculture Segment:** These vessels must be exclusively used in the management, development and servicing of aquaculture areas. This segment, which comprised 97 vessels, with a total capacity of 3,475 GT and 10,356 kW, is not subject to the entry / exit regime.

Capacity of Irish Fleet on 31 December 2017 (Extracted from Vessel Register Report on 31 December 2017).			
Fleet Segment	Number of Vessels	Gross Tonnage (GT)	kilowatts (kW)
<i>Aquaculture</i>	97	3,475	10,356
<i>Specific</i>	140	2,150	11,774
<i>Polyvalent</i>	1,726	32,384	116,489
<i>Beam Trawl</i>	8	884	2,020
<i>RSW Pelagic</i>	23	24,410	47,109
<i>Total</i>	1,994	63,303	187,748

Table 1: Structure of the Irish Fleet 2017

The segmentation of the Irish fishing fleet is provided for by Policy Directive 2 of 2003, as amended by Policy Directive 1 of 2006 and Policy Directive 1 of 2011. The transfer of capacity between the segments (or sub-segments) is not permitted, and equivalent “replacement” capacity must be taken out of the segment (or sub-segment) into which a vessel is being introduced. This is known as the “entry/exit regime” and is a requirement since 1 January 2003 under Regulation (EU) No 1380/2013 of the European Parliament and of the Council which repealed and replaced EU Council Regulation 2371/2002.

Of the 1,994 vessels in the Irish fleet, 1,480 are less than 10 metres length overall, 233 vessels are between 10 and 12 metres length overall, 76 vessels are between 12 and 15 metres length overall, 99 vessels are between 15 metres and 24 metres length overall and 106 vessels are greater than or equal to 24 metres length overall.

Traditionally, up to 90% of ownership of the Irish fishing fleet has been vested in skipper/owner single vessel family operations¹. Despite some consolidation in recent years with the reduction in vessel numbers, this ownership profile continues to dominate in the Irish fleet.

(ii) Link with fisheries

The RSW (Pelagic) Segment is engaged predominantly in fishing for pelagic species such as herring, mackerel, horse mackerel and blue whiting.

Vessels in the Beam Trawler Segment target demersal species such as monkfish, megrim and sole.

Polyvalent vessels are multi-purpose vessels which prosecute a range of fisheries. The species targeted include demersal species, pelagic species, shellfish (e.g. *Nephrops*, crab and lobster) and bivalve molluscs (e.g. scallop, mussel and razor clam).

Vessels in the Specific Segment may target bivalve molluscs and aquaculture species only.

Vessels in the Aquaculture Segment are restricted to use in the management, development and servicing of aquaculture areas. As part of a service to aquaculture installations, such vessels may collect mussel seed, subject to certain restrictions, as have been determined in the context of Regulation (EU) No 1380/2013.

The profile of the Irish fleet in Table 2, below, shows the main target species for each segment.

¹ OECD Country Note 2002

Fleet Segments	Main Target Species	
	Fin Fish	Shellfish
(a) Refrigerated Sea Water (RSW) Pelagic	Pelagic (e.g. Mackerel, Herring, Horse Mackerel, Blue Whiting, Boarfish, Albacore)	
(b) Polyvalent (sub-divided into:- Potting Sub-segment; Scallop Sub-segment; ≥ 18 metre length overall Sub-segment and < 18 metre length overall Sub-segment)	Demersal (e.g. Whiting, Haddock, Hake, Cod, Halibut, Sole, Plaice, Monkfish, Megrim, Skate) Pelagic (e.g. Mackerel, Herring, Horse Mackerel, Blue Whiting, Boarfish, Albacore)	Lobster, Crab, <i>Nephrops</i> , Shrimp, Whelk, Bi-Valve Molluscs (e.g. Mussels, Scallop, Razor Clam, Clam, Oyster etc.)
(c) Beam Trawl	Demersal (e.g. Whiting, Haddock, Hake, Cod, Halibut, Sole, Plaice, Monkfish, Megrim, Skate)	<i>Nephrops</i> , Scallop
(d) Specific (sub-divided into Scallop Sub-segment and General Sub-segment)	N/A	Farmed species and wild Bi-Valve Molluscs (e.g. Mussels, Scallop, Razor Clam, Clam, Oyster etc.)
(e) Aquaculture	Farmed species only	Farmed species only

Table 2: Irish Fleet Profile

(iii) Development in fleets

Compared with 2016, the RSW (Pelagic) Segment did not change in terms of number of vessels but increased in capacity by 844 GT and 512 kW arising from 2 replacement vessels and 1 modified vessel during 2017.

The Beam Trawler Segment decreased by 3 vessels and by 175 GT and 725 kW.

The Polyvalent Segment decreased by 88 vessels but increased by 55 GT and decreased by 1,709 kW in 2017. The decrease in the number of vessels was mainly due to the removal of 66 vessels from the Register of Fishing Boats following routine checks initiated by the Licensing Authority for Sea-fishing Boats. Of the 66 vessels checked and removed, 43 were removed compulsorily and 23 were removed on receipt of completed application forms issued to vessel owners.

The Specific Segment decreased by 3 vessels and by 181 GT and 585 kW in 2017.

The Aquaculture Segment decreased by 4 vessels and 21 GT and 89 kW.

Figure 1 illustrates the number of vessels in the Irish Fleet since 2005 which has grown to approximately 2,000 vessels.

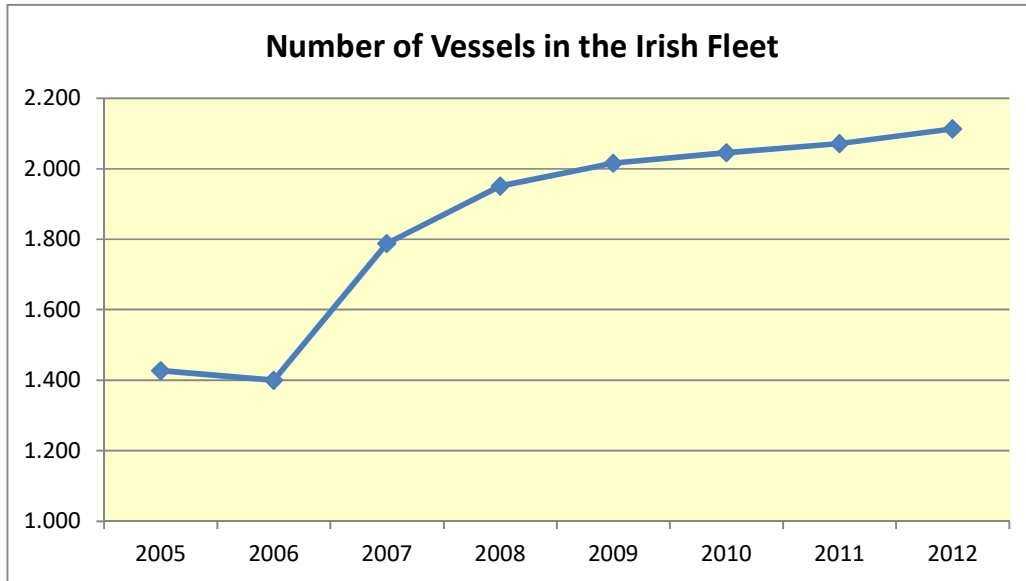


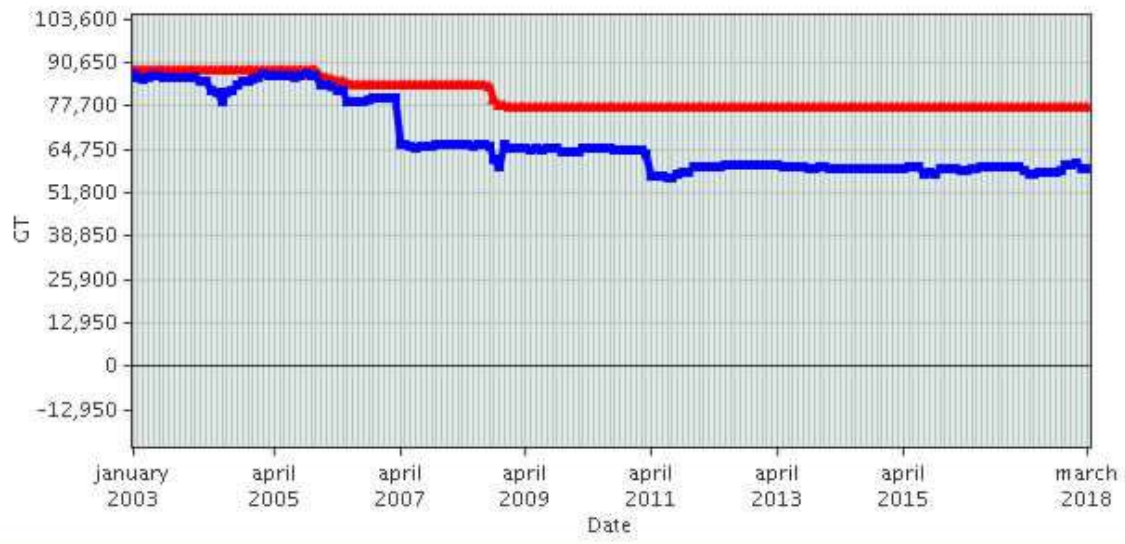
Figure 1: Number of vessels in the Irish Fleet since 2005. The increase in the number of vessels since the year 2006 is mainly due to (a) the number of vessels regularised (i.e. registered and licensed) under the Special Inshore Schemes, (b) the number of Aquaculture vessels registered and licensed and (c) the tendency to replace larger vessels with smaller vessels for economic reasons.

Figures 2 and 3 illustrate that the capacity of the Irish fleet, measured in Gross Tonnes and kW, has in fact decreased. This can be attributed largely to (a) the amount of RSW Pelagic capacity currently off-register², (b) the decommissioning of larger vessels³, and (c) in a minor way to new safety regulations. The fleet capacity ceiling set at 1 January 2014 for the Irish fleet under Regulation (EU) No 1380/2013 is 77,568 GT and 210,083 kW. The Irish fleet makes up just 2.5% of the EU fleet in terms of numbers of vessels but holds capacity just above this percentage.

² Current RSW Pelagic capacity off-register of: 11,697 GT/662 kW

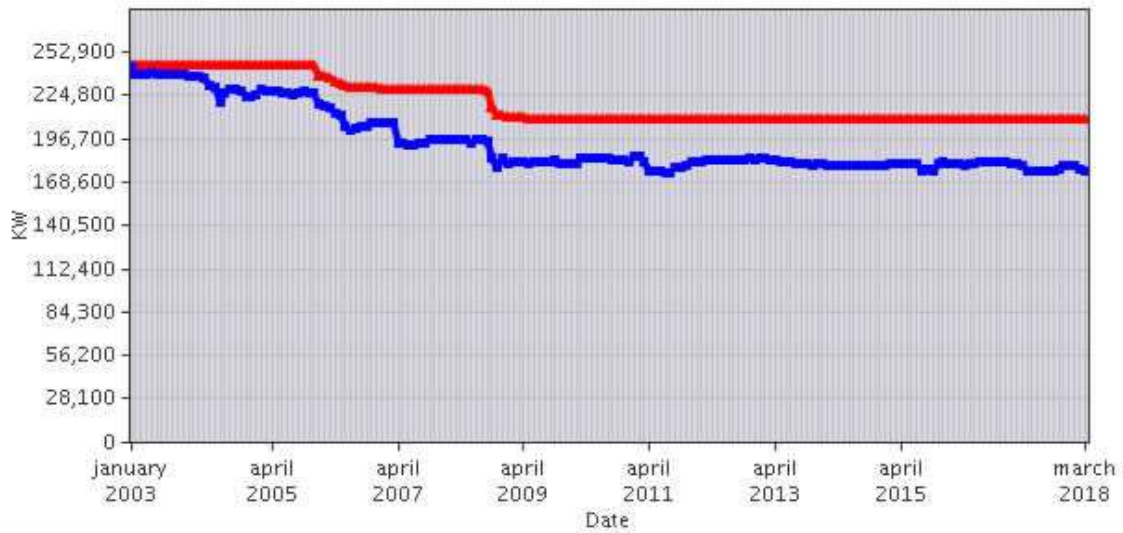
³ Department of Agriculture, Food and the Marine (2011) Value for Money Review Fisheries Decommissioning Scheme 2005-2008

Figure 2: Capacity of the Irish Fleet in Gross Tonnes 2003-2017



12950 Capacity ceiling GT Capacity in GT Values at 1st day of the month

Figure 3: Capacity of the Irish Fleet in kW 2003-2017



28100 Capacity ceiling kW Capacity in kW Values at 1st day of the month

4. Section B

(i) Statement of Effort Reduction Schemes

Fishing Effort – Stock Recovery plans

The Irish demersal fisheries coming within the scope of stock recovery plans (ICES Area VIa and VIIa) are of a highly mixed nature.

In 2009 a new kW days scheme was introduced as part of the Cod Recovery Programme and to comply with the effort ceilings all vessels operating in the areas were required to have specific Authorisations. These Authorisations placed restrictions on the area where the vessels operate, the gear type that could be used and set an upper limit on the maximum kW effort allowed.

Area VIa

Since 2009, Ireland has introduced a seasonal closure in statistical rectangle 39E3, for the protection of juvenile cod as the area was identified as a vulnerable spawning area. Historically, over 40% of Irish cod landings in VIa have been attributed to this area. In its submission to the Commission in 2012, Ireland anticipated that the closure would result in a reduction of cod catches of 24% in 2012. This closure has since been modified and implemented under EU legislation (Regulation (EU) No 227/2013 article 29d.12). The area boundary has been redefined in line with STECF advice and the closure is effective for 6 months of the year from 1 October to 31 March.

Area VIIa

In the Irish Sea, all vessels are required to deploy highly selective gears to minimise the by-catch of cod. Vessels may opt to use either the rigid sorting grids, for which they are exempted under the provisions of Article 11 of EC Regulation 1382/2008, the inclined separator panel or SELTRA style trawls in the *Nephrops* fishery to avoid catching cod.

Fleet Restructuring

In 2005/2006 and 2008, Ireland implemented two fleet decommissioning schemes. The 2005/2006 Scheme removed 3,323 GT, while the 2008 Scheme removed 6,914 GT.

(ii) Impact on fishing capacity of effort reduction schemes

As a result of significant changes to the recovery plan operation in 2009 there were reductions in fleet activity in Areas VIa and VIIa but it is difficult to gauge the full impact on fishing capacity of fishing effort reduction schemes.

In 2011, a Value for Money Review of the two fleet decommissioning schemes was concluded. The Value for Money Review was undertaken in accordance with Ireland's Value for Money and Policy Review Initiative which was introduced to secure improved value for money from public expenditure. VFM reviews aim to analyse Government spending in a systematic manner and provide a basis on which more informed decisions can be made on priorities within and between programmes. While the report was not published until 2012, it was shared with the Commission in 2011.

The review examined the efficiency and effectiveness of the Whitefish Decommissioning Schemes. Overall, the conclusions of the VFM Review were that the 2008 Scheme, co-funded by the European Fisheries Fund, was good value for money, in that it achieved its objectives in an efficient manner, with extremely low deadweight cost and it improved the quota availability to and viability of the remaining whitefish fleet.

5. Section C

Statement of Compliance with Entry/Exit Scheme & with Fleet Capacity Ceiling

Regulation (EU) No 1380/2013 set Ireland's Fleet Capacity Ceiling on 1 January 2014 at 77,568 GT and 210,083 kW.

The total capacity which entered the fleet between 2014 and 2017 was 10,717 GT and 34,221 kW (no decommissioned capacity included). The total capacity which exited the fleet between 2014 and 2017 was 10,405 GT and 38,470 kW (no capacity was decommissioned).

The term "capacity exiting the fleet" refers to capacity coming off-register due to a vessel de-registration or due to a vessel being decommissioned i.e. Decommissioning Schemes. The term "capacity entering the fleet" refers to capacity temporarily off-register from de-registered vessels used to license new/replacement vessels. The capacity of a de-registered vessel can re-enter the fleet whereas the capacity of a vessel decommissioned with public aid cannot as it is permanently withdrawn.

Fishing Capacity at 31 December 2017 (Extracted from Fleet Register 31 December 2017)

The overall fishing capacity situation of the Irish fleet at 31 December 2017 was GT and kW (see Table 3, below).

Table 3: Overall fishing capacity situation of the Irish fleet

CAPACITY OF IRELAND'S FLEET AND FISHING CAPACITY CEILING FOR 2017

	GT	kW
Capacity of the Fleet on 31/12/2013	59,516	181,641
2014 to 2017 Entries of Vessels Without Public Aid	10,717	34,221
2014 to 2017 Exits of Vessels Without Public Aid	10,405	38,470
Capacity of the Fleet on 31/12/2017	59,828	177,392

6. Section D

(I) Summary of Weaknesses & Strengths of Fleet Management System

Fleet management in Ireland involves a number of tools that act upon the Irish fleet and other tools that act upon the impact of the fleet on Irish fisheries. Fleet management tools include the specification of the five Irish segments mentioned previously in section 1A, licensing of sea-fishing boats, gear and vessel restrictions associated with the licensing process and a decommissioning scheme carried out in the period 2005 to 2008. Fishery management policy is developed through a transparent and inclusive system. Fishery management tools include a partnership quota management system with Producer Organisations and other key industry players with monthly meetings and allocation arrangements that are responsive to criteria such as marketing initiatives and market prices.

The strengths of the fleet management system include; the strict control exercised by Ireland's Registrar General of Sea Fishing Boats (Ireland's licensing authority for the fleet) over the entry/exit regime and the fleet remained within its reference level; the logical segmentation of the fleet; the well-functioning of the monthly vessel catch limits agreed upon by Irish fishing stakeholders and the success of the last decommissioning scheme carried out in the Irish fleet.

The weaknesses in the fleet management system include; overcapitalisation evident in parts of the fleet; challenges in responding to the Landing Obligation which may lead to exacerbation of economic indicators signalling further overcapitalisation, particularly in the smaller and medium sized polyvalent fleet.

(II) Plan for improvements in fleet management system

The Fisheries Operational Programme is focusing on improving the economic performance of the fleet under a range of measures and in particular to improvements in on board handling which will increase the quayside value of landings. It also focuses on adding value both at sea and on landing. Within the Programme there is a strong commitment to an enhanced training programme for crew of fishing vessels.

(III) Information on general level of compliance with fleet policy instruments

Ireland's Registrar General of Sea Fishing Boats (Ireland's licensing authority for the fleet) exercised strict control over the entry/exit regime and the fleet remained within its reference level.

7. Section E

(i) Information on changes of the Administrative Procedures Relevant to Fleet Management

Fleet Policy Directives

Under section 3(2) of Ireland's Fisheries (Amendment) Act 2003 (as amended by section 99 of the Sea Fisheries and Maritime Jurisdiction Act 2006), the Minister may from time to time issue policy directives to the Registrar General of Sea-fishing Boats in relation to sea-fishing boat licensing for the purposes of protecting, conserving or allowing the sustainable exploitation of living marine aquatic species. No new policy directives have been necessary since 2012.

Council Regulation 1224/2009

SI 54 of 2016 (which replaces SI 320 of 2012 and SI 453 of 2012) implements Council Regulation (EC) No. 1224/2009 of 20 November 2009 and Commission Implementing Regulation (EU) No. 404/2011 of 8 April 2011 as they relate to fisheries control systems and rules for the recording of fish catches. This Statutory Instrument gives the Marine Survey Office, Sea Fisheries Protection Authority and the Navy the necessary powers to implement the requirements of these regulations in particular in relation to monitoring, certification and verification of engine power.

8. Section F

Estimation & Discussion of Balance Indicators

Summary of Biological Indicators

The estimation and discussion on balance indicators are based on Tables extracts from the JRC website on 12th April 2018 for Sustainable Harvest Indicators (SHI) and Stock at Risk Indicators (SAR) related to the Irish fleet segments (<https://stecf.jrc.ec.europa.eu/reports/balance>). Table 1 (see page 19) gives the Sustainable Harvest Indicators (SHI) for Ireland in Supra Region Area 27, for all gears and all vessel lengths. Table 2 (see page 20) gives the Stock at Risk indicator (SAR) for Ireland in Supra Region Area 27, for all gears and all vessel lengths. The discussion material is based on these tables and the comments for Ireland from the 2017 STECF report – Assessment of balance indicators for key fleet segments and review of national reports on Member States efforts to achieve balance between fleet capacity and fishing opportunities (STECF-17-18). Annex 1 gives the Fishing Technologies – DCF categories used in Table 1 and Table 2. Annex 2 is a map of supra region 27.

The Guidelines referred to in this document are Com (2014) 545 FINAL - Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Art 22 of Regulation (EU) No 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy.

Indicators

This section should be read while referring to Table 1 and Table 2. The Sustainable harvest indicator (SHI) presented in Table 1 is designed to reflect the extent to which a fleet segment is dependent on stocks that are over harvested, where 'over harvested' is assessed with reference to F_{msy} values over time, and dependency is based on fleet segment revenues (value of landings).

The SHI is calculated using landings value for 2008-2015/2016 for every EU fleet segment for which data were available; 2016 data is preliminary. Data on $F_{current}$ (mean F) and F_{msy} for fish stocks found in Area 27 were obtained from the ICES online database. For Area 37 the most recent estimate of $F_{current}$ and F_{msy} (or its proxy $F_{0.1}$) were extracted from the database compiled by the JRC.

Comments on balance (status 2015): $SHI \geq 1$ 'out of balance'; $SHI < 1$ 'in balance' (as according to the 2014 Balance Indicator Guidelines as requested by the TOR)

Red cells indicate SHI values that were calculated where less than 40% of the fleet segment's annual landed value came from assessed stocks (an indication that the SHI value is unrepresentative). Green cells identify cases where more than 40% of the fleet segment's annual landed value came from the assessed stocks.

Trend analysed for the period 2009-2016, using the slope equation and a 5% threshold to indicate significance, as: Slope > 0.05 increasing; Slope < -0.05 decreasing; $-0.5 < \text{Slope} < 0.5$ no significant trend and slope = 0 flat/null trend

Bar charts display trends over the time-series 2009-2016

The Stock at Risk indicator (SAR) presented in Table 2 aims to measure how many stocks are being affected by the activities of a fleet segment that are biologically vulnerable.

SAR calculated for the years 2009-2015 for all fleet segments for which data were available; 2015 data preliminary.

Comment on balance (status in 2015): $SAR \geq 1$ 'out of balance'; $SAR < 1$ 'in balance' ; (as according to the 2014 Balance Indicator Guidelines as requested by the TOR)

Coverage is indicated by the availability of data (landings in weight): cells containing "ND" and highlighted red signify that no data was available in that year

Comments on SHI Indicator Findings for Ireland

Table 1 gives the Sustainable harvest indicator (SHI) for Ireland in Supra Region 27 for all gear and all vessel lengths by year for the time series 2009-2016.

Out of 32 fleet segments active in 2015, landings in value have been provided aggregated in 32 fleet segments and SHI indicator values were available for 28.

According to the criteria in the 2014 Balance Indicator Guidelines, the SHI indicator values for 15 fleet segments cannot be used meaningfully to assess the balance or imbalance because the indicator values are based on stocks that comprise less than 40% of the total value of landings by those fleet segments.

The EWG notes that for the 13 fleet segments for which the SHI indicator may be considered meaningful to assess balance or imbalance, accounted for 82% of the total value of the landings in 2015 provided by MS, and were as follows:

- 6 fleet segments appear to be not in balance with their fishing opportunities;

These are the vessels using hooks in the 10-12m length categories; the beam trawlers in the 18-24m and the 24-40m length categories; and the pelagic trawlers in the 18-24m, 24-40m and the >40m length categories.

- 7 fleet segments appear to be in balance with their fishing opportunities;

These are drift and/or fixed netters in the 12-18m, 18-24m and the 24-40m length categories; demersal trawlers and/or demersal seiners trawlers in the 10-12m, 12-18m, 18-24m and the 24-40m length categories.

In the period 2010-2015 the SHI indicator values considered meaningful to assess balance or imbalance were increasing for 2 fleet segments, decreasing for 2 fleet segments, with no evident trend for 9 fleet.

Comments on Fleet Segments that may not be in balance for SHI

HOK (hooks) 10-12m

- 3 active vessels in 2015.
- This is a small fleet that catches primarily mackerel. This stock was fished above MSY in 2015. The stock size of mackerel in 2015 was close to its historic high. The reason for the high exploitation on this stock is due to lack of international agreement with different coastal states setting autonomous TAC's the sum of which exceeds the catch advised from ICES. The landings from this fleet are within the quota allocated to Ireland.

TBB (beam trawls) 18-24m

- 6 active vessels in 2015.
- The main stock exploited by these vessels is megrim in 7, 8. This biomass of stock of this stock was at an historical high in 2015 and although harvested above Fmsy point estimate, the fishing pressure was well within the Fmsy range. When a stock is harvested according to the MSY approach one can expect F to

fluctuate around the Fmsy target, being numerically above and below the point estimate over time;

- The second-most important stock for this fleet is anglerfish in 7, 8. The TAC covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.

TBB (beam trawls) 24-40m

- 8 active vessels in 2015.
- Same target stocks as 18-24m fleet, see points above.

TM (midwater trawls) 18-24m

- 2 active vessels in 2015. These are multipurpose vessels and only use midwater trawls for a short part of the year.
- Herring in the Celtic sea was the main species targeted by these vessels in 2015. In 2015 the fishing pressure was at about Fmsy and the SSB at a safe level.
- Sprat and mackerel in Via are the other species fished by these vessels. The state of the sprat stock is unknown. Mackerel was fished above MSY in 2015. The stock size of mackerel in 2015 was close to its historic high. The reason for the high exploitation on this stock is due to lack of international agreement with different coastal states setting autonomous TAC's the sum of which exceeds the catch advised from ICES. The landings from this fleet are within the quota allocated to Ireland.

TM (midwater trawls) 24-40m

- 12 active vessels in 2015.
- The dominant stocks for these vessels are mackerel and Celtic sea herring. Mackerel was fished above MSY in 2015. The stock size of mackerel in 2015 was close to its historic high. The reason for the high exploitation on this stock is due to lack of international agreement with different coastal states setting autonomous TAC's the sum of which exceeds the catch advised from ICES. The landings from this fleet are within the quota allocated to Ireland. Herring in the Celtic sea was exploited at about Fmsy in 2015 and the SSB was at a safe level.

TM (midwater trawls) 40m+

- 22 active vessels in 2015.
- This fleet that catches primarily mackerel. This stock was fished above MSY in 2015. The stock size of mackerel in 2015 was close to its historic high. The reason for the high exploitation on this stock is due to lack of international agreement with different coastal states setting autonomous TAC's the sum of which exceeds the catch advised from ICES. The landings from this fleet are within the quota allocated to Ireland.

1.1.1 It should be noted that in 2015 STECF used data from 258 stocks (of which 107 were overfished) in their SHI analysis of the Irish fleet (STECF 15-15). In 2016, STECF used 371 stocks of which 168 were overfished (STECF 16-18).

Comments on SAR Indicator Findings for Ireland

Table 2 gives the Stocks at Risk Indicator (SAR) for Ireland in Supra Region 27 for all gear and all vessel lengths by year for the time series 2009-2015.

SAR indicator was available for 32 active fleet segments in 2015

According to the criteria in the 2014 Balance Indicator Guidelines, EWG 17-08 notes that the 2015 SAR indicator values indicate:

- **25 fleet segments appear to be in balance with their fishing opportunities;**

These are drift and/or fixed netters in the 00-10m, 10-12m, 12-18m, 18-24m and the 24-40m length categories; dredgers in the 00-10m, 10-12m, 12-18m, 18-24m and the 24-40m length categories; demersal trawlers and/or demersal seiners in the 00-10m length category; vessels using pots and/or traps in the 00-10m, 10-12m, 12-18m and the 24-40m length categories; vessels using hooks in the 00-10m, 10-12m and the 12-18m length categories; vessels using active and passive gears in the 10-12m length category; the beam trawlers in the 00-10m length category and the pelagic trawlers in the 00-10m, 10-12m, 12-18m, 18-24m and the 24-40m length categories.

- **7 fleet segments appear to be not in balance with their fishing opportunities. The number of SAR stocks identified for these fleet segments were as follows:**
 - **5 fleet segments with 1 SAR stock;**
These are demersal trawlers and/or demersal seiners in the 10-12m and 12-18m length categories; the beam trawlers in the 18-24m and the 24-40m length categories and the pelagic trawlers in the >40m length category.
 - **2 fleet segment with 3 SAR stocks;**
These are demersal trawlers and/or demersal seiners in the 18-24m and the 24-40m length categories.

Comments on Fleet Segments that may not be in balance for SAR

DTS (demersal trawls/seines) 10-12m

- **24 active vessels in 2015.**
- **This fleet 'depends' on 1 stock that is biologically vulnerable.**
- **The main stocks fished by this fleet are Nephrops in area 7; whiting VIIb-k and anglerfish in areas 7,8.**
- **Nephrops in area 7 are assessed in a number of function units:-**
 - **FU14 (eastern Irish Sea) fished below Fmsy, SSB above Btrigger**

- FU15 (western Irish Sea) fished just above Fmsy, SSB above Btrigger
- FU16 (Porcupine Bank) fished below Fmsy, Btrigger not defined
- FU17 (Aran grounds) fished below Fmsy in 2015 but SSB slightly below Btrigger
- FU19 (South coast) fished below Fmsy and SSB just above Btrigger in 2015
- FU20-11 (Celtic Sea) fished below Fmsy, Btrigger not defined
- FU22 (Smalls grounds) fished below Fmsy and SSB slightly below Btrigger in 2015

Overall, therefore, Nephrops in area 7 would not appear to be over-exploited.

- Anglerfish in 7, 8 is a TAC which covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.
- Whiting in 7b-k is fished below Fmsy and SSB is well above Btrigger.

DTS (demersal trawls/seines) 12-18m

- 38 active vessels in 2015
- This fleet 'depends' on 1 stock that is biologically vulnerable
- The main stocks fished by this fleet are Nephrops in area 7; whiting in 7b-k; anglerfish in areas 7,8; and haddock in 7b-k.
- As indicated above, Nephrops in area 7 would not appear to be over-exploited.
- Whiting in 7b-k is fished below Fmsy and SSB is well above Btrigger.
- Anglerfish in 7, 8 is a TAC which covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.
- Haddock in 7b-k is exploited above Fmsy however SSB is well above MSYBtrigger. While a large proportion of the catches of haddock are discarded, the implementation of the Landing Obligation should make it possible to limit the catches using TACs in the future.

DTS (demersal trawls/seines) 18-24m

- 61 active vessels in 2015.
- This fleet 'depends' on 1 stocks that are biologically vulnerable.
- The main stocks fished by this fleet are Nephrops in area 7; whiting in 7b-k; anglerfish in areas 7,8; hake in areas 3-8; megrim in areas 7, 8 and haddock in 7b-k.
- As indicated above, Nephrops in area 7 would not appear to be over-exploited.
- Whiting in 7b-k is fished below Fmsy and SSB is well above Btrigger.
- Anglerfish in 7, 8 is a TAC which covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.
- Hake in areas 3-8 is fished at Fmsy and SSB is well above Btrigger.
- Megrim in areas 7,8 is harvested 15% above Fmsy but the stock size is at a historical high.
- Haddock in 7b-k is fished above Fmsy but SSB is well above Btrigger. While a

large proportion of the catches of haddock are discarded, the implementation of the Landing Obligation should make it possible to limit the catches using TACs in the future.

DTS (demersal trawls/seines) 24-40m

- 35 active vessels in 2015.
- This fleet 'depends' on 1 stocks that are biologically vulnerable.
- The main stocks fished by this fleet are Whiting in 7b-k; Nephrops in area 7; anglerfish in areas 7,8 and haddock 7b-k
- Whiting in 7b-k is fished below Fmsy and SSB is well above Btrigger
- As indicated above, Nephrops in area 7 would not appear to be over-exploited.
- Anglerfish in 7, 8 is a TAC which covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.
- Haddock in 7b-k is fished above the Fmsy but within the Fmsy range. SSB is well above Btrigger. While a large proportion of the catches of haddock are discarded, the implementation of the Landing Obligation should make it possible to limit the catches using TACs in the future

TBB (beam trawls) 18-24m

- 8 active vessels in 2015.
- This fleet 'depends' on 2 stocks that are biologically vulnerable.
- The main stock exploited by these vessels is megrim in 7, 8. This biomass of stock of this stock was at an historical high in 2015 and although harvested above Fmsy point estimate, the fishing pressure was well within the Fmsy range. When a stock is harvested according to the MSY approach one can expect F to fluctuate around the Fmsy target, being numerically above and below the point estimate over time;
- The second-most important stock for this fleet is anglerfish in 7, 8. The TAC covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.

TBB (beam trawls) 24-40m

- 8 active vessels in 2015.
- This fleet 'depends' on 2 stocks that are biologically vulnerable.
- The main stock exploited by these vessels is megrim in 7, 8. This biomass of stock of this stock was at an historical high in 2015 and although harvested above Fmsy point estimate, the fishing pressure was well within the Fmsy range. When a stock is harvested according to the MSY approach one can expect F to fluctuate around the Fmsy target, being numerically above and below the point estimate over time;
- The second-most important stock for this fleet is anglerfish in 7, 8. The TAC covers 2 stocks. The most recent analysis by ICES showed the primary species caught by this fleet to be harvested sustainably and the biomass to be at a safe level.

TM (midwater trawls) >40m (NEW)

- 22 active vessels in 2015.
- The main stock exploited by these vessels is mackerel. Mackerel was fished above MSY in 2015. The stock size of mackerel in 2015 was close to its historic high. The reason for the high exploitation on this stock is due to lack of international agreement with different coastal states setting autonomous TAC's the sum of which exceeds the catch advised from ICES. The landings from this fleet are within the quota allocated to Ireland.

Conclusion

The fleets that are considered to be out of balance in relation to SHI mainly target mackerel and megrim. The new assessment for megrim in Area VII showed that the stock size is at a historical high and that F is not significantly above F_{msy} . When a stock is harvested according to the MSY approach one can expect F to fluctuate around the target of F_{msy} . Therefore, we do not consider that it is valid to state that the stock is over-exploited each time F is slightly above the target. In the case of North-east Atlantic mackerel, the stock was fished just above MSY in 2015. The stock size of mackerel is close to a historic high. When a stock is harvested according to the MSY approach one can expect F to fluctuate around the target of F_{msy} . Therefore, we do not consider it is valid to state that the stock is over-exploited each time F is slightly above the target.

In relation to the fleets that may be out of balance in relation to SAR, the STECF analyses do not provide any information on what the vulnerable stocks are - the tables presented simply list the number of vulnerable stocks. Ireland examined the catch profile of these fleets and could not replicate the results in the STECF table. Without access to the international data used, it is not possible to assess whether fleets take more than 10% of the landings of a vulnerable stock. However, it was possible for Ireland to assess that none of the fleets land more than 10% of its landings from any vulnerable stock.

TABLE 1: Ireland - Sustainable Harvest Indictors (SHI) for Supra Region Area 27; all gears and all vessel lengths. This table was extracted from <https://stecf.jrc.ec.europa.eu/reports/balance> STECF 17-18 - Balance capacity - Indicator table.xlsx.

		SHI								Trend (5%)	Status 2015 according to guidelines	Trend 2009-2016	Status 2015 according to thresholds and criteria in the 2014 Guidelines
Fishing tech	Vessel length	2009	2010	2011	2012	2013	2014	2015	2016				
DFN	VL1218	1.9	1.4	1.1	1.1	1.3	1.0	1.0		no trend	in balance		
DFN	VL1824	1.9	1.6	1.0	1.1	1.0	0.9	0.9		no trend	in balance		
DFN	VL2440	1.7	1.4	1.1	1.0	1.0	0.9	0.9		no trend	in balance		
DRB	VL1012					0.7		1.0	1.3				
DRB	VL1218								1.0				
DRB	VL1824						0.9						
DRB	VL2440												
FPO	VL1218	1.0	1.1	1.0	1.4	0.9	1.2	1.0	1.2	no trend			
FPO	VL1824		0.8										
FPO	VL2440												
HOK	VL1012	1.0	1.1	1.2	1.1	1.2	1.3	1.3	1.3	no trend	out of balance		
HOK	VL1218			1.2			0.9	0.9		decreasing			
HOK	VL2440	0.7											
PGP	VL0010												
PGP	VL1012	1.3		1.2						no trend			
PMP	VL1012		1.4	1.1	1.1		0.7	1.5	0.8	no trend			
PMP	VL1218	1.7	1.4	0.8	0.9	0.6	0.7		1.0				
PMP	VL1824				0.9								
PS	VL0010												
PS	VL2440	1.6											
TBB	VL0010							1.0					
TBB	VL1824	1.7	1.7	1.6	1.6	1.5	1.2	1.1	0.8	decreasing	out of balance		
TBB	VL2440	1.8	1.8	1.7	1.7	1.8	1.5	1.2	1.1	decreasing	out of balance		
TM	VL0010					1.1	1.0	1.0		decreasing			
TM	VL1012				0.8	0.7		0.8					
TM	VL1218	0.9		0.6	0.9	0.7	0.9	0.8	1.0	no trend			
TM	VL1824	0.9			0.9	0.6	1.0	1.1		increasing	out of balance		
DFN	VL0010					1.1	1.1	1.0		decreasing			
DFN	VL1012	2.2	1.9	1.2	1.3	1.4	1.2	1.1	1.1	no trend			
DRB	VL0010					0.8	0.6	0.7		no trend			
DTS	VL0010					1.3	1.2	1.1		decreasing			
DTS	VL1012	1.1	1.0	0.8	1.0	0.9	1.0	0.9	0.9	no trend	in balance		
DTS	VL1218	1.1	1.1	0.9	1.0	0.9	0.9	0.8	0.9	no trend	in balance		
DTS	VL2440	1.0	1.1	0.9	0.9	0.9	0.8	0.8	0.9	no trend	in balance		
FPO	VL0010					1.0	1.0	1.0		no trend			
FPO	VL1012	1.4	1.2	0.9	1.0	0.9	1.0	0.9	0.5	no trend			
HOK	VL0010					1.1	1.1	1.1		no trend			
TM	VL40XX	1.1	1.1	1.0	1.0	1.0	1.2	1.3	1.1	increasing	out of balance		
DTS	VL1824	1.1	1.0	0.9	1.0	0.9	0.9	0.9	0.9	no trend	in balance		
DTS	VL40XX			1.1									
TM	VL2440	0.9	1.0	0.9	1.0	0.9	1.1	1.1	1.0	no trend	out of balance		
DFN	VL1218								1.0				
DFN	VL1824								1.0				
DFN	VL2440								1.0				
PGP	VL1012								1.3				
TM	VL1012								1.3				
INACTIVE	VL1824												
INACTIVE	VL40XX												
INACTIVE	VL1012												
INACTIVE	VL1218												
INACTIVE	VL2440												
INACTIVE	VL0010												

Table 2: Ireland - Stock at Risk indicator (SAR) for Supra Region Area 27; all gears and all vessel lengths. This table was extracted from <https://stecf.jrc.ec.europa.eu/reports/balance> STECF 17-18 - Balance capacity - Indicator table.xlsx - Balance indicator table.xlsx.

		SAR							Status 2015 according to guidelines	Status 2015 according to thresholds and criteria in the 2014 Guidelines
Fishing tech	Vessel length	2009	2010	2011	2012	2013	2014	2015		
DFN	VL1218	0	0	0	-1	0	0	0	in balance	
DFN	VL1824	0	0	0	0	0	0	-1	no SAR found	
DFN	VL2440	0	0	-1	-1	0	0	-1	no SAR found	
DRB	VL1012	-1	-1	-1	-1	-1	-1	-1	no SAR found	
DRB	VL1218	-1	-1	-1	-1	-1	-1	-1	no SAR found	
DRB	VL1824	-1	-1	-1	-1	-1	-1	-1	no SAR found	
DRB	VL2440	-1	-1	-1	-1	-1	-1	-1	no SAR found	
FPO	VL1218	0	0	-1	-1	-1	0	0	in balance	
FPO	VL1824	-1	-1	-1	-1	-1				
FPO	VL2440	-1	-1	-1	-1	-1	-1	-1	no SAR found	
HOK	VL1012	0	0	-1	-1	-1	-1	-1	no SAR found	
HOK	VL1218			-1			0	-1	no SAR found	
HOK	VL2440	0								
PGP	VL0010									
PGP	VL1012	-1		-1						
PMP	VL1012		0	-1	-1		-1	-1	no SAR found	
PMP	VL1218	0	0	0	-1	0	1			
PMP	VL1824				0					
PS	VL0010									
PS	VL2440	0								
TBB	VL0010							-1	no SAR found	
TBB	VL1824	1	1	0	1	2	2	1	out of balance	
TBB	VL2440	0	0	0	0	0	0	1	out of balance	
TM	VL0010					0	0	0	in balance	
TM	VL1012				-1	-1		-1	no SAR found	
TM	VL1218	0		-1	0	0	1	0	in balance	
TM	VL1824	0			-1	0	0	0	in balance	
DFN	VL0010					0	0	0	in balance	
DFN	VL1012	0	0	0	0	0	0	0	in balance	
DRB	VL0010					0	0	-1	no SAR found	
DTS	VL0010					-1	0	0	in balance	
DTS	VL1012	0	0	0	0	0	1	1	out of balance	
DTS	VL1218	0	0	0	1	0	0	1	out of balance	
DTS	VL2440	4	3	3	4	3	3	3	out of balance	
FPO	VL0010					0	0	0	in balance	
FPO	VL1012	0	0	0	0	0	0	0	in balance	
HOK	VL0010					0	0	0	in balance	
TM	VL40XX	-1	-1	-1	-1	-1	1	1	out of balance	
DTS	VL1824	3	4	3	2	2	4	3	out of balance	
DTS	VL40XX			-1						
TM	VL2440	0	0	-1	-1	-1	0	0	in balance	
DFN	VL1218									
DFN	VL1824									
DFN	VL2440									
PGP	VL1012									
TM	VL1012									
INACTIVE	VL1824									
INACTIVE	VL40XX									
INACTIVE	VL1012									
INACTIVE	VL1218									
INACTIVE	VL2440									
INACTIVE	VL0010									

ANNEX 1

FISHING_TECHNIQUE – DCF categories used in Table 1 and Table 2

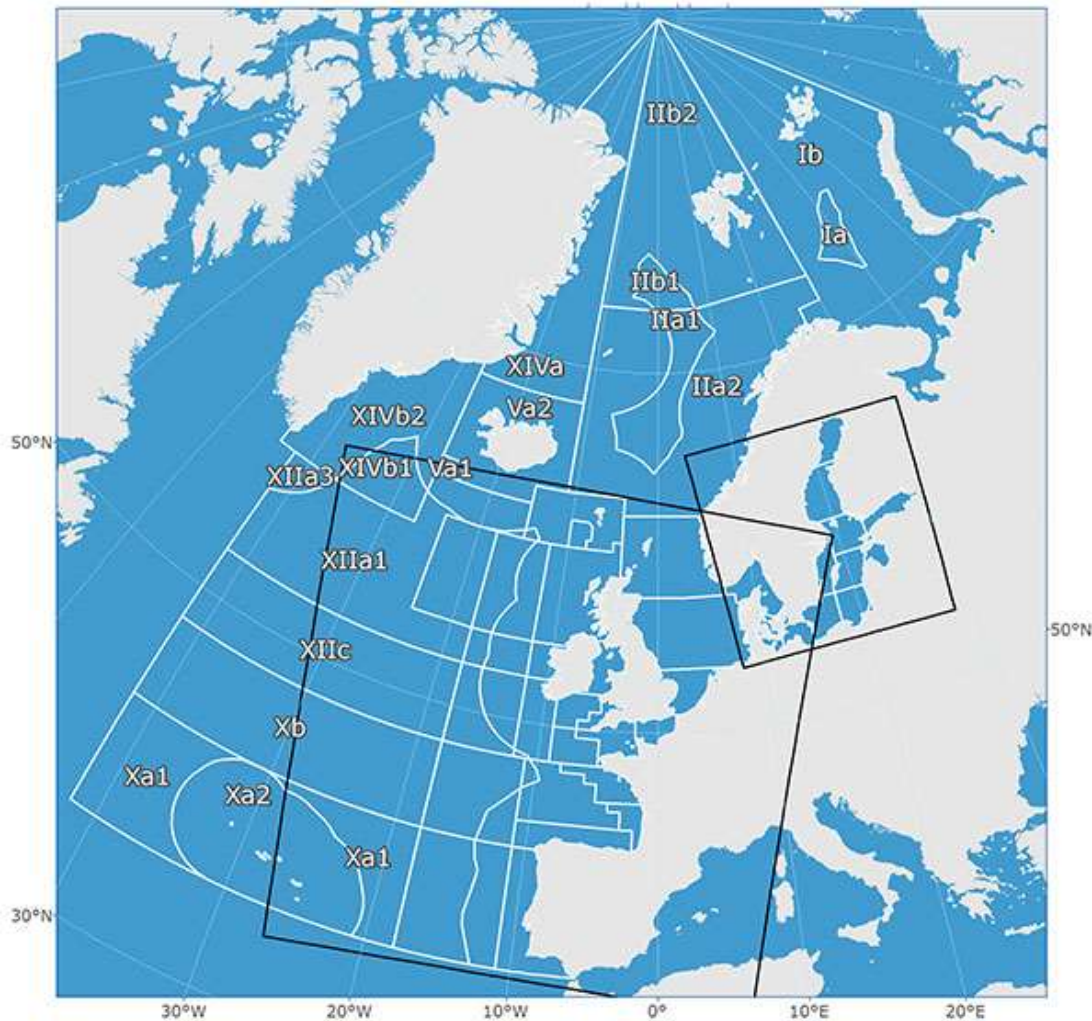
DFN	=	Drift and/or fixed netters
DRB	=	Dredgers
DTS	=	Demersal trawlers and/or demersal seiners
FPO	=	Vessels using pots and/or traps
HOK	=	Vessels using hooks
MGO	=	Vessel using other active gears
MGP	=	Vessels using polyvalent active gears only
PG	=	Vessels using passive gears only for vessels < 12m
PGO	=	Vessels using other passive gears
PGP	=	Vessels using polyvalent passive gears only
PMP	=	Vessels using active and passive gears
PS	=	Purse seiners
TM	=	Pelagic trawlers
TBB	=	Beam trawlers

VESSEL_LENGTH classes

VL0010	=	Vessel between 0 meters and 10 meters in length
VL1012	=	Vessel between 10 meters and 12 meters in length
VL1218	=	Vessel between 12 meters and 18 meters in length.
VL1824	=	Vessel between 18 meters and 24 meters in length.
VL2440	=	Vessel between 24 meters and 40 meters in length.
VL40XX	=	Vessel greater than 40 meters in length.

Annex 2

Supra Region Area 27 - Baltic Sea, North Sea, Eastern Arctic, North Atlantic;



The boundaries of the Atlantic, Northeast (Major Fishing Area 27) corresponding to the ICES fishing areas for statistical purposes. (Source: <http://www.fao.org/fishery/area/Area27/en>)

Estimation & Discussion of Balance Indicators

2. Economic Indicators

The Annual Economic Report (AER), the STECF Working Group on balance between fleet capacity and fishing opportunities (STECF-15-02), and the DG Fisheries and Maritime Affairs Guidelines for analysis of the balance between fishing capacity and fishing opportunities **ALL** have distinct definitions of the economic indicators.

The fact that these indicators have not been harmonised creates confusion and leads to member states using different calculations. In the following sections, the two main indicators, Return on Fixed Tangible Assets (RoFTA) and Current Revenue against Breakeven Revenue (CR/BER) along with their disparate definitions will be described and their results detailed. The main difference among these is the calculation of opportunity costs which involves applying a long term interest rate to the estimated capital value of the fleet and her segments.

In relation to the calculation of the Irish fleet segments' economic trajectory via these indicators it is essential to recognise that, in this report, the indicators are calculated for the sample of the active fleet that returned a DCF economic survey outlining the vessels annual costs in contrast to the AER method which calculates socio-economic performance indicators by fleet segments using the DCF economic survey data raised up to the active national totals.

Table 1: Percentage DCF economic survey returns from the active fleet

DCF Clusters	2008	2009	2010	2011	2012	2013	2014	2015	2016
DFNVL0010			13	2	14	10	11	18	26
DFNVL1012	9	20	36	40	50	33	27	20	58
DFNVL1218									20
DFNVL1824	20		17	45	18	40	18	25	17
DRBVL0010		2	13	6	17	12	9	14	17
DRBVL1012	8	36	50	37	52	29	31	15	17
DRBVL1824									20
DRBVL2440	50	40	71	17	33	29	25	29	14
DTSVL0010						7		17	27
DTSVL1012	6		5	12	20	24	16	20	20
DTSVL1218	19	18	16	18	19	26	23	7	19
DTSVL1824	25	20	19	21	25	22	17	29	22
DTSVL2440	39	40	17	40	41	29	35	16	33
FPOVL0010	4	7	6	9	15	10	10	8	10
FPOVL1012	11	16	21	33	43	34	39	34	33
FPOVL1218	16	28	28	43	38	26	29	26	35
HOKVL0010				8	3	16	15	8	24
PMPVL1218	20	33	33	17	20	200	33	100	50
TBBVL1824									20
TMVL1012									20
TMVL2440	29	42	50	64	18	50	33	33	58
TMVL40XX	35	45	25	42	52	48	33	19	30

The methodology used by the member state (IRL), for the AER, is to submit landings income from the landings declarations. In this report the declared revenue from the landings declarations of those vessels that provided DCF economic survey data are compared against the stated costs from the DCF surveys. **Hence, there is no raising up of the data in this report, this is, as mentioned, a summary of the sample data, as detailed in table 1.**

Differences in economic indicator results may arise between both methodologies. These differences can be caused by biases in the data. For instance, those vessels that have returned DCF cost surveys may have landed below the average for their segment and so their revenue may be below the average segment level and may skew the results of the indicators, or vice versa.

The segmentation used here will follow the DCF segmentation as opposed to the Irish national segmentation used by the Department of Agriculture, Food and the Marine (DAFM); however the results for the latter will be included in Annex 1 and Annex 2.

2.1 Economic indicator 1: ROI/RoFTA

Annual Economic Report Methodology for Economic Indicators – Chapter 6 AER REPORT METHODOLOGY

The AER defines ROI/RoFTA as follows :

Net Profit/Loss:

Net Profit = Income from landings + other income – crew costs – unpaid labour - energy costs – repair costs – other variable costs – non variable costs – depreciation cost – opportunity cost of capital

*Where opportunity cost of capital = fixed tangible asset value * real interest*

Where real interest (r) = [(1 + i) / (1 + π)] - 1.

Where i is the nominal interest rate of the Member State in the year concerned and π is the inflation rate of the Member State in the year concerned. See Table 6.3.

Rate of Return on Fixed Tangible Assets (RoFTA):

ROFTA = (net profit + opportunity cost of capital) / tangible asset value (vessel depreciated replacement value)

In the calculations above opportunity cost is included as a cost in the calculation for net profit. However, in the RoFTA calculation it is included again as what would seem to be an income i.e. the net profit side of the equation should exclude the opportunity cost. It has been clarified that the net profit on its own should include opportunity costs while the RoFTA should not include opportunity costs as part of the net profit [by adding back the opportunity cost after it was already taken off in the previous equation]. The RoFTA is then compared against the opportunity cost of capital.

STECF WG on balance :

RoFTA* is calculated as:

Net profit* / (fleet depreciated replacement value);

where, Net profit* = (Income from landings + other income) - (crew wage + unpaid labour + energy + repair + other variable costs + non variable costs + annual depreciation)

ROI is compared against a Target Reference point (TRP). For this exercise, **the 5-year average of the risk free long-term interest rate for each MS was used.**

Maritime Affairs Guidelines for analysis of the balance between fishing capacity and fishing opportunities

The suggested calculation method is as follows:

ROI = Net profit / Capital asset value

Where:

Net profit = (Income from landings + other income) – (crew costs + unpaid labour + energy costs + repair and maintenance costs + other variable costs + non variable costs + depreciation)

And where:

Capital asset value = Vessel replacement value + estimated value of fishing rights

In instances where data on intangible assets are not available, the Return on Fixed Tangible Assets (ROFTA) should be calculated instead, using exactly the same calculation method but without including an estimated value for fishing rights.

ROI (or ROFTA) would then be compared to the interest rate of a low risk long term investment calculated as proposed above. That interest rate represents the profitability that the same invested capital will obtain if it was invested in the next best available alternative (normally long term government bonds).

The resulting formula for the indicator would be *ROI – low risk long term interest rate.*

*Threshold: If the return on investment (RoI) **is less than zero and less than the best available long-term risk-free interest rate**, this is an indication of long-term economic inefficiency that could indicate the existence of an imbalance.*

Conclusion: all three definitions differ in terms of interest rates. Both the STECF balance report and the Guidelines to MS refer to the 'low risk long term interest rate' however the STECF balance report recognises that the 'low risk long term interest

rate' which would formerly have been the ECB rate IRL has fluctuated wildly during the years of the economic crisis and so has suggested using a 5-year average of the interest rate. **The AER uses real interest rate. The difference for Ireland can be seen in the following graph:**

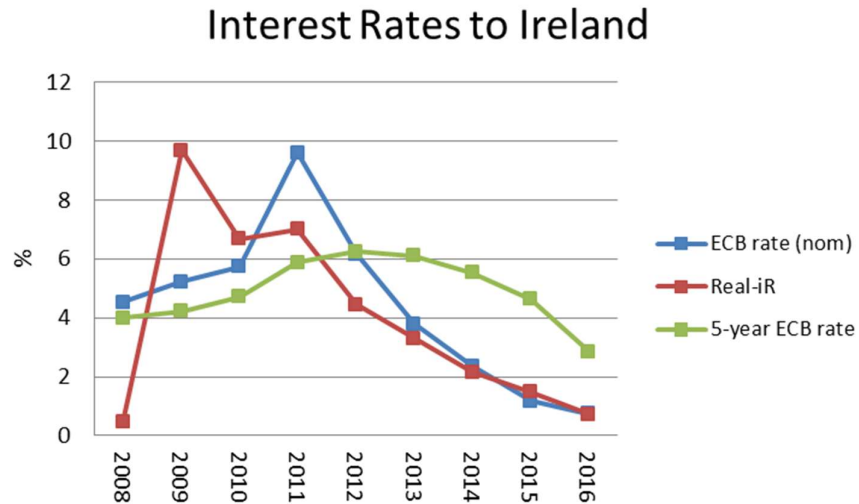


Figure 1: Nominal, real and 5 year average nominal interest rates for Ireland

The **ECB rate IRL** is the nominal interest rate to Ireland from the ECB in each year, the **Real-iR** is the real rate of interest that adjusts the ECB nominal rate for annual inflation, and the **5-year ECB rate IRL** is the average interest rate for each year of the 5 former years (e.g. The 2008 value is the average interest rate to Ireland from 2004-2008 and so on).

In this report the indicator will be calculated following the suggestion of the STECF WG on balance and use the 5-year average ECB rate to Ireland (5-year ECB rate IRL).

Table 2: RoFTA using the declared landing income in combination with costs stated in the DCF surveys and the 5 year average interest rate from the ECB to Ireland:

DCF Segment	2008	2009	2010	2011	2012	2013	2014	2015	2016
DFNVL0010			0.29	0.21			6.47	0.81	1.10
DFNVL1012	0.15		-0.06	0.13	0.03	0.60	0.69	0.98	0.18
DFNVL1218									1.09
DFNVL1824	0.32		-0.03	0.06	1.14	0.08	5.95	0.03	0.04
DRBVL0010			0.31	0.53			5.06	1.36	1.39
DRBVL1012	7.48	2.71	0.30	2.18	0.88		12.24	1.01	0.28
DRBVL1824									-0.03
DRBVL2440	-0.08	-0.01	-0.63	-0.05	-0.08	0.04	0.46	-0.12	0.00
DTSVL0010								0.48	0.46
DTSVL1012	-0.04			0.60	0.27	0.41	0.21	0.00	0.42
DTSVL1218	-0.03	-0.03	0.00	-0.02	0.04	0.02	0.15	0.03	0.19
DTSVL1824	-0.06	-0.02	-0.10	0.01	0.04	-0.04	-0.10	0.02	0.14
DTSVL2440	-0.09	-0.01	0.03	0.01	0.04	-0.04	0.02	0.07	0.06
FPOVL0010			0.41	0.48	2508.42	21.56	12.71	1.03	0.53
FPOVL1012	3.59		0.40	0.40	0.55	1.18	3.08	1.07	1.14
FPOVL1218	-0.14	-0.06	0.09	0.04	0.08	0.52	3.22	1.90	0.54
HOKVL0010				-14.13			1.51	1.74	1.99
PMPVL1218	0.19	0.57	0.00	0.77	-0.08			0.66	532.17
TBBVL1824									0.13
TMVL1012									2.46
TMVL2440	-0.01	-0.03	-0.04	0.08	0.00	0.05	0.21	-0.25	0.02
TMVL40XX	-0.03	0.00	0.03	0.01	0.04	0.03	0.11	0.03	0.02
Grand Total	-0.03	0.00	0.01	0.03	0.05	0.05	0.14	0.02	0.07

Results of RoFTA:

Overall, the results for 2016 for the Irish fleet are positive with only two segments failing the RoFTA indicator, the dredger fleets of 18-24m and 24-40m. The result for these segments is only marginally negative and overall the indicator is positive for all other fleet segments. All demersal trawling segments (DTS) pass the indicator with the important length classes of 18-24m and 24-40m improving or maintaining their long-term profitability in 2016. Both of the main pelagic fleet segments (TM) show a steady return on fixed tangible assets in 2016.

2.2 Economic indicator 2: CR/BER

Annual Economic Report Methodology for Economic Indicators – Chapter 6 AER REPORT METHODOLOGY

Break-Even Revenue (BER):

$BER = (\text{Fixed costs} + \text{opportunity costs of capital} + \text{depreciation}) / (1 - (\text{crew costs} + \text{unpaid labour} + \text{energy costs} + \text{repair and maintenance costs} + \text{other variable costs}) / \text{Revenue})$

Revenue to Break-Even Revenue Ratio (CR/BER):

$CR/BER = \text{revenue} / \text{break-even revenue} = \text{Income from landings} + \text{other income} / BER$

CR/BER gives an indication of the short term profitability of the fleet/fleet segment (or over/under capitalised): if the ratio is greater than 1, then enough cash flow is generated to cover fixed costs (economically viable in the short term). If the ratio is less than 1, insufficient cash flow is generated to cover fixed costs (indicating that the segment is economically unviable in the short to mid-term).

STECF WG on balance :

Current revenue to break-even revenue ratio (CR/BER) is calculated as:

Current revenue (CR) / Break Even Revenue (BER),

where,

CR = income from landings + other income

where,

BER = fixed costs / (1 - [variable costs / current revenue])

and,

Fixed costs = non variable costs + annual depreciation

and,

Variable costs = crew wage + unpaid labour + energy costs + repair costs + other variable costs

Maritime Affairs Guidelines for analysis of the balance between fishing capacity and fishing opportunities

The formula for calculating the BER is as follows:

$$BER = (Fixed Costs) / (1 - [Variable costs / Current Revenue])$$

Where:

Variable costs =

Crew costs + Unpaid labour + Energy costs + Repair and Maintenance costs + other variable costs

And where:

Fixed costs = Non variable costs + depreciation

And current income = income from landings + other income

The ratio is calculated by dividing the current revenue by the BER i.e.

$$Ratio = Current Revenue (CR) / BER$$

The calculation of the ratio as indicated above gives a short term view of financial viability. Should data permit, MS could also opt for providing an economic long term viability analysis of CR/BER. Doing so would require **adding opportunity costs to fixed costs**:

Fixed costs = Non variable costs + depreciation + opportunity cost of capital

*Opportunity cost of capital = capital asset value * low risk long term interest rate.*

MS will need to state which CR/BER concept they are using.

*Threshold: If the ratio between current revenue and break-even revenue **is less than one**, this is an indication of short-term economic inefficiency that could indicate the existence of an imbalance.*

Conclusion: the CR/BER defined in the STECF report is what the Guidelines refer to as the short-term CR/BER while the CR/BER defined in the AER is what the Guidelines refer to as the long-term CR/BER. Hence, the long-term indicator includes opportunity costs. The difference between the AER and the Guidelines in this regard is the 'low risk long term interest rate'.

In this report we will use the **long term indicator** that includes opportunity costs of capital.

Table 3: Current Revenue to Breakeven Revenue long term (CR/BER) using the declared landing income in combination with costs stated in the DCF surveys:

DCF Segment	2008	2009	2010	2011	2012	2013	2014	2015	2016
DFNVL0010			4.16	1.33	6.20	7.52	4.39	5.91	4.36
DFNVL1012	1.90	-0.31	0.30	1.54	1.24	3.67	4.52	4.12	2.12
DFNVL1218									2.23
DFNVL1824	1.75		0.73	1.25	4.96	1.71	5.74	1.15	1.26
DRBVL0010		0.61	4.86	3.87	10.79	3.19	7.97	6.55	5.39
DRBVL1012	1.75	4.35	2.88	5.91	2.39	7.75	12.53	8.35	2.82
DRBVL1824									0.83
DRBVL2440	0.59	0.85	-0.94	0.70	0.62	1.12	2.97	0.14	0.99
DTSVL0010						48.53		2.44	2.35
DTSVL1012	0.78			5.06	2.26	1.87	1.91	1.00	2.51
DTSVL1218	0.88	0.85	0.98	0.92	1.14	1.12	1.69	1.18	1.96
DTSVL1824	0.77	0.91	0.60	1.05	1.17	0.84	0.69	1.10	1.89
DTSVL2440	0.58	0.95	1.17	1.05	1.24	0.80	1.14	1.52	1.39
FPOVL0010	13.65	9.89	5.37	3.10	4.56	12.34	12.79	4.06	3.35
FPOVL1012	6.01	3.39	5.90	3.03	3.32	5.64	12.39	4.47	4.63
FPOVL1218	0.39	0.63	1.77	1.17	1.38	2.99	11.69	5.51	3.47
HOKVL0010				-0.81	12.99	7.84	11.66	4.34	7.68
PMPVL1218	2.74	2.07	1.03	5.82	0.88	3.51	23.64	7.47	8.86
TBBVL1824									1.18
TMVL1012									5.37
TMVL2440	0.94	0.85	0.85	1.35	1.00	1.30	2.34	0.33	1.18
TMVL40XX	0.86	1.02	1.25	1.05	1.23	1.18	1.76	1.30	1.16
Grand Total	0.85	0.98	1.05	1.19	1.30	1.30	1.90	1.10	1.49

Results of CR/BER:

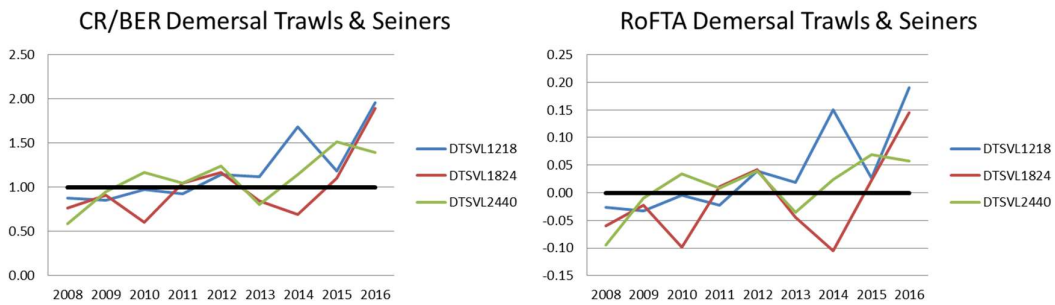
The results of this indicator are broadly positive again showing only two segments failing the indicator, namely the dredger fleet segments of 18-24m and 24-40m. All other fleet segments pass this indicator. Notably, all the demersal trawl segments pass the indicator as do all pelagic trawl segments.

Economic Indicator Summary

STECF balance and Guideline for fleet reports use similar methodology in terms of long term interest rate while the AER uses real interest rates to incorporate the opportunity costs of capital. In this report for the long term indicator (RoFTA) we used the STECF recommendation of 5-year average ECB rates to Ireland. For the breakeven revenue indicator we follow the Guidelines and incorporate opportunity costs in the CR/BER indicator.

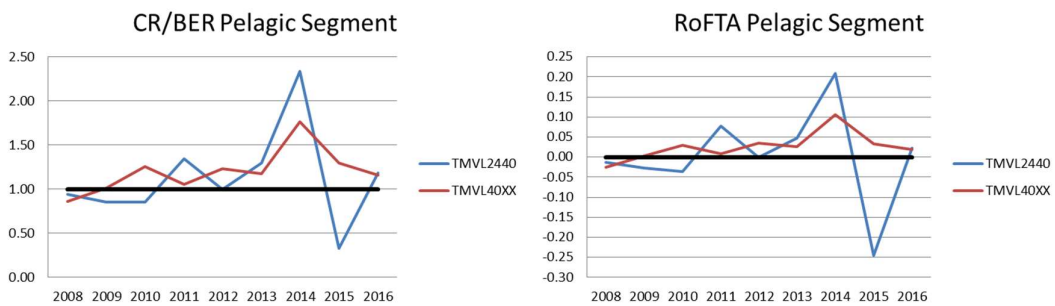
The most important revenue generating segments in the Irish fleet to be analysed here are polyvalent general, pelagic and specific DCF segments:

- Polyvalent general: DTS segments: DTS1218 - DTS1824 - DTS2440
- Pelagic: TM segments: TM2440 - TM40XX
- Specific: DRB segments - DRB2440



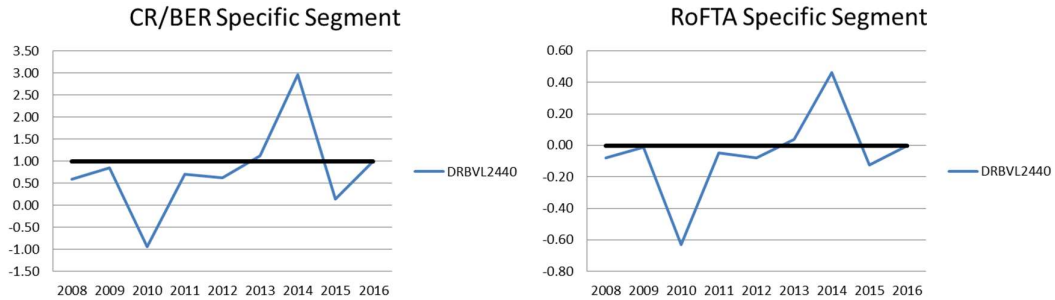
Figures 2a & 2b: Current Revenue against Break Even Revenue in the Long Term and Return on Fixed Tangible Assets for DTS length classes respectively

Results show that there have been improvements in both (CR/BER) and (RoFTA) economic indicators for the DTS fleet since 2008. The trends in both indicators are overall positive however there have been sharp fluctuations throughout. The results show that in 2016 all three length classes over 12m pass both indicators comfortably.



Figures 3a & 3b: Current Revenue against Break Even Revenue in the Long Term and Return on Fixed Tangible Assets for TM length classes respectively

Results for the pelagic segment show positive results for 2016. Despite significant fluctuations in both segments since 2008 they show strong results since 2011. The length class 24-40m shows more volatile results than the more stable 40XX class. In 2016 the 24-40m and 40XX classes show positive results in both indicators.



Figures 4a & 4b: Current Revenue against Break Even Revenue in the Long Term and Return on Fixed Tangible Assets for TM length classes respectively

The specific segment has shown mixed results for both indicators throughout the time series with some sharp fluctuation between years. The segment has improved results in 2016 over 2015 however it still fails both indicators, albeit marginally.

The results of both economic indicators are shown by Irish DAFM segmentation in Annex 1 and Annex 2.

Conclusion

These results show a very positive outlook for the Irish fleet with the trawling fleet (DTS) passing both indicators for the last two years in all length classes. The pelagic trawl segment both show positive results for 2016 along with most other fleet segments. Only two segments fail the indicators in 2016, the dredgers 18-24m and 24-40m however they show an improving trend throughout the time series therefore specific measures may not be necessary.

4. Technical Indicators

– see attached spreadsheet

Annex 1 – RoFTA Irish Segmentation

DAFM Segment	Length	2008	2009	2010	2011	2012	2013	2014	2015	2016
Beamer	VL1824	-0.19	-2.00	-0.23	0.02		-1.16			0.13
Beamer	VL2440		-0.13	-0.04			-0.16			
Pelagic	VL2440	-0.05	-0.02	-0.01	0.04	0.09	-0.01	-0.06	-0.32	-0.02
Pelagic	VL40XX	-0.02	0.00	0.03	0.01	0.03	0.03	0.11	0.03	0.02
Polyvalent General	VL0010			0.33	0.45	3486	10.94	7.66	0.79	0.90
Polyvalent General	VL1012	0.63		0.24	0.37	0.33	1.12	2.28	0.98	0.63
Polyvalent General	VL1218	0.04	0.04	0.00	0.09	0.12	0.18	0.50	0.66	0.41
Polyvalent General	VL1824	-0.06	-0.05	-0.09	0.01	0.04	-0.03	-0.09	0.02	0.12
Polyvalent General	VL2440	-0.07	-0.01	0.03	0.03	0.04	0.02	0.14	0.04	0.08
Polyvalent Potting	VL0010			0.71	0.63				1.93	0.37
Polyvalent Potting	VL1012			0.69	0.78	0.61		1.53	2.68	7.21
Polyvalent Tank	VL2440	0.12	-0.18	-0.11	0.24					
Specific	VL0010			0.18	0.36				1.61	0.91
Specific	VL1012	7.48		0.25	1.74	1.48		10.32	0.91	0.20
Specific	VL1218		0.90	0.90		0.33				
Specific	VL1824	-0.14	-0.06	-1.86					-0.16	-0.03
Specific	VL2440	-0.03			-0.05		0.04	0.41	0.26	0.00

Annex 2 – CR/BER Irish segmentation

DAFM Segment	Length	2008	2009	2010	2011	2012	2013	2014	2015	2016
Beamer	VL1824	0.24	-3.14	0.28	1.08		-0.79	1.58		1.18
Beamer	VL2440		0.29	0.70			0.74			
Pelagic	VL2440	0.60	0.86	0.96	1.19	1.33	0.90	0.53	0.24	0.82
Pelagic	VL40XX	0.91	1.02	1.25	1.05	1.20	1.18	1.76	1.30	1.16
Polyvalent General	VL0010	9.92	7.73	4.79	2.83	5.47	6.57	8.71	3.98	3.77
Polyvalent General	VL1012	3.67	4.44	3.95	2.84	2.67	4.48	9.83	4.16	3.75
Polyvalent General	VL1218	1.20	1.20	1.03	1.37	1.42	2.06	3.11	3.86	2.55
Polyvalent General	VL1824	0.77	0.79	0.64	1.04	1.13	0.90	0.72	1.08	1.75
Polyvalent General	VL2440	0.63	0.92	1.16	1.14	1.24	1.11	1.83	1.28	1.53
Polyvalent Potting	VL0010	19.75	13.34	7.63	4.53	11.23	21.48	30.18	4.39	2.82
Polyvalent Potting	VL1012		-1.58	8.38	5.33	1.46	37.57	7.39	5.55	5.39
Polyvalent Tank	VL2440	1.59	0.64	0.70	1.59					
Specific	VL0010		0.61	2.79	4.04	2.05	9.54	8.94	8.08	3.77
Specific	VL1012	1.75	0.57	2.38	5.14	2.74	8.59	13.29	7.91	2.30
Specific	VL1218		3.13	3.09		2.20				
Specific	VL1824	0.31	0.58	-2.32					-0.14	0.83
Specific	VL2440	0.84			0.70		1.12	2.82	2.24	0.99