REPUBLIC OF CROATIA
Ministry of Agriculture
Directorate of Fisheries

Annual report
on balance between fishing capacity and fishing opportunities for 2022

pursuant to Article 22 of the **Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy**, *amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC* and following the *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 (COM/2014/545)*

Zagreb, 31st May 2023

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amendment upon validation of scientific advice at the level of GFCM Scientific Advisory Committee

European Union

1. Section A1: Description of the fishing fleet segments in relation to fisheries

In accordance with the Article 22 of the Regulation (EU) No 1380/2013, Croatia has put in place measures to adjust its fishing capacity with the available resources. This report is prepared in line with the Guidelines provided by the Commission. Croatia acceded to the EU on 1ˢᵗ July 2013, and started immediately applying the measures targeted to balancing of the fleet with resources in 2014. In terms of the assessment of the long-term profitability of the fleet segments, it should be pointed out that the characteristics of the Croatian fleet, in particular small-scale, mean that in most cases the profitability may not be judged based on the incomes from just fishing activity, and hence should be interpreted with caution. As the importance and the sustainability of the small-scale fleet is in the core of the CFP, this is an important element that needs to be considered when assessing the overall fleet capacity.

As the TACs are currently only applicable for the Bluefin tuna and Mediterranean swordfish in the case of Croatia, the measures related to this particular fleet have been strictly imposed in accordance with the applicable regulations and recommendations of ICCAT. Having said this, Croatian capacity as calculated using the SCRS methodology is in line with the opportunities and is duly communicated to the Commission.

Croatian fleet capacity ceiling was set at the date of accession and has been fixed for the first time in the Annex II of Regulation (EU) 1380/2013. The ceiling as set in the Annex II is 53.452,00 GT and 426.064,00 kW. The permanent cessation of fishing activities funded under the EFF and EMFF was carried out in the period 2015-2018 and resulted with a decrease of the ceiling capacity to 48.759,83 GT and 405.211,48 kW by the end of 2018. As foreseen in the Fleet Report submitted in 2015, permanent cessation of fishing activities was one of the measures under the OP for the EFF and it was implemented in 2015, for PS and DTS fleet segments. In 2016, 2017 and 2018 permanent cessation of fishing activities for PS and DTS segments continued under the EMFF, as was planned in the 2016 and 2017 fleet report action plans. It can be stated that fleet management measures in Croatia are a combination of the capacity management through permanent cessation activity funded by EFF and EMFF including also a strict calculation matching the fishing capacity with the fishing opportunities in tuna fishery, and an array of effort management measures pursuant to regional and national legislation in force.

The figures listed in this report indicate the number of 7.680 vessels in 2022. The ceiling limit set in the Annex II of the Regulation (EU) No 1380/2013 also includes the total of 3.500 vessels within the small-scale fleet previously categorized as 'for personal needs' included in the Fleet register pursuant to accession negotiations.

Compared to preliminary data submitted in line with the Fleet economic data call in 2023, the figures representing fleet capacity in this report exclude 14 aquaculture vessels. Data submitted to DG MARE will be finally aligned with the figures in this report for the next Fleet economic data submission (final dataset for 2022).

The licences in Croatia are issued for indefinite time (there are no provisions on withdrawal if vessel is inactive). However, for those fisheries managed by management plans, the issued authorisations are time limited, and authorisation process is repeated upon their expiration following the current state of play considering the balance between the status of the resources and fleet capacity. Croatian national legal framework foresees the possibility of a vessel being erased from the register under specific circumstances.

1.1 Description of fleets

A. Developments in the fishing fleet

Croatia's capacity ceiling was fixed by way of Regulation (EU) 1380/2013. Furthermore, permanent cessation of fishing activities was implemented in the EFF and EMFF frameworks, with the target date for achieving results by the end of 2015 for the EFF and the end of 2018 for EMFF respectively.

In the course of 2022, 146 new vessels entered the fleet without public aid, with a total capacity of 237,41 GT and 4.540,5 kW. In the same year 193 vessels left the fleet with a total capacity of 461,04 GT and 6.541,43 kW.

In 2022 Croatian fishing fleet consisted of 7.680 vessels of which 6.182 were active. Inactive vessels represented 19,5% of the total fleet registered in 2022.

Fleet capacity in terms of GT and kW remained stable in 2022 in terms of total vessel tonnage and engine power when compared to previous year. In 2022, GT, kW and number of vessels were reduced by 8,6%, 7,5% and 2,2%, respectively, compared to 2015-2021 average values (Table 1).

Table 1. Croatian commercial fishing fleet in the period 2012-2022.

Year	GT	kW	No. vessels
2012	45.203,82	329.693,77	4.211
2013	46.034,24	346.247,22	4.358
2014	46.104,38	347.927,35	4.385
2015	53.811,85	429.745,89	7.849
2016	49.157,90	387.601,65	7.746
2017	48.840,26	386.830,98	8.349
2018	46.048,94	360.883,33	7.731
2019	45.208,68	355.579,40	7.829
2020	45.251,54	355.871,16	7.808
2021	44.621,47	354.226,43	7.757
2022	43.457,97	347.728,65	7.680
Δ 2022 to 2021	-2,6%	-1.8%	-1,0%
Δ 2022 to avg. 15-21	-8,6%	-7,5%	-2,4%

B. Analysis of the fleet

In 2022, majority of the entire commercial fishing fleet (7.680 vessels) was composed of vessels with LOA less than 6 m (4.355 vessels, 56,7%) and vessels with LOA between 6 and 12 m (2.789 vessels, 36,3%). Only 536 fishing vessels corresponding to 6,97% of the fleet was larger than 12 m LOA, including 330 vessels, or 4,3% with LOA between 12 and 18 m; 101 vessels, or 1,3% with LOA between 18 and 24 m and 105 vessels, 1,4% with LOA between 24 and 40 m (Table 2).

Table 2. Fleet characteristics by vessel length category in 2022.

Vessel length category	Total GT	Total kW	Total no. vessels	Share in total fleet
VL0006	3.941.29	40.384,16	4.355	56,7%
VL0612	9.830,68	167.753,86	2.789	36,3%
VL1218	5.990,50	52.987,93	330	4,3%
VL1824	7.166,00	29.945,80	101	1,3%
VL2440	16.529,50	56.656,90	105	1,4%
TOTAL	**43.457,97**	**347.728.65**	**7.680**	

Small-scale coastal fleet (SSCF) covered 86,5% (5.345) of active vessels and 2,9% of landed weight in 2022 (Table 3). Large-scale fleet (LSF), in total 837 vessels, represented 13,5% of active fleet in 2022, and landed 97% in weight and 81,7% in value. Majority of LSF in Croatia is constituted of high activity commercial purse seiners and demersal trawlers which are under a strict management regime. Decreasing trend continued in 2022, as the number of LSF vessels decreased by 33 vessels (-3,8% between 2022 and 2021), and by 0,5% in SSCF (corresponding to 25 vessels). In 2022, inactive fleet (1.512 vessels) further decreased to by 0,3% compared to 2021.

Table 3. Overall fleet characteristics of active vessels by fishing activity category in 2022.

Fishing activity	Total no. vessels	Total GT	Total kW	Share in fleet	Share in days at sea	Share in landing weight	Share in landing value
LSF	837	22.550,52	120.738,62	*13,5%*	*29,8%*	*97,1%*	*81,7%*
SSCF	5.345	8.880,67	128.625,61	*86,5%*	*70,2%*	*2,9%*	*18,3%*

Although the structure of the fishing fleet somewhat changed with the inclusion of 3.500 small-scale vessels for personal needs in 2015, the fleet operates essentially the same. Overall, since Croatia's entry into the EU in 2013, number of vessels in LSF significantly decreased in 2022 (-22,6%, corresponding to 244 vessels). A major factor in the large-scale fleet reduction since 2013 is scrapping of vessels.

The Croatian fishing fleet has a range of vessel types using various fishing gears and targeting different species exclusively in FAO area 37.2.1. (Adriatic), predominantly in the GFCM Geographical Sub-Area 17 (GSA 17) - Northern Adriatic Sea. The fleet consists of 23 active fleet segments, which are divided into 10 small-scale coastal fleet (SSCF)[1] segments (DFN, FPO, HOK, PGP and PMP) and 13 large-scale fleet (LSF) segments (DFNVL1218, DRB, DTS, MGO and PS), and 5 inactive length classes, according to DCF methodology[2] (Table 4).

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[1] SSCF, 'small-scale coastal fishing', is carried out by marine and inland fishing vessels of an overall length of less than 12 metres and not using towed fishing gear as defined in point (1) of Article 2 of Council Regulation (EC) No 1967/2006, or by fishers on foot, including shellfish gatherers in line with Regulation (EU) 2021/1139.
[2] Definitions and acronyms for DCF length classes and fleet segments can be found in Appendix 1.

Table 4. Developments in the fishing fleet in the period 2013-2022.

	Fishing technique	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Δ 2022 to 2021	Δ 2022 to avg. 13-21	Δ 2022 to avg. 15-21
GT	DFN	3.275,67	3.108,17	3.117,64	2.910,51	2.942,63	2.996,54	2.964,52	2.993,01	2.973,92	2.940,18	-1%	-3%	-2%
	DRB	518,15	381,32	603,54	670,52	578,80	385,09	461,24	406,26	300,17	271,20	-10%	-43%	-44%
	DTS	10.035,55	10.027,26	9.865,43	8.934,23	8.348,08	7.337,04	7.371,37	7.571,02	7.449,61	7.287,51	-2%	-15%	-10%
	FPO	391,24	365,41	361,85	396,83	354,30	354,25	361,44	363,17	425,71	388,14	-9%	4%	4%
	HOK	1.324,85	1.325,41	1.120,29	1.144,73	1.124,43	1.217,57	1.240,53	1.299,15	1.244,39	1.228,51	-1%	0%	2%
	MGO	494,11	442,51	535,70	527,73	481,48	454,29	470,11	446,67	435,29	418,57	-4%	-12%	-13%
	PGP	110,30	127,94	311,49	3.273,82	4.185,88	4.239,50	4.494,90	4.447,45	4.460,41	4.403,02	-1%	54%	21%
	PMP	357,77	393,45	287,71	234,20	172,82	149,51	83,33	129,33	106,41	112,66	6%	-47%	-32%
	PS	15.963,37	16.090,79	16.498,06	16.059,40	16.393,10	14.755,90	14.675,02	14.685,48	14.758,16	14.381,40	-3%	-7%	-7%
	INACTIVE	13.563,23	13.842,12	21.110,14	15.005,93	14.258,74	14.159,25	13.086,22	12.910,00	12.467,40	12.026,78	-4%	-17%	-18%
	TOTAL	*46.034,24*	*46.104,38*	*53.811,85*	*49.157,90*	*48.840,26*	*46.048,94*	*45.208,68*	*45.251,54*	*44.621,47*	*43.457,97*	*-3%*	*-8%*	*-9%*
kW	DFN	53.949,33	51.599,67	52.482,48	48.115,90	50.569,78	50.937,27	50.845,80	50.697,14	49.751,93	49.873,87	0%	-2%	-1%
	DRB	5.018,22	4.511,98	6.954,51	8.278,60	6.933,94	4.942,62	4.409,06	3.848,42	4.086,92	3.654,50	-11%	-33%	-35%
	DTS	65.477,00	65.013,71	63.076,09	58.783,40	55.908,40	51.105,42	50.442,81	51.613,28	50.156,97	48.564,62	-3%	-15%	-11%
	FPO	7.668,28	7.336,72	7.730,51	7.982,24	7.236,76	7.305,40	7.380,11	7.376,67	8.895,19	8.500,40	-4%	11%	10%
	HOK	32.175,33	32.371,54	27.560,52	28.642,84	27.983,44	30.599,95	29.645,54	32.881,66	31.546,22	31.508,01	0%	4%	6%
	MGO	9.698,60	9.491,54	10.560,73	10.670,38	9.468,89	9.188,74	9.448,22	8.850,84	8.325,32	8.861,73	6%	-7%	-7%
	PGP	2.028,32	1.899,52	4.291,45	27.739,48	35.249,72	36.207,56	38.013,16	38.234,71	38.949,58	38.555,07	-1%	56%	23%
	PMP	4.532,51	4.562,96	5.400,47	4.710,87	3.568,47	3.056,18	1.838,82	2.464,54	2.267,87	2.202,38	-3%	-39%	-34%
	PS	65.938,19	67.173,04	68.015,62	65.521,45	66.488,44	60.253,39	59.949,87	59.511,67	59.618,74	57.643,65	-3%	-9%	-8%
	INACTIVE	99.761,44	103.966,67	183.673,51	127.156,49	123.423,14	107.286,80	103.606,01	100.392,23	100.627,69	98.364,42	-2%	-16%	-19%
	TOTAL	*346.247,22*	*347.927,35*	*429.745,89*	*387.601,65*	*386.830,98*	*360.883,33*	*355.579,40*	*355.871,16*	*354.226,43*	*347.728,65*	*-2%*	*-6%*	*-7%*
No vessel	DFN	1.085	1.033	1.062	1.007	998	1.008	1.035	1.037	1.042	1.057	1%	2%	3%
	DRB	32	33	47	53	43	33	28	23	25	22	-12%	-38%	-39%
	DTS	463	449	428	387	378	350	338	344	334	320	-4%	-17%	-12%
	FPO	160	153	153	172	155	158	161	159	173	172	-1%	7%	6%
	HOK	366	360	335	328	314	346	343	360	350	339	-3%	-2%	0%
	MGO	356	342	355	342	340	329	327	329	324	321	-1%	-5%	-4%
	PGP	44	50	154	2.746	3.566	3.610	3.771	3.767	3.770	3.735	-1%	57%	22%
	PMP	94	90	88	102	70	63	45	65	53	55	4%	-26%	-21%
	PS	207	206	201	187	188	166	168	167	169	161	-5%	-13%	-10%
	INACTIVE	1.551	1.669	5.026	2.422	2.297	1.668	1.613	1.557	1.517	1.498	-1%	-30%	-35%
	TOTAL	*4.358*	*4.385*	*7.849*	*7.746*	*8.349*	*7.731*	*7.829*	*7.808*	*7.757*	*7.680*	*-1%*	*8%*	*-2%*

C. Description of small-scale coastal fisheries

Regardless of the fact that the category of small-scale coastal fisheries is not as economically significant when compared to LSF, its economic significance is pronounced on local level, and social importance is due to the large number of vessels and fishers involved. Analysis of the data collected under the DCF for the reference year 2022 shows that small scale fleet segments, with 5.345 vessels cover 86,5% of vessels in the active fleet, only 2,9% (corresponding to 1,8 thousand tonnes) of total landing weight and 18,3% of landing value (EUR 13.4 million).

Average length of these vessels was only 5,7 m and average vessel age of 41 years in 2022, and their fishing activities are mostly limited to fishing grounds near the port and to one day fishing trips. When small-scale fleet "for personal needs" is excluded, average vessel length is 7 m, and average vessel age 37 years. Average age of vessel owners in this segment is 62 years of age, and 50 years when small-scale fishers in the segment "for personal needs" are excluded from the analysis.

Analysis of effort and landing of the small-scale fishery indicates that DFN segment covering 56% of days at sea of small-scale fleet, over 57% of landing weight and 52% of landing value in 2022, is the most active SSCF segment. Although HOK segment covers only 6% of SSCF in terms of number of vessels, it is significant both in small-scale fleet landing value and total landing value (Table 5, Table 6). Regarding average vessel age, youngest are HOK and PMP (polyvalent) vessels.

PGP segments cover 70% of SSCF vessels, however their share in days at sea, landing weight and values is insignificant even in the context of small-scale fleet, as the most important role of fisheries in this segment is to provide the source of food. Segments with low share of vessels and low activity are FPO segments which cover about 3% of small-scale vessels, 9% DAS, 8% of landing weight and 13,7% of landing value, PMP segments (1% vessels, 3% DAS, 3,5% landing weight and 3% landing value). HOK vessels cover a significant part in landing weight and value, 23% and 26%, respectively.

Table 5. Fleet segments that form small-scale fisheries and their share in landing weight, landing value and days at sea in 2022.

Fleet segment		Number of vessels	% SSCF	Average age of vessel	Average age of vessel owners	% Days as sea	% Landing weight	% Landing value
DFN	VL0006	346	6,5%	38	49	18,3%	15,9%	12,3%
	VL0612	698	13,1%	39	51	37,6%	41,0%	39,5%
FPO	VL0006	47	0,9%	35	47	1,7%	1,2%	1,9%
	VL0612	125	2,3%	36	50	7,2%	6,7%	11,8%
HOK	VL0006	88	1,6%	34	50	2,4%	2,0%	2,3%
	VL0612	251	4,7%	35	51	8,0%	21,0%	23,3%
PGP	VL0006	2923	54,7%	42	68	17,1%	6,1%	3,7%
	VL0612	812	15,2%	44	68	5,1%	2,6%	2,2%
PMP	VL0006	29	0,5%	28	47	1,3%	1,1%	1,3%
	VL0612	26	0,5%	33	47	1,3%	2,4%	1,7%

In 2022, the average age of vessel owner in small-scale fleet increased to 62 years. Small-scale fleet segment with youngest vessel owners is PMP with average age of 47 years. The oldest segment is PGP in general, with average vessel age of 42 years and average vessels owners' age of 68. This group of vessels, previously categorised as "for personal needs", fall into a separate category of commercial fleet. Most of these vessels' owners are retired and occasionally engaged in fishing activities. It must be considered that during the public call for license holders in the context of transition into the small-scale coastal artisanal fisheries, an advantage was given to the older applicants. Due to legal restrictions, authorized persons in this category could only be natural persons without legal rights to be involved in first sales and without obligations to pay social security fees. However, reporting on fishing activities is mandatory for this category as it is for any other category of commercial fisheries. Since there is no income, salaries, or any kind of remuneration in this category, all the participants are considered as unpaid labour. Still, this category with a large number of participants is of great social importance as supplementary activity and food security for households.

In 2022, number of days at sea in the SSCF, excluding PGP vessels "for personal needs", has increased by 25% compared to average in the period 2013-2021, and by 5% compared to 2021, mostly due to

increase in days at sea in the DFN, FPO and HOK segments, even though the number of vessels has slightly decreased.

When PGP vessels "for personal needs" are excluded, SSCF vessels spent 112 days at sea (DAS) in 2022 on average. The most active in SSCF are DFN vessel owners, spending on average 123 days at sea in 2022. In contrast, HOK vessels are the least active, with 70 days at sea on average.

Days at sea for passive gears have a distinct seasonal character with spring and autumn peaks, depending on migration of target species to the inshore area during the warmer period of the year, but also depending on other integrated activities – tourism, maritime transport, or agriculture (Fig. 1).
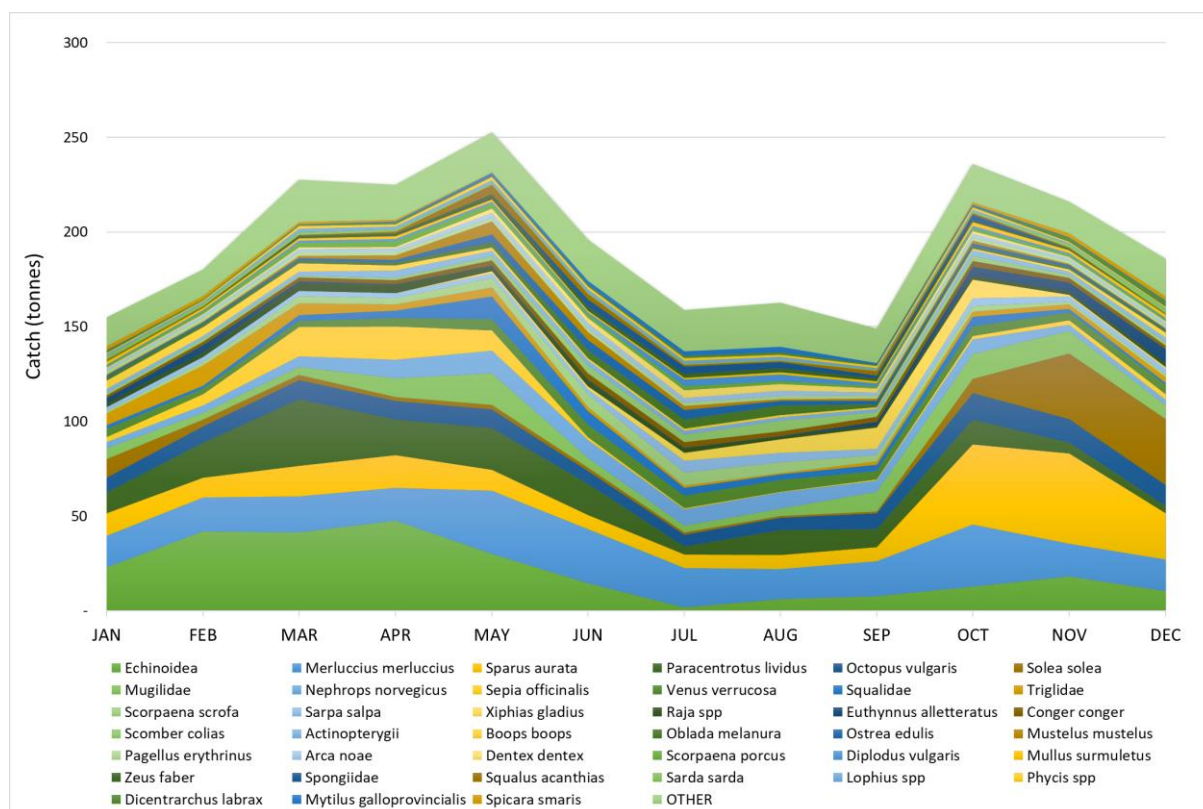
Figure 1. Monthly landing composition in the small-scale fisheries in 2022.

In 2022, the total value of landings of small-scale fishery was EUR 13,4 million, covering 18,3% of total value of landings. The catch is highly diverse, as is characteristic of Mediterranean mixed fishery, with 38 and 31 species covering 90% of landing weight and value, respectively, in 2022 (Fig. 2), compared with large scale fisheries where 4 and 16 species cover 90% of landing weight and value, respectively. Most of the landing weight and landing value in 2022 consisted of finfish, 63% and 54%, respectively. Top five species caught in SSCF in 2022 were gilthead seabream, Atlantic bluefin tuna, Norway lobster, European hake and common sole, representing 40% and 44% of landed volume and value, respectively. Most of the small-scale fishery's catch is sold on the local market, and income is often used as the addition to the home budget and providing food security. This is the main reason for negative economic indicators in these segments, but for some fishers in these segments, commercial benefit is not even a priority since they have other sources of income.
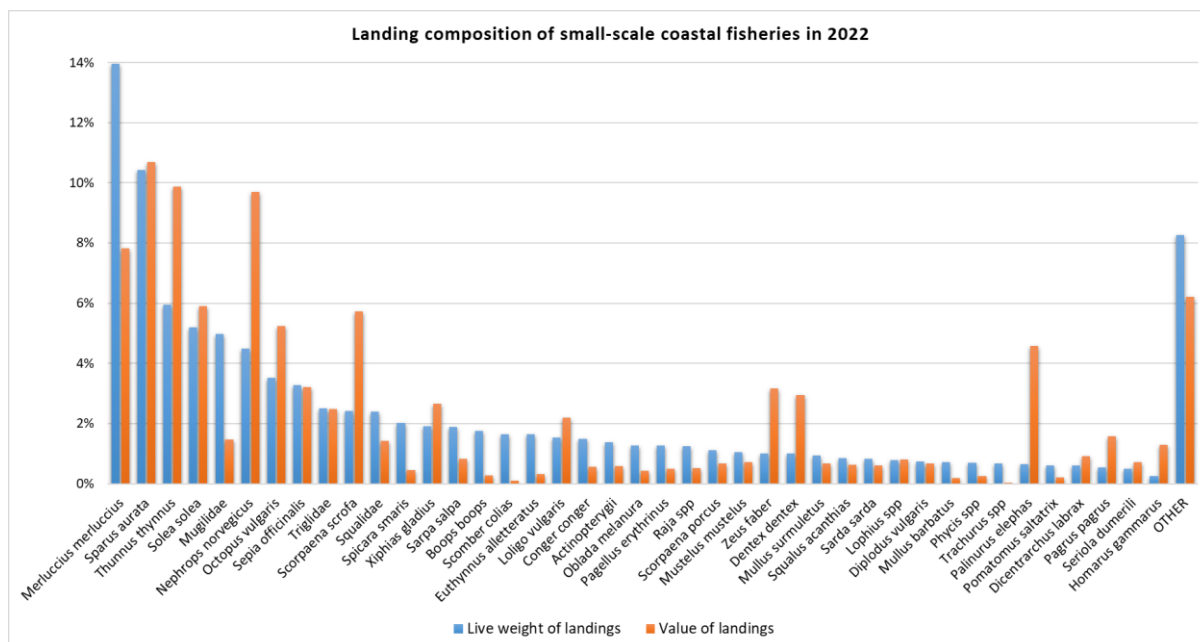
Figure 2. Landing composition of small-scale coastal fisheries in 2022.

Table 6. Characteristics of small-scale coastal fisheries in 2022.

Fleet segment		Number of vessels	Days at sea (DAS)	Landing (tonnes)	DAS per vessel	LPUE*
DFN	VL0006	346	42.184	284,81	122	7
	VL0612	698	86.613	737,23	124	9
FPO	VL0006	47	3.991	21,09	85	5
	VL0612	125	16.680	120,29	133	7
HOK	VL0006	88	5.612	36,36	64	6
	VL0612	251	18.345	377,84	73	21
PGP	VL0006	2923	39.450	109,84	13	3
	VL0612	812	11.719	46,36	14	4
PMP	VL0006	29	2.965	19,76	102	7
	VL0612	26	2.943	43,25	113	15

LPUE - Landing (kg) per DAS

A distinctive local character of the use of the fishing gears and target assemblage could be noticed in a regional distribution of the vessels from different SSCF fleet segments. More than half of the vessels (78%) from the FPO fleet segment are from coastal counties well known for the tradition of trap fishery – Primorje-Gorski Kotar, Lika-Senj County and to a lesser extent Zadar County. Also, 70% of total landing of Norway lobster from small scale fleet was landed by FPO vessels from Primorje-Gorski Kotar County in 2022. Around 41% of vessels from the HOK fleet segment are situated in Split-Dalmatia County while 57% of total landed volume of swordfish and 55% of hake was landed by vessels from this county. Tradition of gillnet fishing of the Istria region, especially targeting common sole is reflected in share of gillnets in Istria County (27% of total number of vessels in DFN fleet segment) so as in share of landed volume of common sole (89% of total landing of common sole landed by vessels from Istria County, 90% with gillnets).

Even though indicators presented in Section F show a certain level of imbalance, DFN segment is not included in the Action plan as Croatia considers that addressing the capacity of the most important fleet segments in terms of percentage of landings and activity is the issue of priority. With very low catch and landing values, the DFN segment is primarily highly artisanal and important in terms of social and economic elements for local population and communities, and actions in that segment are envisaged in future years, primarily by way of regulation of their activity. It is also expected that this fleet segment shall in the forthcoming years be the one mostly encompassed by measures of diversification of activities and provision of services complementary to fisheries.

D. Small-scale fleet previously categorized 'for personal needs'

Prior to its accession to the EU Croatia had a very specific category of non-commercial fishery that was transferred to the commercial category in 2015, pursuant to regulations in force. The transition process of their full registration ended in April 2015, while the administrative process of licensing followed throughout 2016. These vessels' licence holders are not full-time fishers, nor do they depend on fishing activity and only perform it in very specific places and in very specific times. This is the exact reason why they fall into a separate category of commercial fleet that is nationally defined by the Marine Fisheries Act and limited both in catch and fishing gears. According to the list of vessels that have been designated for granting licences under conditions set by national legislation, the capacity of these vessels was included in the fleet register in 2015. However, most of the vessels remained inactive in 2015 and 2016, as the licences were not issued due to the prolonged administrative procedure and Fisheries Information System updating.

Following the transfer from the previous non-commercial fishery into the commercial one, Croatia included the small-scale vessels for personal needs into the national sampling scheme within the amended National Data Collection Programme. With regards to the Data Collection Framework fleet segment categorization, all these vessels fall under the polyvalent passive gears segment (PGP), but they are not full-time engaged in the fishery and most of them have very limited activity. Considering the above mentioned constrains, Croatia conducted the required data collection and include in the analysis of active vessels the limited share of the segment which was active during the period 2016-2022. Characteristics of the PGP fleet segment in 2022, including the active small-scale vessels that entered the commercial fleet in 2015, are shown in Table 7.

It is important to mention though that this fleet category including the vessels previously operating for personal needs is kept as a ring-fenced category, with specific requirements and constrains. The catches of this particular fleet and their possibilities to market the fish as well as the gears allowed are strict and technical measures foresee the possibility to exercise this activity only on a local scale. However, as this has been the traditional category existing prior to the accession, the social needs are of particular concern. With all constrains of the operation of this fleet and their particular social and traditional characteristics, it cannot be expected that they are economically viable, and the activity they show does not indicate a substantial impact on the resources (given their very sporadic and very limited catches and manner of operation). Albeit their number might indicate importance, this is assessed as a skewed indication since their overall activity does not correspond to the activity of the fishers that are engaged in full or even half-time fisheries. Additionally, owners of the licenses for this particular fleet are not envisaged to be beneficiaries of public aid.

It should be noted that the PGP segment is broader and also includes vessels not falling into this particular category of vessels transferred from the non-commercial to commercial category, but also other "strictly" commercial vessels using the same gears (15 vessels in 2022 corresponding to 0,4% of PGP vessels, which landed almost 10% of PGP segment landing in 2022). In 2022, number of the vessels in a ring-fenced category including those transferred from the non-commercial category however was in total 3.720.

Table 7. Characteristics of PGP vessels 'for personal needs' in 2022.

Fleet segment		Number of vessels	Total GT	Total kW	Average age	Average length (m)	Share of vessels in active fleet, %	Share in total landing weight, %	Share in total landing value, %
PGP	VL0006	2.921	2.542,39	18.782,55	42	4,7			
PGP	VL0612	799	1.819,72	18.976,34	44	6,8	60,2%	0,2%	0,9%
Total		3.720	4.362,11	37.758,89	42	5,2			

1.2 Link with fisheries

In 2022, purse seine segment (PS) continued to be the most important fleet segment in terms of share in landing weight (90% and 50% of total landings weight and value, respectively) with 2,6% of total number of active vessels. This segment includes vessels which remain active the entire year and fishing activity represents the main commercial activity.

The demersal trawls (DTS) are the second most important in terms of shares in landings weight, as they constitute 5,8% and 23% share in landings weight and value, and 5,2% of active fleet in 2022. The main fleet segments in terms of landings weight and value in Croatia are purse seiners and demersal trawlers, with 96% share in landings, 73% in landings value and 65% of fuel consumption.

The largest number of vessels in the in main commercial fleet are active in driftnet and fixed nets segment (DFN, in Croatia fixed nets include gillnets and trammel nets, 1.057 active vessels or 17% of the active fleet). Highly seasonal activity of the DFN segment indicates strong dependency on activities other than fishery, which leads to the strong conclusion that fishing is a secondary activity for some of the licence holders. This is further emphasized by the fact that the total landings of DFN segment represent 1,7% of total landings, indicating the lower levels of fishing impact compared to LSF. The same is applicable for hook and line gears (HOK) and miscellaneous active gear (MGO), that together constitute almost 11% of active fleet, but their share in landings is 1,8% and 11,7% in terms of volume and value of landings, respectively. This is also since these fleet segments are composed almost entirely of vessels less than 12 m LOA whose activity is largely seasonal and operate on local basis. In majority of cases, these activities are not the main source of income for the licence owner, and the fleet displays highly seasonal character (Table 8).

The PGP segment, as described in the previous chapter D, which includes the largest number of vessels, is constituted mainly of small-scale vessels "for personal needs" transferred to the commercial category in 2015, and gradually activated during 2016. This segment is managed as a specific fleet category with catch and gear restrictions and special licences and is important as a specific social and traditional category.

Table 8. Characteristics by fishing technique in 2022.

Fishing technique	No. vessels	Total GT	Total kW	Landing weight (thousand tonnes)	Landing value (million EUR)	Energy consumption (thousand tonnes)	Share in active fleet	Share in landing weight	Share in landing value	Share in energy consumption
DFN	1.057	2.940,18	49.873,87	1,05	7,09	4,08	17,1%	1,7%	9,7%	16,9%
DRB	22	271,20	3.654,50	0,17	0,95	0,38	0,4%	0,3%	1,3%	1,6%
DTS	320	7.287,51	48.564,62	3,66	16,66	8,85	5,2%	5,8%	22,8%	36,7%
FPO	172	388,14	8.500,40	0,14	1,83	0,82	2,8%	0,2%	2,5%	3,4%
HOK	339	1.228,51	31.508,01	0,41	3,42	1,98	5,5%	0,7%	4,7%	8,2%
MGO	321	418,57	8.861,73	0,70	5,11	0,60	5,2%	1,1%	7,0%	2,5%
PGP	3.735	4.403,02	38.555,07	0,16	0,79	0,40	60,4%	0,2%	1,1%	1,6%
PMP	55	112,66	2.202,38	0,06	0,40	0,10	0,9%	0,1%	0,6%	0,4%
PS	161	14.381,40	57.643,65	56,33	36,86	6,87	2,6%	89,9%	50,4%	28,5%
TOTAL	6.182	31.431,19	249.364,23	62,68	73,12	24,09				

Landings in 2022 included 125 species in total. The table below lists the most important ones in terms of quantity and value. In 2022, several small-pelagic species accounted for 90% in total landing (sardine, anchovy, Atlantic chub mackerels and Jack and horse mackerels), and 24 species for over 90% of landing value (Table 9). Quantities landed have been stable over time, with the share of small pelagic species targeted in purse seine fisheries, sardine and anchovy, by far dominating the overall structure (85% of total landing weight in 2022). Small pelagic species also constituted the most important species in terms of value, accounting for almost 50% of total landing value. Considering demersal fishery, main species targeted by demersal trawling, i.e., hake, deep-water rose shrimp, Norway lobster and red mullet, account for 4,6% in terms of quantity, but over 18% in terms of the value (Table 9). While total landed volume increased in 2022 compared to 2021 by only 2% amounting to 62,7 thousand tonnes, landing value increased by 18% and amounted to EUR72,12 million. This year was characterized by recovery of market and distribution channels which were largely disrupted in the period 2020-2021 due to global pandemic, while increase in fish prices in 2022 was necessary to mitigate the effects of the energy crisis and costs increase caused by the war in Ukraine.

Table 9. Species representing over 90% of Croatian landing weight and value in 2022 (ranked by share in landing value).

	Species	Species FAO code	Total landing weight (tonnes)	Share in landing weight	Δ 2022 to 2021	Total landing value (million EUR)	Share in landing value	Δ 2022 to 2021
1.	European pilchard(=Sardine)	PIL	39.241,80	62,6%	-3%	21,62	29,6%	15%
2.	European anchovy	ANE	13.912,01	22,2%	20%	13,04	17,8%	26%
3.	European hake	HKE	1.180,93	1,9%	11%	4,92	6,7%	21%
4.	Norway lobster	NEP	273,34	0,4%	9%	4,40	6,0%	27%
5.	Deep-water rose shrimp	DPS	759,95	1,2%	3%	2,71	3,7%	38%
6.	Gilthead seabream	SBG	229,46	0,4%	24%	1,75	2,4%	30%
7.	Sponges	SPO	15,85	0,0%	-29%	1,59	2,2%	-26%
8.	Common octopus	OCC	137,27	0,2%	5%	1,52	2,1%	36%
9.	European squid	SQR	134,58	0,2%	37%	1,43	2,0%	40%
10.	Atlantic bluefin tuna	BFT	109,29	0,2%	31%	1,35	1,8%	59%
11.	Red mullet	MUT	646,68	1,0%	-16%	1,26	1,7%	-4%
12.	Common sole	SOL	140,20	0,2%	-12%	1,18	1,6%	-15%
13.	John dory	JOD	49,15	0,1%	-7%	1,14	1,6%	11%
14.	Red scorpionfish	RSE	59,18	0,1%	15%	1,04	1,4%	31%
15.	Warty venus	VEV	58,53	0,1%	-13%	0,86	1,2%	2%
16.	Atlantic chub mackerel	VMA	1.666,67	2,7%	46%	0,82	1,1%	55%
17.	Monkfishes nei	MNZ	97,61	0,2%	-13%	0,76	1,0%	6%
18.	Sea urchins, etc. nei	URX	255,65	0,4%	17%	0,75	1,0%	31%
19.	Common cuttlefish	CTC	100,76	0,2%	9%	0,73	1,0%	21%
20.	Horned and musky octopuses	OCM, EDT, EOI	174,67	0,3%	-8%	0,69	0,9%	9%
21.	Common spiny lobster	SLO	11,73	0,0%	28%	0,62	0,8%	60%
22.	Gurnards, searobins nei	GUX	75,99	0,1%	-24%	0,56	0,8%	-26%
23.	Jack and horse mackerels nei	JAX, HMM, HOM	1.058,13	1,7%	-13%	0,52	0,7%	-4%
24.	Common dentex	DEC	23,04	0,0%	9%	0,50	0,7%	28%
	Other species		2.268,93	3,6%	-1%	7,35	10,0%	15%
	Total landing		**62.681,42**		**2%**	**73,12**		**18%**

FAO code changed to VMA in 2016 (previously Pacific chub mackerel - MAS).

In the further description of fleet segments, a métier approach was taken; segments selected in ranking by effort, landing weight and value are identified as the most important fleet segments in terms of their contribution to total landing, landing value and effort (Table 11).

Out of 23 clustered fleet segments, 11 segments were selected by the ranking procedure as most important segments in 2022 in terms of contribution to landing and effort, as they constitute more than 90% of total landing, landing value and effort. These segments are the following: purse seiners (PS) from 12 to 40 m LOA, demersal trawlers (DTS) from 6 to 40 m LOA, fixed netters (DFN) from 6 to 12 m LOA, hooks and lines vessels (HOK) from 6 to 12 m LOA and vessels with other active gears (MGO) less than 12 m LOA.

The most important fleet segment in terms of contribution to total landings is purse seiners from 24 to 40 m LOA. This fleet segment accounted for 49,4% of landings in 2022. Overall, purse seine segments with 90% of landing weight and over 50% of landing value in 2022 form the backbone of Croatian fisheries. These fleet segments catch mainly small pelagic fish, targeting sardines and anchovies, and fall under the provisions of the multiannual management plan for small pelagics in GSAs 17 and 18 (and previously, emergency measures) as adopted under the GFCM. The effect of the measures foreseen by the GFCM framework, further strengthened by national measures going beyond it, is continuous decreasing trend in the overall landing of sardine and anchovy. In comparison to the baseline 2014, the period 2015-2022 shows a constant decreasing trend of landings due to implementation of management measures stemming from the GFCM Management plan and a set of ambitious national measures. Overall, average landing of small pelagic species in the period 2014-2022 is 59,5 tonnes (Table 10, Fig. 3). Landing ratio between the two target species is on average 80% in favour of sardine. However, ratio between the two species shows a clear trend of increase of the share of anchovy within the total catch, with the highest share of 26% in 2022.
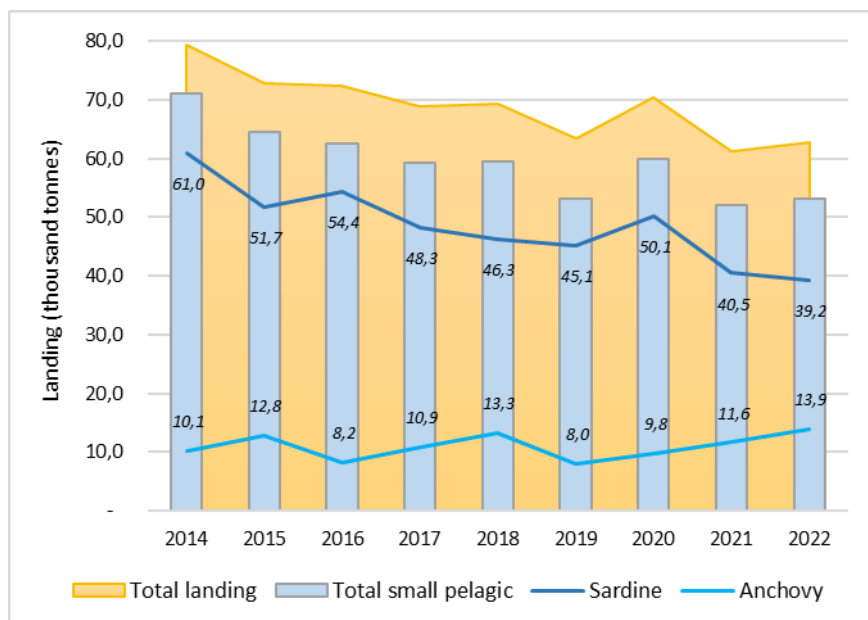
Figure 3. Trends in landing of small pelagic species in the period 2014-2022.

Table 10. Annual decrease in the landing (tonnes) of small pelagic species from 2014 to 2022.

Small pelagic species	Landing (tonnes)									Δ '22 to '21	Δ '22 to avg. 14-21	Δ '22 to '14
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
Sardine	60.974,45	51.729,58	54.368,33	48.333,44	46.267,11	45.134,11	50.133,50	40.485,31	39.241,80	-3%	-21%	-36%
Anchovy	10.122,85	12.785,11	8.235,78	10.880,35	13.250,81	7.994,60	9.781,24	11.620,81	13.912,01	20%	31%	37%
Σ	**71.097,30**	**64.514,69**	**62.604,11**	**59.213,79**	**59.517,92**	**53.128,71**	**59.914,74**	**52.106,12**	**53.153,81**	*2%*	*-12%*	*-25%*
Share in total landing	89,5%	88,5%	86,6%	86,0%	85,8%	83,9%	85,2%	85,2%	84,8%			

The largest number of vessels in the main commercial fleet were active in fixed nets segment (DFN, in Croatia fixed nets – gill nets and trammel nets, 1.057 active vessels or 17% of the main commercial fleet), while only 1,7% of landing volume contributes to 9,7% of landing value. Their actual activity is highly seasonal, and the calculation of different parameters is skewed due to the nature of this activity. The most important segment in this gear class was the one between 6 and 12 m LOA, with 698 vessels, representing around 11% of the active fleet. Only fixed nets are used in Croatia (trammel nets and gillnets), and they operate in shore and coastal waters, in limited areas and during limited periods. These fishers had around 120 sea days yearly per vessel and in 2022 caught on average 9 kg per day at sea.

Although 60,4% of the active fleet is made up of PGP vessels, in 2022 their contribution to landing weight and value was 0,2% and 1%, respectively, in line with legal limitations on catch related to small-scale vessels for personal needs. In comparison to previous year, weight and value decreased to previous levels, therefore the increase in 2020 can be attributed to COVID-19 pandemics and possible compensation of loss in alternative sources of income, such as tourism and increased need for food supply for family and local community. In any case, Croatia will closely follow these trends in the coming years.

In the further analysis, the specific impact of the small-scale fleet in relation to its activity and social context is considered. Croatia is fully in line with the provisions of the Basic regulation that calls for the recognition of the specificities of the small-scale fleet, considering all the relevant provisions and elements of the fleet policy. Additionally, catch reporting requirements in Croatia for vessels less than 10 m LOA are based on monthly catch reports that are particularly suited for passive gears.

Table 11. Characteristics of fleet segments in 2022 ranked by share in total landing value. Selection of fleet segments that achieve 90% of the total landing, landing value and effort.

Segments highlighted in blue constitute for over 90% of any variable.

Fleet segment		Number of vessels	Tonnage GT	Engine power kW	Landing weight (tonnes)	Landing value (million EUR)	Days at sea	Fuel consumption (tonnes)	LPUE Landed weight per sea day (kg/day)	Landed value per sea day (EUR/day)	Days per vessel	Energy consumed per landed tonne (l/tonne)	Share of vessels in active fleet	Share in landing weight	Share in landing value	Share in effort (GT Fish days)
PS	VL2440	61	10.069	35.253	30.992,80	19,89	9.650	4.285	3.212	2.061	158	138	1,0%	49,4%	27,2%	40,9%
PS	VL1824	39	3.351	14.368	15.574,75	10,38	6.216	1.762	2.506	1.671	159	113	0,6%	24,8%	14,2%	14,5%
DTS	VL1218	154	2.807	23.762	1.503,13	6,64	15.930	3.388	94	417	103	2.254	2,5%	2,4%	9,1%	7,0%
PS	VL1218	36	803	6.218	9.215,66	6,08	4.767	742	1.933	1.275	132	81	0,6%	14,7%	8,3%	2,9%
DFN	VL0612	698	2.403	43.330	737,23	5,28	86.613	3.658	9	61	124	4.962	11,3%	1,2%	7,2%	6,3%
DTS	VL1824	30	2.236	8.346	1.058,32	5,05	5.166	2.859	205	977	172	2.702	0,5%	1,7%	6,9%	11,3%
HOK	VL0612	251	1.145	29.858	377,84	3,11	18.345	1.872	21	170	73	4.955	4,1%	0,6%	4,3%	1,9%
DTS	VL0612	128	1.101	12.688	729,93	3,10	11.965	1.549	61	259	93	2.122	2,1%	1,2%	4,2%	2,8%
MGO	VL0006	279	235	5.260	442,98	2,88	31.494	323	14	91	113	729	4,5%	0,7%	3,9%	0,6%
MGO	VL0612	42	183	3.602	252,05	2,23	5.259	278	48	424	125	1.102	0,7%	0,4%	3,1%	0,7%
DTS	VL2440	8	1.144	3.769	373,03	1,88	1.412	1.049	264	1.329	177	2.813	0,1%	0,6%	2,6%	5,1%
DFN	VL0006	346	345	4.530	284,81	1,64	42.184	345	7	39	122	1.210	5,6%	0,5%	2,2%	0,9%
FPO	VL0612	125	337	7.332	120,29	1,57	16.680	735	7	94	133	6.108	2,0%	0,2%	2,2%	1,5%
DRB	VL1218	13	191	2.478	117,48	0,66	1.487	268	79	441	114	2.285	0,2%	0,2%	0,9%	0,6%
PS	VL0612	25	159	1.805	550,86	0,51	2.515	84	219	201	101	153	0,4%	0,9%	0,7%	0,4%
PGP	VL0006	2.923	2.544	18.808	109,84	0,50	39.450	190	3	13	13	1.730	47,3%	0,2%	0,7%	0,9%
HOK	VL0006	88	83	1.650	36,36	0,31	5.612	105	6	54	64	2.894	1,4%	0,1%	0,4%	0,1%
DRB	VL0612	9	80	1.176	49,16	0,30	818	116	60	363	91	2.366	0,1%	0,1%	0,4%	0,2%
PGP	VL0612	812	1.859	19.747	46,36	0,29	11.719	206	4	25	14	4.450	13,1%	0,1%	0,4%	0,7%
FPO	VL0006	47	51	1.168	21,09	0,26	3.991	90	5	64	85	4.268	0,8%	0,0%	0,4%	0,2%
PMP	VL0612	26	84	1.443	43,25	0,23	2.943	39	15	77	113	904	0,4%	0,1%	0,3%	0,2%
PMP	VL0006	29	28	759	19,76	0,18	2.965	66	7	60	102	3.316	0,5%	0,0%	0,2%	0,1%
DFN	VL1218	13	192	2.014	24,44	0,17	1.039	77	24	161	80	3.155	0,2%	0,0%	0,2%	0,3%
TOTAL		**6.182**	**31.431**	**249.364**	**62.681,42**	**73,12**	**328.220**	**24.088**	**191**	**223**	**53**	**384**				

Despite the fact that many different species are caught in the Adriatic Sea, the main Croatian commercial fishing fleet, which is composed of aforementioned fleet segments, is only dependent on 20 to 25 commercial species, including the following:

- Small pelagic fish (sardine, anchovy, Atlantic chub mackerel, Jack and horse mackerels) targeted by purse seiners,
- Demersal fish (hake, red mullet), crustaceans (deep-water rose shrimp, Norway lobster) and cephalopods (horned and musky octopuses, various squid) targeted by demersal trawlers,
- Large pelagic fish, targeted by purse seiners (Bluefin tuna) and hook and line vessels, including pelagic longline, (Bluefin tuna and swordfish), and
- Other species (common octopus, common sole, gilthead seabream, mullets, red scorpionfish, gurnards, warty venus, sea urchins and sponges) targeted by fixed netters and vessels using mobile gears.

Main target species of the most significant fleet segments in 2022 are presented in the table below (Table 12). In 2022, the majority of landings of purse seiners from 24 to 40 m LOA included sardine (71%) and anchovy (23,6%) and similarly for purse seine vessels from 18 to 24 m LOA, sardine (63,3%) and anchovy (29,6%). Similar species landing composition can be observed in all PS segments above 12 m LOA, however purse seiners under 12 m LOA have a different landing composition and do not target as much sardine and anchovy. This is a result of different purse seine nets used in areas closer to the coast (so called 'small purse seines'), with different mesh sizes, which target species such as Atlantic bonito and Greater amberjack or mullets). Also, PS segments under 12 m LOA have a high contribution of other gears in their landing, such as fixed nets, longlines, etc.

For demersal trawlers, the composition in segments from 18 to 40 m LOA mainly includes deep-water rose shrimp, hake, red mullet, and Norway lobster. In the demersal trawl segments from 12 to 18 m LOA and 6 to 12 m LOA the main species landed were red mullet, European hake, and deep-water rose shrimp, while Norway lobster, European squid and horned and musky octopuses are also caught in larger quantities. The differences between different segments of the same gear groups can be explained by the fishing grounds exploited (smaller segments tend to stay closer to shore, use gears other than bottom trawl nets and exploit different fishing grounds, whereas larger segments tend to operate in areas further from the shore).

Further, the fixed nets segment from 6 to 12 m LOA, which represents the largest number of vessels active in the main commercial fleet, has a total landing of 1% which contributes with 7,2% to total landing value. The main species targeted are gilthead seabream, common sole and European hake, and a mixture of other species (common cuttlefish, mullets, red scorpionfish etc.).

MGO segment, selected for its high ranking in the landing value, includes a variety of traditional mobile and other active gears and practices, such as highly selective hand gathering gears and harpoon, which have different target species. Shellfish are mainly targeted, including warty venus and European flat oyster, followed by Cephalopods such as common octopus. In terms of hand gathering gears, sponges and red coral are traditionally collected, while in recent years since 2018 there has been a significant increase in commercial exploitation of sea urchins.

HOK segment from 6 to 12 m LOA in 2022, which includes vessels using set longlines, mainly targeted demersal fish such as European hake and gurnards, however vessels with Bluefin tuna and swordfish quota are also included in this segment.

Table 12. Target species of selected fleet segments in 2022 (most important species ranked by contribution to landing weight).

Fleet segment (FS)		Target species	Species FAO code	Landing weight (tonnes)	Landing value (million EUR)	Share in FS landing weight	Share in FS landing value	Share in total species landing
DFN	VL0612	Gilthead seabream	SBG	108,68	0,83	14,7%	15,7%	47,4%
		Common sole	SOL	82,01	0,69	11,1%	13,1%	58,5%
		European hake	HKE	72,10	0,30	9,8%	5,7%	6,1%
		Common cuttlefish	CTC	38,84	0,28	5,3%	5,4%	38,6%
		Mullets nei	MUL	32,27	0,07	4,4%	1,3%	32,3%
DTS	VL0612	European hake	HKE	170,30	0,71	23,3%	22,9%	14,4%
		Red mullet	MUT	154,65	0,30	21,2%	9,7%	23,9%
		Horned and musky octopuses	OCM, EDT, EOI	59,01	0,23	8,1%	7,5%	33,8%
		Deep-water rose shrimp	DPS	51,08	0,18	7,0%	5,9%	6,7%
		Picarel	SPC	47,02	0,08	6,4%	2,6%	51,0%
		Norway lobster	NEP	33,78	0,54	4,6%	17,5%	12,4%
DTS	VL1218	European hake	HKE	405,00	1,69	26,9%	25,4%	34,3%
		Red mullet	MUT	349,47	0,68	23,2%	10,2%	54,0%
		Deep-water rose shrimp	DPS	208,34	0,74	13,9%	11,2%	27,4%
DTS	VL1824	Deep-water rose shrimp	DPS	358,71	1,28	33,9%	25,4%	47,2%
		European hake	HKE	266,87	1,11	25,2%	22,0%	22,6%
		Red mullet	MUT	92,02	0,18	8,7%	3,5%	14,2%
		Norway lobster	NEP	76,59	1,23	7,2%	24,4%	28,0%
DTS	VL2440	Deep-water rose shrimp	DPS	141,55	0,51	37,9%	26,9%	18,6%
		European hake	HKE	84,37	0,35	22,6%	18,7%	7,1%
		Norway lobster	NEP	29,19	0,47	7,8%	25,0%	10,7%
		Red mullet	MUT	28,34	0,06	7,6%	2,9%	4,4%
HOK	VL0612	European hake	HKE	117,43	0,49	31,1%	15,7%	9,9%
		Atlantic bluefin tuna	BFT	106,85	1,32	28,3%	42,4%	97,8%
		Swordfish	SWO	33,26	0,34	8,8%	11,0%	86,2%
		Gurnards, searobins nei	GUX	30,32	0,22	8,0%	7,2%	39,9%
MGO	VL0006	Stony sea urchin	URM	105,72	0,25	23,9%	8,8%	61,9%
		Sea urchins, etc. nei	URX	99,28	0,29	22,4%	10,1%	38,8%
		Common octopus	OCC	62,40	0,69	14,1%	24,0%	45,5%
		Warty venus	VEV	49,81	0,73	11,2%	25,4%	85,1%
MGO	VL0612	Sea urchins, etc. nei	URX	149,84	0,44	59,4%	19,6%	58,6%
		Stony sea urchin	URM	65,02	0,15	25,8%	6,9%	38,1%
		Sponges	SPO	14,36	1,44	5,7%	64,7%	90,6%
		Warty venus	VEV	5,74	0,08	2,3%	3,8%	9,8%
PS	VL1218	European pilchard(=Sardine)	PIL	6.958,65	3,83	75,5%	63,1%	17,7%
		European anchovy	ANE	1.917,50	1,80	20,8%	29,6%	13,8%
PS	VL1824	European pilchard(=Sardine)	PIL	9.855,37	5,43	63,3%	52,3%	25,1%
		European anchovy	ANE	4.613,14	4,33	29,6%	41,7%	33,2%
		Atlantic chub mackerel	VMA	577,64	0,28	3,7%	2,7%	34,7%
		Jack and horse mackerels nei	JAX, HMM, HOM	301,11	0,15	1,9%	1,4%	28,5%
PS	VL2440	European pilchard(=Sardine)	PIL	22.051,05	12,15	71,1%	61,1%	56,2%
		European anchovy	ANE	7.302,68	6,85	23,6%	34,4%	52,5%
		Atlantic chub mackerel	VMA	883,42	0,43	2,9%	2,2%	53,0%
		Jack and horse mackerels nei	JAX, HMM, HOM	583,04	0,29	1,9%	1,4%	55,1%

Table 13. Changes in landing (tonnes) of main target species in the period 2013-2022.

Main target species	Species FAO code	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Share in total landing 2022	Δ 2022 to 2021	Δ 2022 to avg. 13-21
European anchovy	ANE	10.059,96	10.122,85	12.785,11	8.235,78	10.880,35	13.250,81	7.994,60	9.781,24	11.620,81	13.912,01	22,2%	20%	32%
Atlantic bluefin tuna	BFT	7,30	7,32	18,69	79,61	44,54	58,96	71,78	72,62	83,44	109,29	0,2%	31%	121%
Common cuttlefish	CTC	187,66	200,78	192,07	112,50	107,23	91,71	90,62	103,57	92,22	100,76	0,2%	9%	-23%
Deep-water rose shrimp	DPS	314,86	370,09	534,58	655,00	834,33	912,59	714,81	660,79	737,25	759,95	1,2%	3%	19%
Gurnards, searobins nei	GUX	70,86	82,60	100,11	91,52	95,69	115,06	119,56	114,05	99,46	75,99	0,1%	-24%	-23%
European hake	HKE	1.125,97	897,49	771,11	753,03	927,99	991,94	1.144,87	1.202,17	1.063,81	1.180,93	1,9%	11%	20%
Jack and horse mackerels nei	JAX, HMM, HOM	280,96	234,47	436,75	988,06	915,41	1.463,51	1.585,29	1.754,86	1.211,75	1.058,13	1,7%	-13%	7%
Mullets nei	MUL	110,19	82,18	91,59	120,57	120,13	104,17	118,59	91,01	99,01	99,82	0,2%	1%	-4%
Red mullet	MUT	1.101,64	1.168,42	1.144,14	972,52	1.001,40	842,21	747,91	762,40	767,97	646,68	1,0%	-16%	-32%
Norway lobster	NEP	299,83	344,55	303,10	237,21	200,97	231,60	266,21	237,72	251,20	273,34	0,4%	9%	4%
Common octopus	OCC	187,16	309,29	327,04	253,64	136,55	107,80	162,36	167,78	130,18	137,27	0,2%	5%	-31%
Horned and musky octopuses	OCM, EDT, EOI	576,46	669,25	501,42	371,11	362,57	322,07	236,03	314,81	189,56	174,67	0,3%	-8%	-56%
European pilchard(=Sardine)	PIL	56.898,98	60.974,45	51.729,58	54.368,33	48.333,44	46.267,11	45.134,11	50.133,50	40.485,31	39.241,80	62,6%	-3%	-22%
Gilthead seabream	SBG	74,26	94,24	140,59	168,27	165,91	133,93	127,01	131,57	184,75	229,46	0,4%	24%	69%
Common sole	SOL	251,84	193,62	276,55	189,59	230,94	216,46	198,18	213,88	158,61	140,20	0,2%	-12%	-35%
Picarel	SPC	147,13	114,21	102,56	107,41	101,64	87,22	74,95	90,38	98,43	92,23	0,1%	-6%	-10%
Sponges	SPO	23,60	20,93	27,05	20,06	26,93	30,85	25,61	27,12	22,25	15,85	0,0%	-29%	-36%
Swordfish	SWO	9,79	15,84	10,06	24,89	19,75	28,17	33,44	23,13	25,38	38,57	0,1%	52%	82%
Sea urchins, etc. nei	URM, URX	4,36	12,93	12,27	9,11	27,54	136,19	173,17	147,65	373,30	426,47	0,7%	14%	328%
Warty venus	VEV	70,44	111,42	122,23	126,96	101,72	93,15	77,62	57,80	67,26	58,53	0,1%	-13%	-36%
Atlantic chub mackerel	VMA	593,32	637,94	566,10	1.865,50	1.945,36	1.807,21	2.115,81	1.966,01	1.143,74	1.666,67	2,7%	46%	19%
Total catch main target species		**72.396,56**	**76.664,87**	**70.192,70**	**69.750,68**	**66.580,39**	**67.292,72**	**61.212,53**	**68.054,08**	**58.905,68**	**60.438,63**	**96,4%**	**3%**	**-11%**
Total catch		74.918,17	79.407,85	72.908,32	72.323,65	68.874,77	69.401,08	63.349,60	70.330,39	61.166,25	62.681,42	100,0%	2%	-11%

*BFT catch in PS fishery is not included in these figures since there is no landing per se.

Fishing opportunities of vessels using active gears in large-scale fisheries are highly dependent on catch and effort management measures which is evident from the monthly catch composition as shown in the figure below. Fishing activities of purse seiners catching small pelagic fish were completely prohibited from the end of December 2021 until mid-February 2022, in May and end of December 2022. Demersal fishery was significantly reduced in April, followed by a peak in mid-May until June, and decreasing during the summer period until November in line with spatio-temporal closures in 2022 affecting certain fishing areas, such as the Jabuka/Pomo Pit FRA and specific Croatian fishing zones.

Figure 4. Monthly landing composition of active gears in the large-scale fisheries in 2022.

1.3   *Data collection and fleet monitoring*

In 2013, Croatia started implementing the DCF in line with the applicable rules. All fleet segments with major contribution to the total catch of the Croatian fleet have been sampled for economic data with satisfactory response rates in each of the referent years. In 2021, referent year relevant for the presentation of economic indicators in this report, response rate of the main commercial fleet was satisfactory, allowing for a representative sample for the estimation of economic variables. Where possible, administrative sources were used to include data for all vessels (including landing income, energy consumption, energy costs and subsidies). However, subsidies on investments related to the decommissioning schemes are included in inactive segments, so they have no effect on the calculation of economic indicators. It needs to be noted that information on subsidies is not included in the calculation of revenue, in line with the guidelines.

Capacity, effort and landing data is collected for the entire fleet according to the Control Regulation and national legislation. Fishing reports are used for reporting on fishing activity for vessels below 12 m LOA using passive gears. Catch reporting requirements in Croatia for all vessels under 10 m LOA are based on monthly catch reports that are particularly suited for passive gears or the mobile application Catch report in which reports are submitted immediately upon return from the fishing trip. In 2023, a total of 510 vessels are submitting catch reports in real time - for fishing vessels using seine nets or have allocated BFT/SWO quota logbooks are submitted using mobile app mLogbook, while for vessels that are selling directly from the fishing vessel in the port catch reports are submitted using mobile app mCatchReport.

Small-scale vessels for personal needs, that were transferred to the commercial fleet in 2015 also fall under the national reporting requirement.

With regard to the 3.500 small-scale vessels which were transferred into the commercial SSCF in 2015, all these vessels fall under the polyvalent passive gears segment (PGP), however these fishers are not full-time engaged in fishery and most of them had very limited activity in 2015-2022. Therefore, economic indicators for the PGP segment should be taken with caution.

Since 2018, all modifications on fishing vessels in the Fleet Register are automatically transmitted to the Union Vessel Register following FLUX procedures. For the purpose of real time monitoring and control of the fishing fleet, Croatia has a national plan for the validation systems as per Article 109 (8) of the Control Regulation. The National Plan for the Implementation of the Validation and Verification System in Republic of Croatia was approved by Commission Implementing Decision (EU) 2015/2277 of 2 December 2015. During 2015 Croatia started implementing the VALID system which is continuously being developed further and is used to control data quality. The VALID system became fully operational in October 2018 including alarms and notifications for immediate detection of discrepancies. The system is constantly upgraded, and the set of alarms expanded.

In terms of data validation and quality, VALID automatic cross-check procedures operate in addition to local validations on data-entry and are based on several validation rules packages (EC core rules, DCF reporting validation rules, national VMS rules, fleet registrations/licensing, catch documentation rules, traceability rules etc.). In addition, statistical crosscheck procedures are performed prior to reporting according to data collection on-demand validation reports and internal procedures for statistical and reporting purposes for data end users (EC, ICCAT, GFCM, EUROSTAT, FAO etc.) under DCF and include specific rules developed for each report in order to verify and validate data.

In 2017, DG MARE performed an audit of the catch registration system in Croatia with an objective to assess whether the catch registration systems function effectively and comply with applicable regulations. As some shortcomings in the Croatian fisheries control system were identified, an Action plan with remedial actions was established and implemented and Croatia further upgraded the reporting system.

During 2018 a full traceability system of fisheries products up until first sale was established and implemented in 2019. During the course of 2018 and 2019 a series of workshops were organized to familiarize the sector with the new system, legislation and electronic reporting. This process started in 2016 by implementing an electronic transport document and linking first sale with logbooks and catch reports.

In 2016 the upgrading of the national FIS (Fisheries Information System) in regard to the fleet register and the new FIS module used for license issuing has been finalized. Both registers, fleet register and register of licences, are directly linked which enables efficient verification of data.

It needs to be stressed that in Croatia, there is an obligation of reporting entire catch and landing regardless of the vessels' length.

Mobile applications (mTransportDocument, mSalesNote, mCatchReport and mLogbook) are gradually being introduced since 2018, to facilitate reporting by the sector. After full implementation, the administrative burden of data entry into FIS should be significantly decreased hence more focus and resources will be dedicated to fleet monitoring and data validation. Plans for the future include installing sensors that notify when towing gear is in use as well as geo-locators for the passive gears.

In addition to obligations pursuant to Article 9 of the Basic Regulation, Croatia requires VMS on every demersal trawler (OTB) and shore seiner (SB), purse seiner (PS) and any vessel with dredges (DRB) regardless of their overall length. VMS is also obligatory for vessels with BFT and/or SWO quota, equipped with hooks, lines and longlines. Vessels with quota for recreational fisheries of BFT are also required to have VMS. Validation rules according to Art. 26(1), Art. 33(2) and Art. 47(1) of Commission Implementing Regulation (EU) No. 404/2011 have been set up accordingly. E-logbooks are obligatory for all demersal trawlers (OTB), purse seiners (PS) and all vessels with dredges (DRB) regardless of LOA as well as for all vessels with hooks, lines and longlines with BFT quota. VMS and e-logbook installation on authorized shore seiners and small purse seiners was conducted after the approval of the derogations based on the respective Management plans by the EC during 2018 and 2019.

At the beginning of 2023, 90% of large-scale commercial fleet was equipped with VMS devices (700 vessels) and under mandatory real time electronic catch reporting (680 vessels).

The VMS system outlines areas of special regulations of fishing or restricted areas (such as the FRA Jabuka/Pomo Pit, national parks etc.), and in combination with VALID alarms and EFCA alert reports, FMC employees monitor the movements of vessels on a daily basis and report possible irregularities in the operation of vessels to the fisheries inspection.

2. Section A2: Social and structural characteristics of the fleet and their impact on fleet performance

2.1 Fleet structure and social dimension

Considering social dimension in fisheries, Croatian fishing fleet faces multiple challenges: shortage of qualified labour force, the process of ageing of the vessel owners and emerging lack of intergenerational succession.

In 2022, the average age of the vessel owners in the Croatian fishing fleet was 52 years, excluding owners in small-scale artisanal fisheries segments "for personal needs" (most of the vessels in PGPVL0006 and PGPVL0612 segments). For this group of vessels (approximately 3.500 vessels), special, socially sensitive criteria were applied in ranking applicants for the specific fishing licence, namely, older applicants were given an advantage in the ranking so the average age of vessel owners in this segment is above 65 and therefore would significantly affect age indicators for the entire fleet.

In line with the DCF classification of age groups, 37% of vessel owners in Croatian fishing fleet belong to the age group 50-64 years, 30% to the age group 40-49 years, 12% are older than 65, and only 21% are younger than 40 years of age.
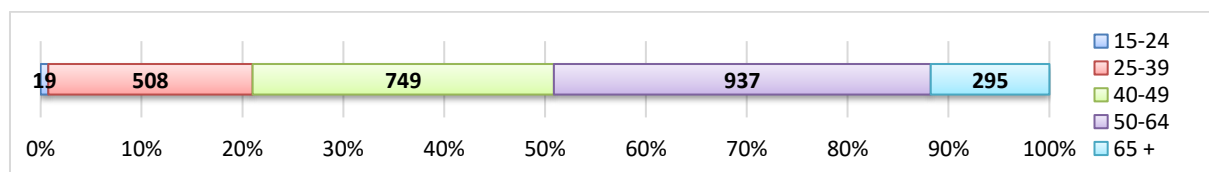
Figure 5. Age structure - number of vessel owners by age group in Croatian fishing fleet in 2022 (excluding owners in small-scale artisanal fisheries segments "for personal needs" and inactive vessel owners).

The median age of vessel owners for the entire fleet is 51 years. This age structure, with a predominance of fishers older than 40, is present in all length classes (Fig. 6).
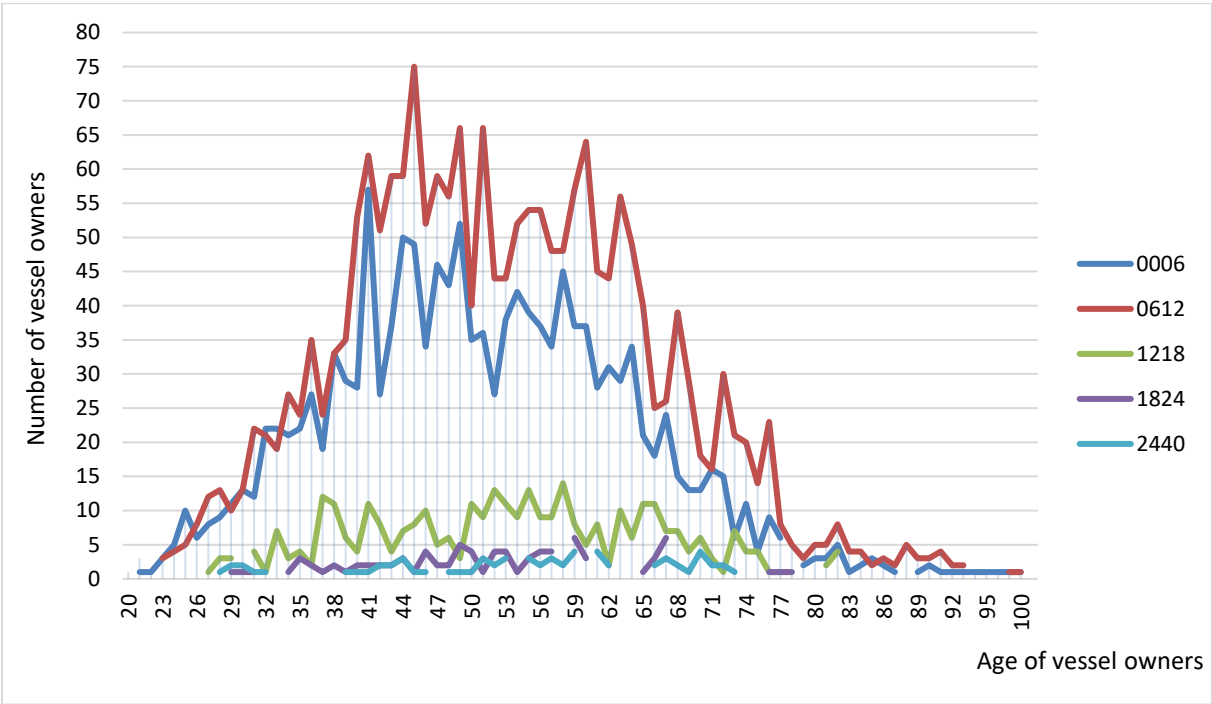
Figure 6. Age structure of vessel owners in Croatian fishing fleet by vessel length (VL) classes in 2022. *Vessel length classes - VL0006: <6 m, VL0612: ≥6 <12 m, VL1218: ≥12 <18 m, VL1824: ≥18 <24 m and VL2440: 24 <40 m (defined in Appendix 1).*

MGO and PMP segments have the most favourable age structure, where vessel owners are on average younger than 45 years of age. Vessels in these segments are below 12 m LOA, with one or two employees, attractive for younger fishers to start up a business. On the contrary, vessel owners in DTS and PS segments are in general older, but it should be considered that vessels in these segments provide jobs for on average 5-8 employees on-board per vessel, mostly of younger age.
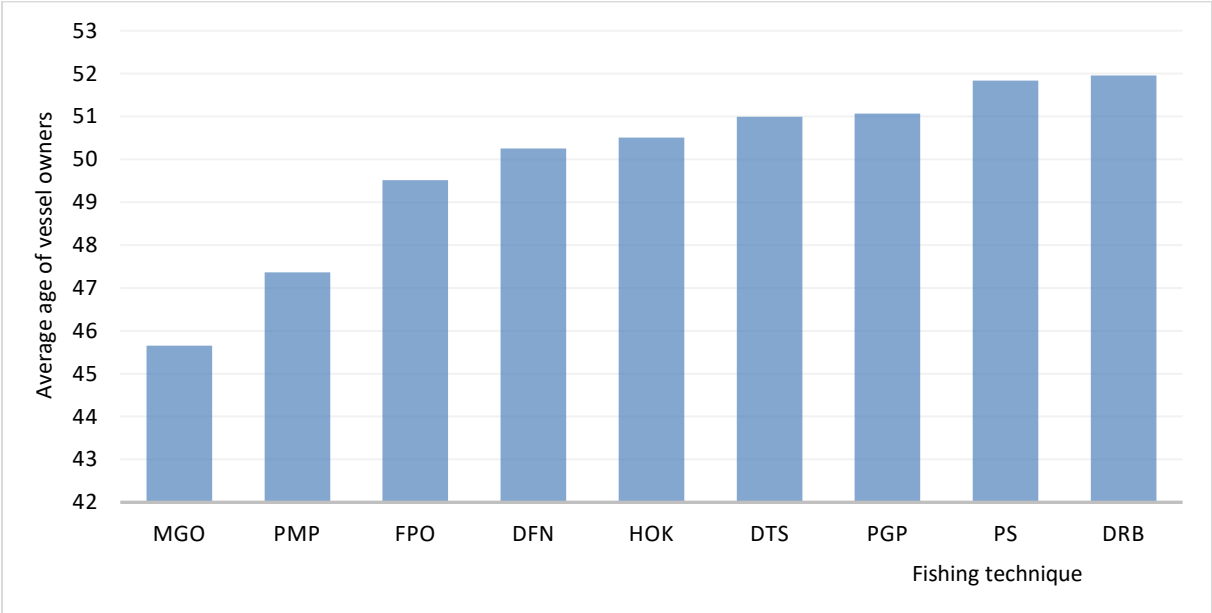
Figure 7. Average age of the vessel owners in the Croatian fishing fleet in 2022 by fishing technique.

Regardless of the age structure for specific segment, of the total number of young fishers in the Croatian fishing fleet in 2022 (around 530 persons up to 40 years of age[3]), 44% are in the DFN segment, 16% in MGO, 12% in HOK and 11,5% in DTS segment.
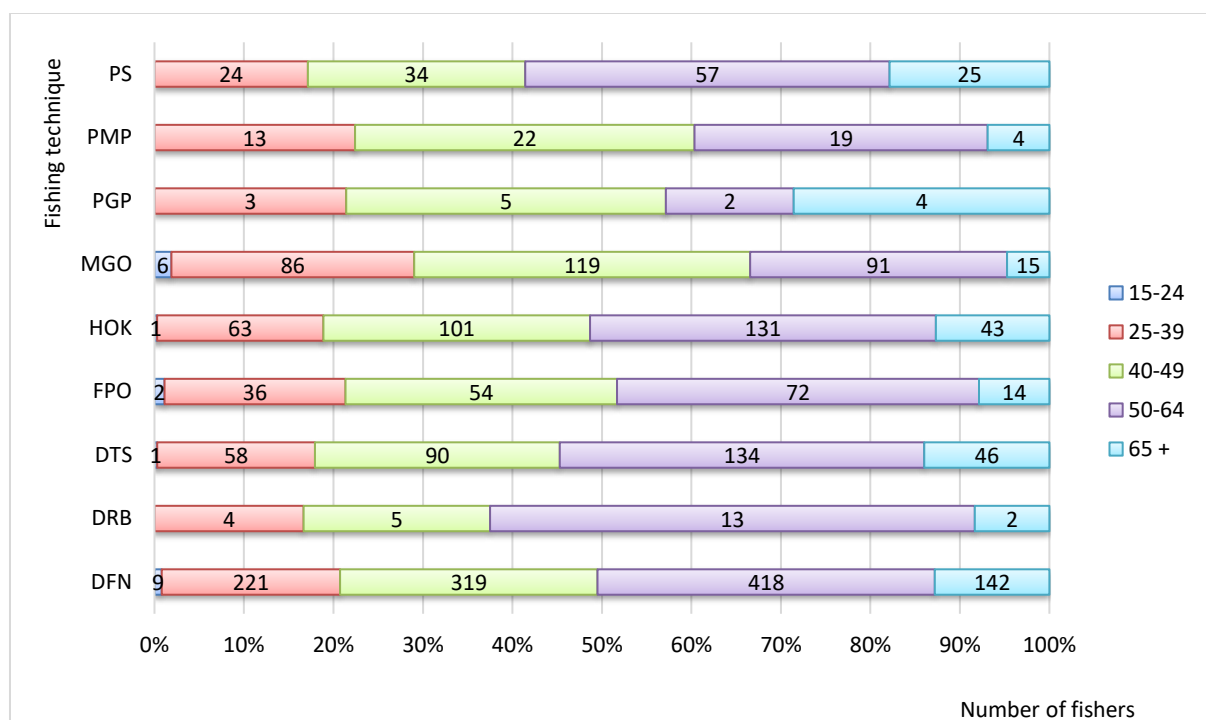
Figure 8. Number of vessel owners in the Croatian fishing fleet in 2022 by fishing technique and age category.

According to the social survey conducted by MA-DoF (2019), behind the process of ageing in the fishing fleet are complex reasons. Among others, non-competitive fish prices, insufficiently developed infrastructure, insufficient investment capacity when starting a business, harsh working conditions and uncertain or irregular income, and uncertainty due to managing decisions as well as global changes and shocks (COVID-19, war in Ukraine, global climate changes).

The fishing fleet's lack of qualified and reliable labour is becoming increasingly pronounced recently. According to the MA-DoF social survey (2019) half of the interviewed vessel owners expressed that they need to recruit new employees one or a few times a year. The results of the survey suggest that employees working on-board vessels in the large-scale fleet segments are more likely to consider changing professions. Fishers in small scale fleet segments, often the only ones working on-board, have expressed more social and cultural connections with the nature of the job in fisheries and are less likely to change profession, especially in cases of financial dependency on fisheries, but independently of their professional education.

In 2022, the average fishing vessel in the Croatian fishing fleet was 40 years old. Vessels in Croatian fishing fleet were traditionally made of wood while metal vessels, which are on average 28 years old, were introduced in the fleet in the recent period.

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[3] According to the Program for Fisheries and Aquaculture of the Republic of Croatia for the programming period 2021-2027
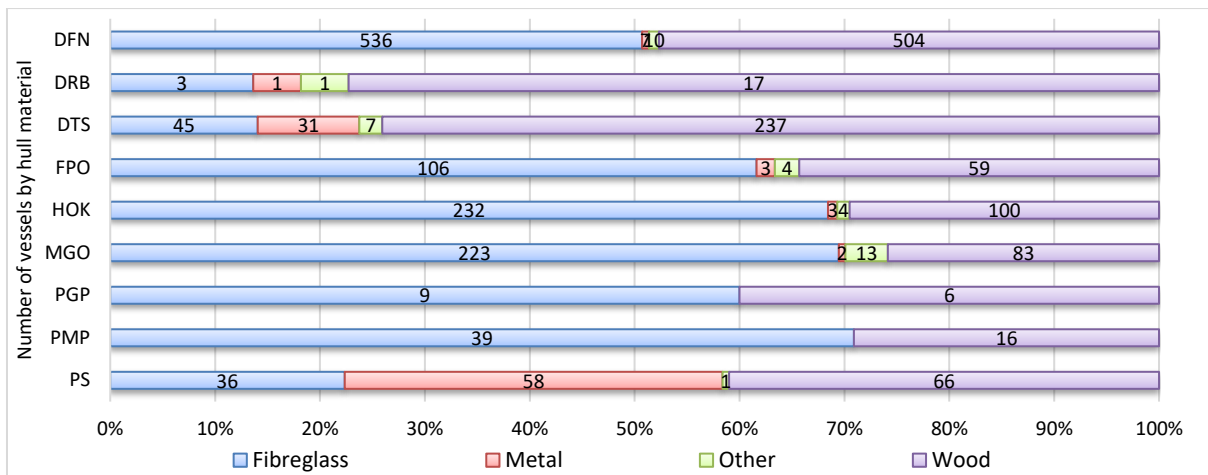
Figure 9. Number of vessels in the Croatian fishing fleet by hull material and fishing technique in 2022.

Table 14. Average age of the vessels in the Croatian fishing fleet by material used and fishing technique in 2022.

Fishing technique	Fibreglass	Metal	Other	Wood	Average (all materials)
DFN	30	47	28	47	39
DRB	30	29	31	41	38
DTS	30	34	29	48	44
FPO	28	44	41	50	36
HOK	27	26	36	53	34
MGO	26	20	19	43	30
PGP	30	-	-	61	43
PMP	26	-	-	40	30
PS	32	28	38	59	41

Newer, fiberglass vessels dominate in small-scale fleet segments, using mostly lines and pots. A specific type of vessels – fiberglass vessels with glass bottom are used for highly selective harpoon fishing, also in small-scale fleet segments (MGO).
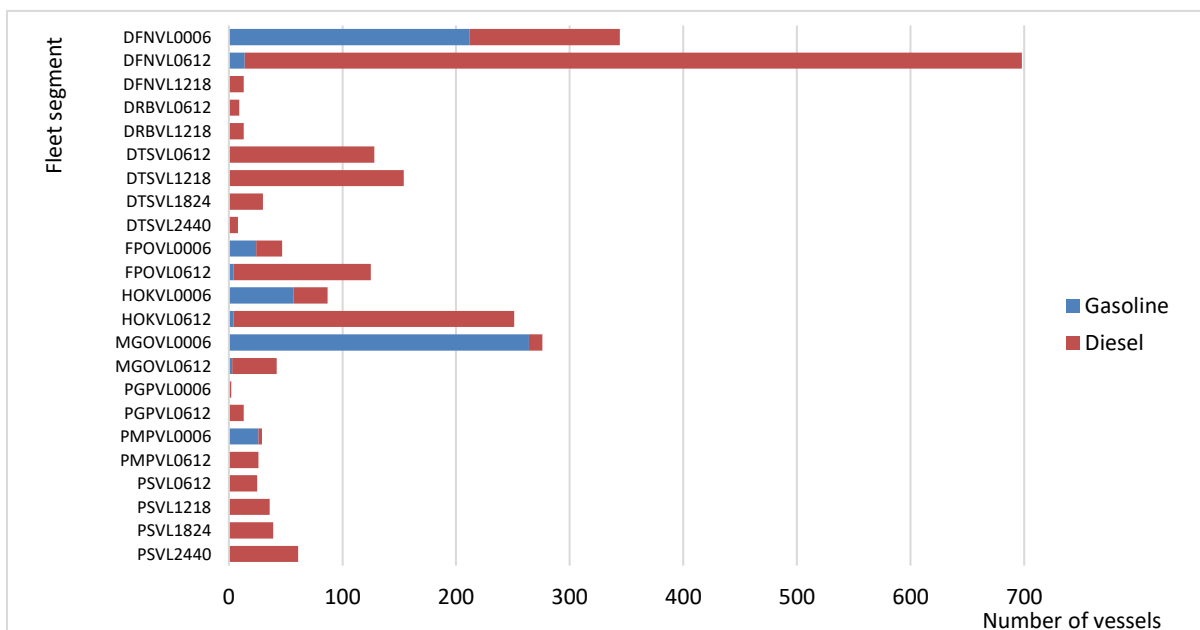
Figure 10. Number of vessels by propulsion type and fleet segment in 2022.

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By fuel type, in Croatian fishing fleet dominate vessels with diesel engines. Gasoline fuelled engines dominate in small-scale fleet segments, particularly in length class <6 m. Considering energy consumption, the most demanding vessels are trawlers and purse seiners with different patterns of consumption during the fishing trip and high consumption and energy cost in total.

2.2   *Markets and Trade of Fisheries Products*

Market for the products of marine capture fisheries in Republic of Croatia is based on registered first buyers. Registered first buyers include approved fish storage and/or processing facilities, traders, and fishmongers which number around 1.300, and first sale of fisheries products are sold exclusively through a web-based application and stored in a database maintained by MA-DoF. All landed fishery products are firstly sold to a registered first buyer. Some of the registered buyers are producer organizations (PO) and fisheries cooperatives (with approved establishments dealing with food of animal origin). Fish products are weighed at the landing place but can also be weighed at the fishing vessel or in approved establishment if it has prior approval to do so. Landed fish is accompanied by a transport document, if necessary, weighing evidence and sales note. Presently, there are no operational fish auction centres in Croatia. In addition to trading fish by registered first buyer principle, holders of the commercial fishing licence are allowed to sale directly to end consumers at port from the fishing vessel under special conditions (some of the conditions are that they must use electronic system for catch data transmission to MA-DoF and fish can be sold in line with local community rules in terms of location and time). Total quantity of fishery products sold from a fishing vessel is limited to 5 kilograms per final consumer, and total value up to HRK 3.000,00 (398,17 EUR) per day per commercial fishing licence. During the COVID-19 pandemic, exemptions were enacted, and holders of the commercial fishing licence had no limitation on the quantity and value of fishery products sold directly to end consumers because most of the fishing markets as well as HORECA sector were closed.

Channels for sale are different for small pelagic fish, large pelagic fish, and demersal fish. The largest share of marine capture fisheries of demersal fish following first sale is intended for placing on markets outside Croatia (export) and placement at local restaurants and markets, whereas large quantities of small pelagic fish are destined as raw material for the fish processing sector and in the aquaculture sector, exclusively as animal feed in tuna farming.

Producer organizations in fisheries originate from fisheries associations and cooperatives of fishers. Their main purpose is joint sustainable management of resources, marketing of products, as well as establishing market standards, collection, distribution, and placement of fishery products on the market, but also procurement of equipment, easier organization of logistics and equipping of fishing vessels. However, geographical characteristics of the Croatian eastern Adriatic coastline, such as the second most indented coastline in Europe with numerous islands, islets, rocks, and reefs (nearly 1.200), significantly limits the possibility of establishing POs and Cooperatives, as well hinders the connectivity of different stakeholders. In addition, fishers do not recognise the interest in associating because they are used to work alone, and they have already established channels of sale for their products without the participation of middleman. Presently, in Croatia there exists four POs and eight fishery cooperatives, all of which belong to the marine capture fisheries sector. Out of four POs, two are located in the Zadar County, whereas the remaining two are placed in Split-Dalmatia County and in Istria County, and together they number 82 members. Out of eight fishery cooperatives, three are in Zadar County, two in Šibenik-Knin County, and one in Istria, Primorje-Gorski Kotar and Split-Dalmatia County, and together they number 128 members.

In addition, administrative and other supporting actions to different sectors of fisheries is carried out by Croatian Chamber of Economy (CCE) and Croatian Chamber of Trades and Crafts (CTC). CCE and CTC offer a range of services to their members, including promotion, coordination, and representation of joint interests before state and local authorities, influence on adoption of regulation as well as connection of different sector of fisheries using a system of county chambers.

Globally, the European Union is the leading importer of fisheries and aquaculture commodities in terms of value. Fisheries and aquaculture commodities can be imported for human consumption (fresh, frozen, or processed form) or for non-food or industrial use (bait for commercial and sport fisheries, as direct feed in aquaculture, raw material for the processing sector, fishmeal and fish oil, stock enhancement or aquarium trade, etc.). Both import and export of fisheries and aquaculture products in terms of value

and volume have increased in Croatia from its entry to the EU in 2013 to 2022. Following the entry of Croatia into the EU, trade barriers and tariffs were not valid any longer, whereas new regulation related to hygiene, quality, safety, traceability and labelling of fishery and aquaculture products as well as to the environment were introduced. In 2013, Croatia imported 30.359 tonnes of fishery and aquaculture products at the value of just over EUR 83 million, whereas the import in 2022 amounted to 63.444 tonnes at the value of nearly EUR 63.5 million. In the same period, Croatia exported 38.347 tonnes of fisheries and aquaculture products at a value of over EUR 130 million in 2013, whereas in 2022, Croatia exported 66.478 tonnes at the value of nearly EUR 312.5 million (Figures 11 and 12). In the period from 2013 to 2022, the most exported fisheries and aquaculture commodity in terms of volume and value was fresh or chilled fish (excluding fish fillets), the second most exported commodity in terms of volume was frozen fish (excluding fish fillets and other fish meat), whereas in terms of value the most exported commodity was prepared or preserved fish (Figures 13-16). The most imported fisheries and aquaculture commodities in terms of volume were frozen fish and molluscs (octopus, squid, cuttlefish, fresh or chilled, frozen, smoked), whereas the third most imported commodity was prepared or preserved fish. In terms of value, molluscs and prepared or preserved fish amounted to the most imported commodities. From 2013, Croatia has experienced a positive trend in trade balance of fishery and aquaculture commodities in terms of volume, and especially in terms of value since the value of exports is greater than imports. Therefore, Croatia is a net exporter of fisheries and aquaculture commodities, with approximately EUR 50 million surplus. The commodity with the highest value in exports is fresh/chilled fish, which mostly refers to farmed seabass, gilthead seabream and Bluefin tuna. Outside of the EU, the most important market for the export of Bluefin tuna is Japan, whereas within the EU, Italy, Slovenia, and Spain are the leading export destinations for fresh/chilled and dried, salted or in brine fishery and aquaculture commodities. Cephalopods (primarily squid) and demersal fish (fresh/chilled) are exported primarily to Italy. In terms of imports, cephalopods (squid), skipjack tuna, salmon and others are the most represented fisheries and aquaculture commodity, originating predominantly from Spain, Italy, Slovenia, and the Netherlands.

Apparent consumption of fishery and aquaculture products in Republic of Croatia has increased significantly since the early 1990s, when it was estimated to be 2,7 kg per capita in 1992 according to data published by Food and Agriculture Organization of the United Nations (FAO) (Laurenti, 2009). For example, according to data from the FAO global statistics database (FAOSTAT) (Food supply quantity (kg/capita/yr.) – Livestock and Fish Primary Equivalent), apparent consumption of fishery and aquaculture products has increased from 7,26 kg per capita in 2000 to 19,06 kg per capita in 2013. In the period from 2013 to 2019 the apparent consumption of fishery and aquaculture products in Republic of Croatia increased further and was estimated to be 20,02 kg per capita in 2019, according to calculations by MA-DoF. The most consumed fishery and aquaculture products according to commodity groups were fresh/chilled fish, fish fillets, frozen fish, prepared/preserved fish and cephalopods, whereas commodity groups that were consumed less frequently include cured fish, crustaceans and molluscs. However, apparent consumption of fishery and aquaculture products in Republic of Croatia is still below the average of EU-28 Countries (23,97 kg per capita) according to data published by European Market Observatory for Fisheries and Aquaculture Products for the year 2019 (EUMOFA, 2021).
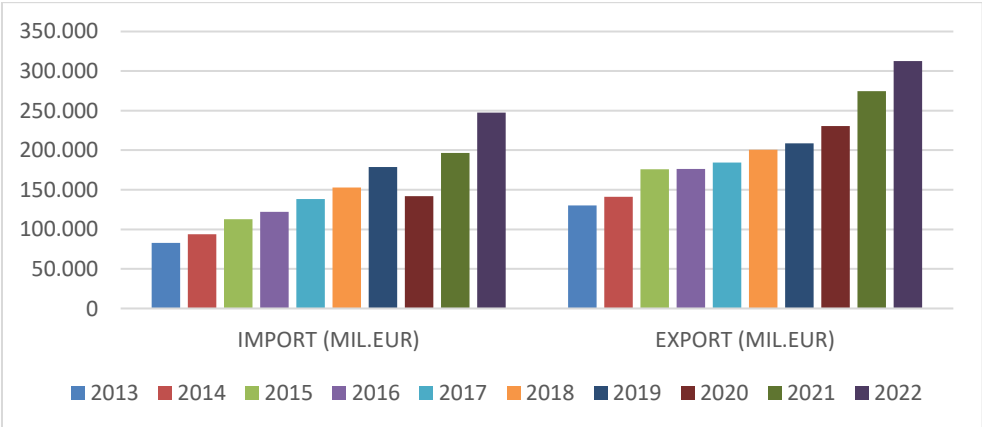
Figure 11. Import and export of fishery and aquaculture products in value (million EUR) from 2013 to 2022.
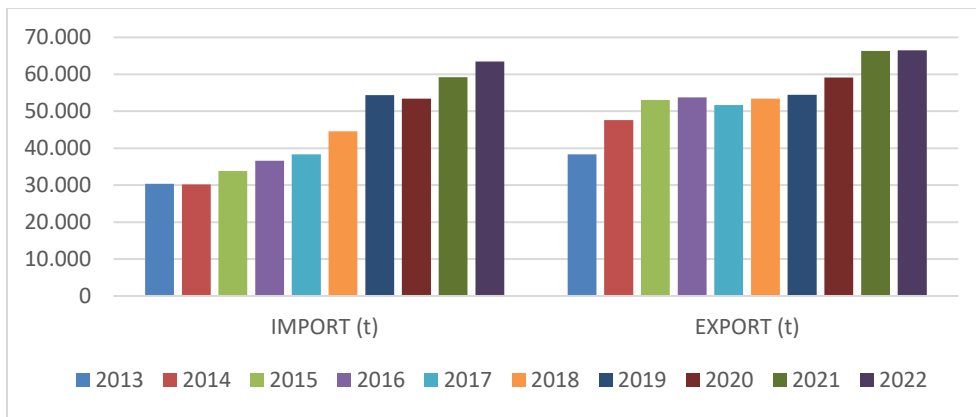
Figure 12. Import and export of fishery and aquaculture products in volume (tonnes) from 2013 to 2022.
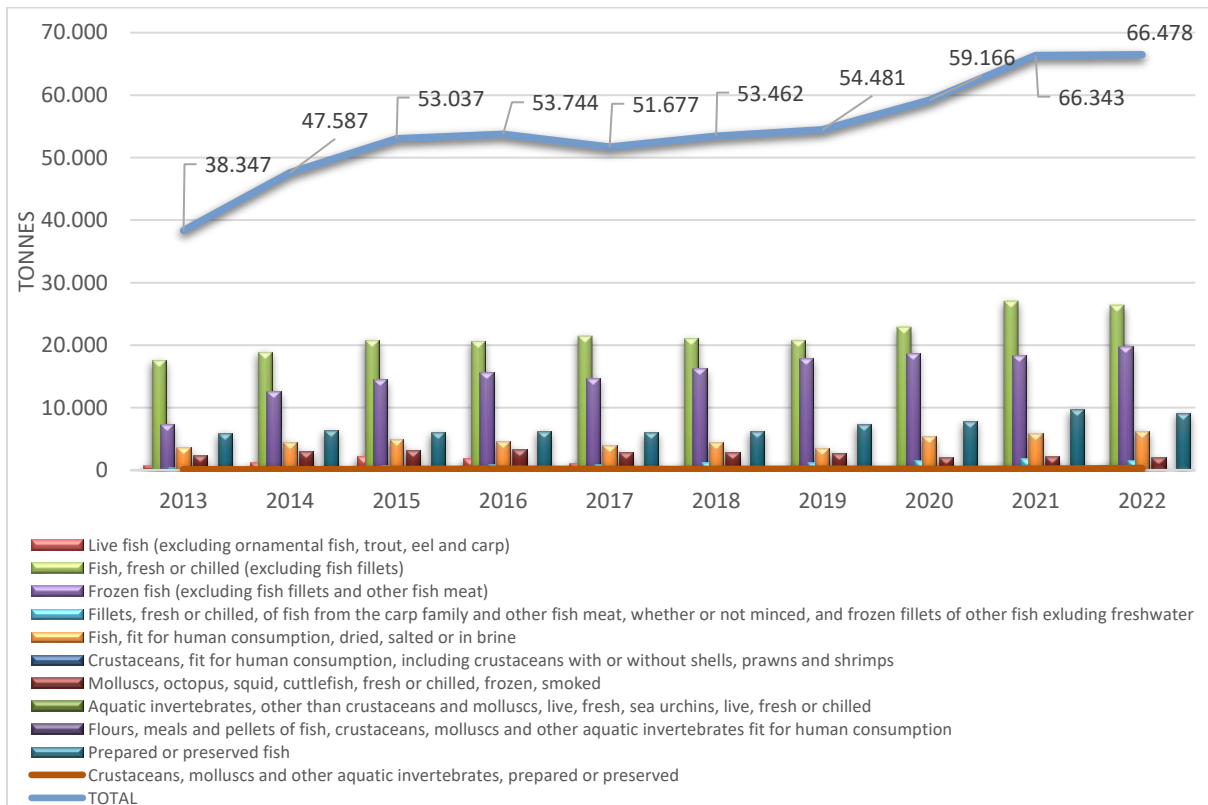
Figure 13. Export of fishery and aquaculture products by commodity groups in volume (tonnes) from 2013 to 2022.
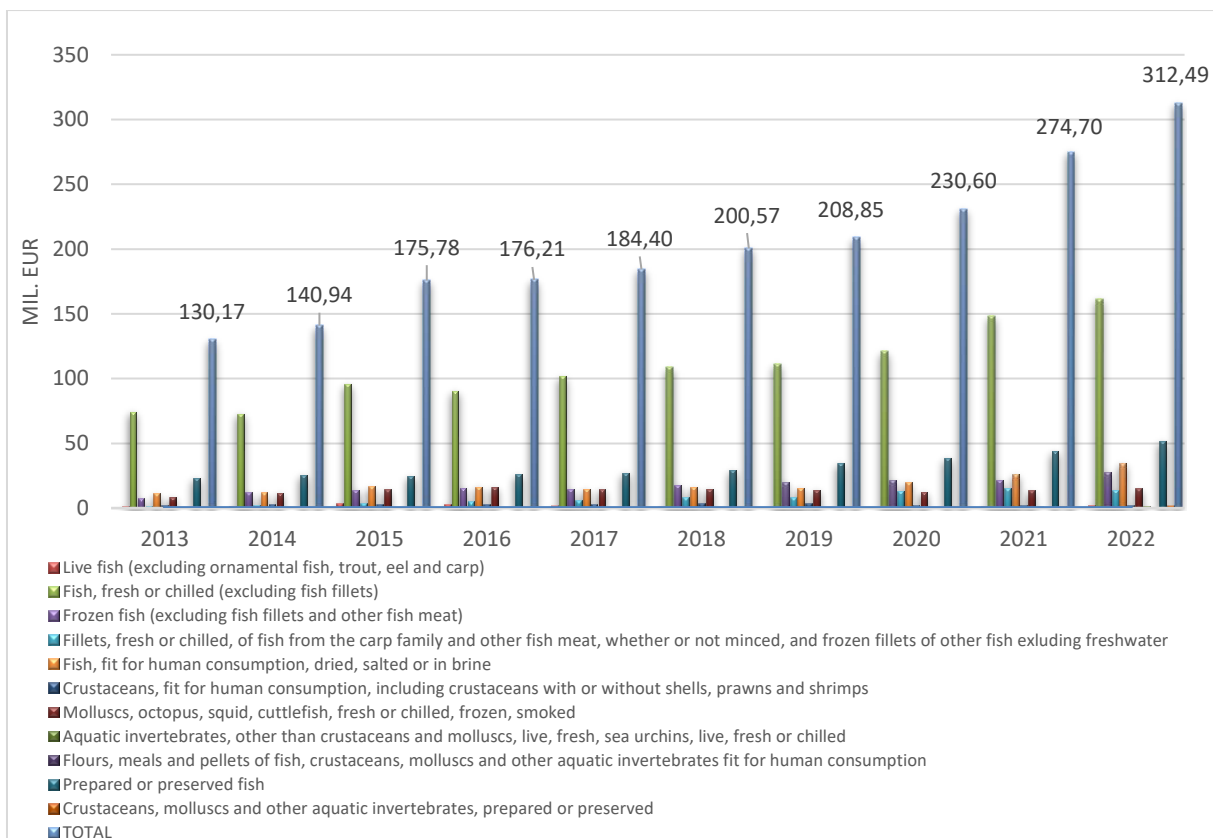
Figure 14. Export of fishery and aquaculture products by commodity groups in value (million EUR) from 2013 to 2022.
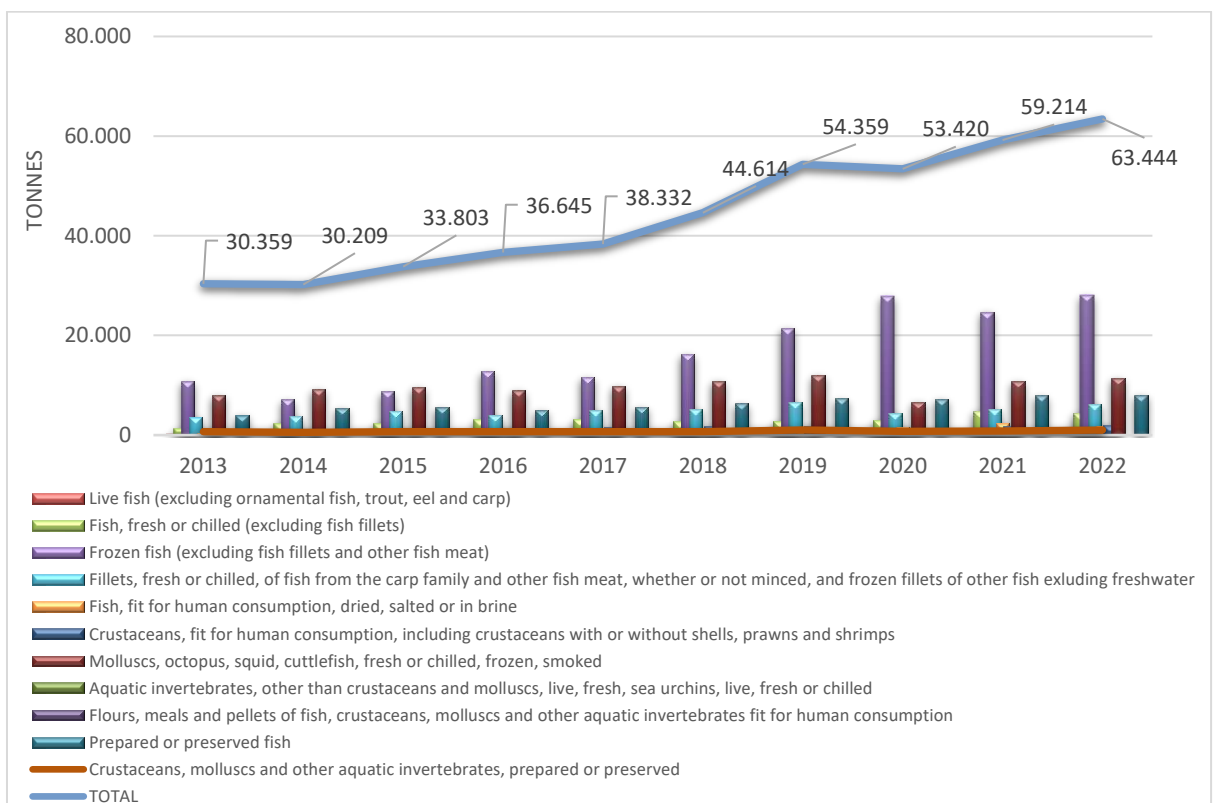
Figure 15. Import of fishery and aquaculture products by commodity groups in volume (tonnes) from 2013 to 2022.
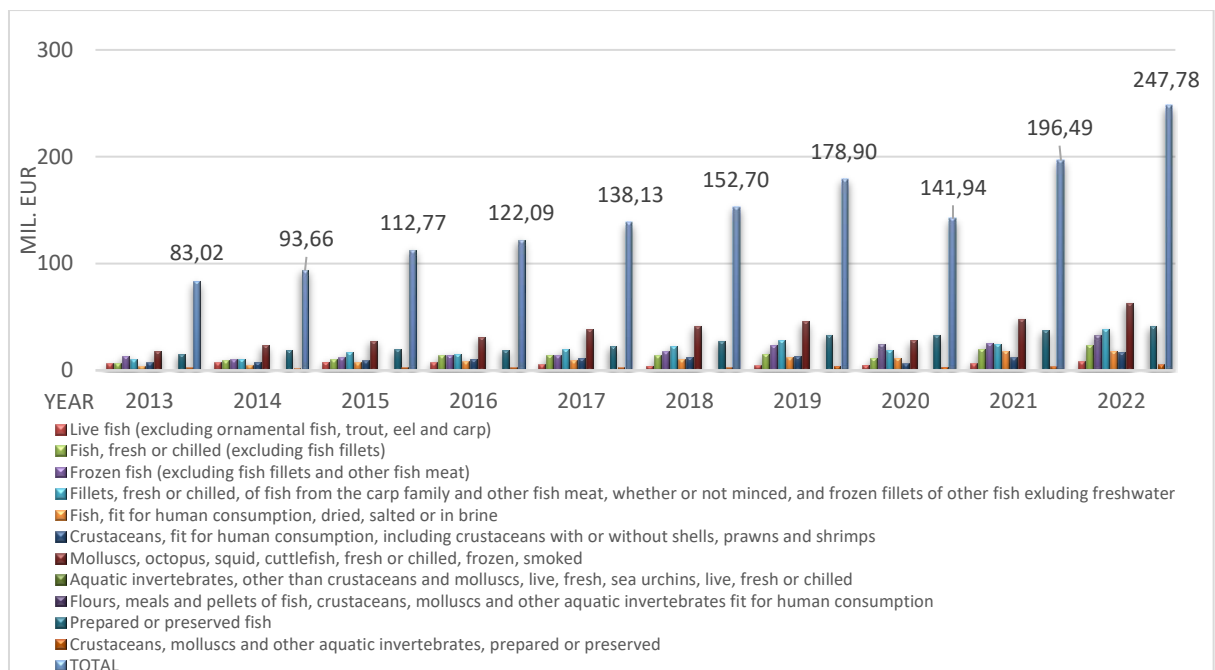
Figure 16. Import of fishery and aquaculture products by commodity groups in value (million EUR) from 2013 to 2022.

First sales prices

In 2022, average landed (real) price of EUR 1.78 per kg further increased by 10% compared to 2021 and by 25% compared to average in the period 2013-2021. Of the top six commercially most important species, Norway lobster and Common octopus had the highest prices (16.1 and 11.1 EUR/kg, respectively) in 2022, but also a significant price increase compared to 2021 (Common octopus increased by 29% compared to 2021 and Norway lobster price increased by 16.6%). Sardine and anchovy were sold at relatively low prices (0.6 and 0.9 EUR/kg, respectively).
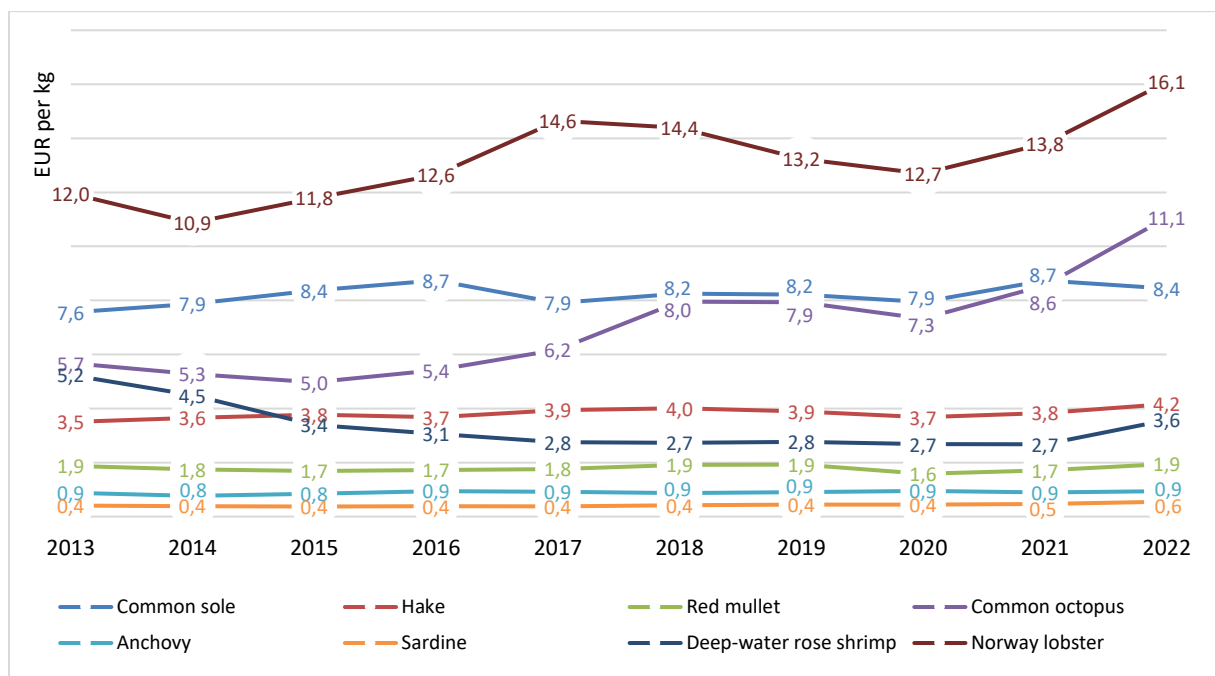
Figure 17. Average prices for the most important commercial species in the period 2013-2022.

Prices of small pelagic species, sardine, and anchovy remained constant in 2022, due to introduction of non-compulsory temporary cessations and secure market for remaining active fishers (Fig. 17).
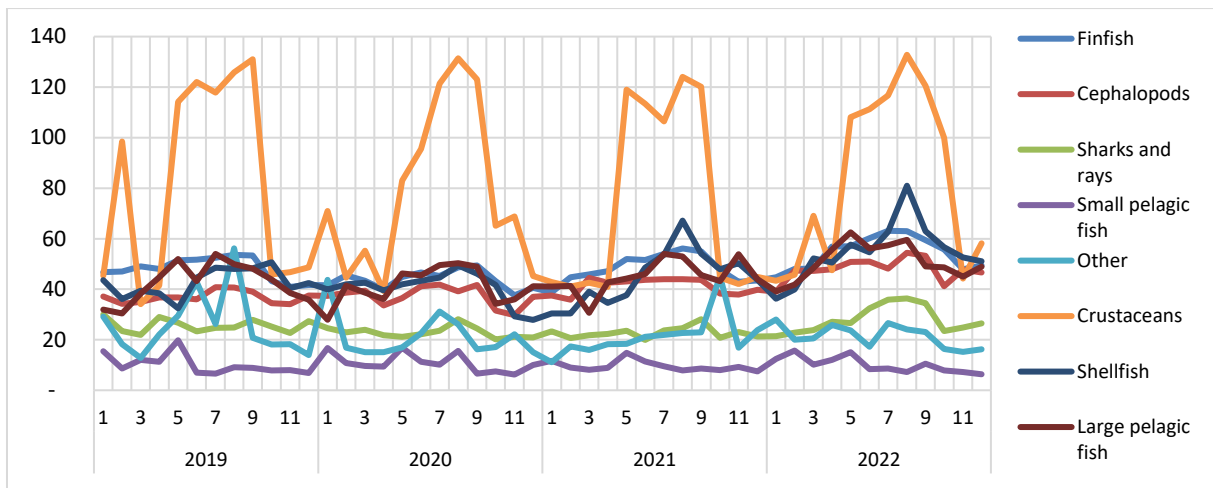
Figure 18. Seasonal variability of prices in first sales by species groups in the period 2019-2022 (HRK/litre).

The main characteristic of the prices in first sales is seasonality in several different aspects. Firstly, availability of resources has a seasonal characteristic. Also, fisheries management is oriented to spatio-temporal limitations which influences market availability and first sales prices of particular species (e.g., European lobster, spinous spider crab and common spiny lobster or groupers). Finally, high impact of tourism affects the price increase in first sales during the summer season.

2.3   Fleet productivity and energy efficiency

After period of stabilization during 2018-2019, fuel prices dropped to lowest levels at the beginning of 2020 (0.4 EUR for blue diesel, 1 EUR for gasoline), along with COVID-19 crises and related constraints in fisheries. From 2020, the prices demonstrated an upward trend, with highest prices of blue diesel of EUR 1.3 (+ 225%) and gasoline of EUR 1.9 (+ 90%), during May-July 2022 (Fig. 19). Although fuel prices are currently in period of stabilization, the increase in energy costs had a major effect on the fleet productivity, especially on fuel intensive fleet segments, but also on the whole value chain and increase in prices in first sales, which is compensated in the framework of the EMFF.
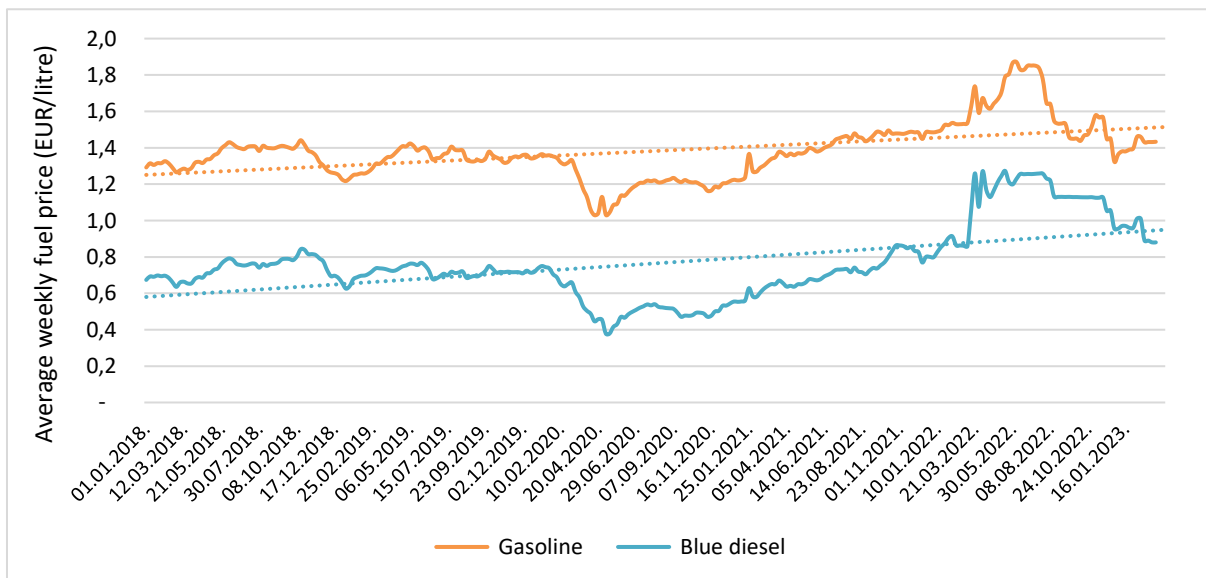
Figure 19. Trend in average weekly fuel prices (EUR) in the period 2018-2022.

Energy and productivity indicators

While landing weight in time series 2012-2022 demonstrates a trend of stabilisation and gradual decline, value of landing tends to further increase, which implies an increase in average first sales prices and increase in productivity.
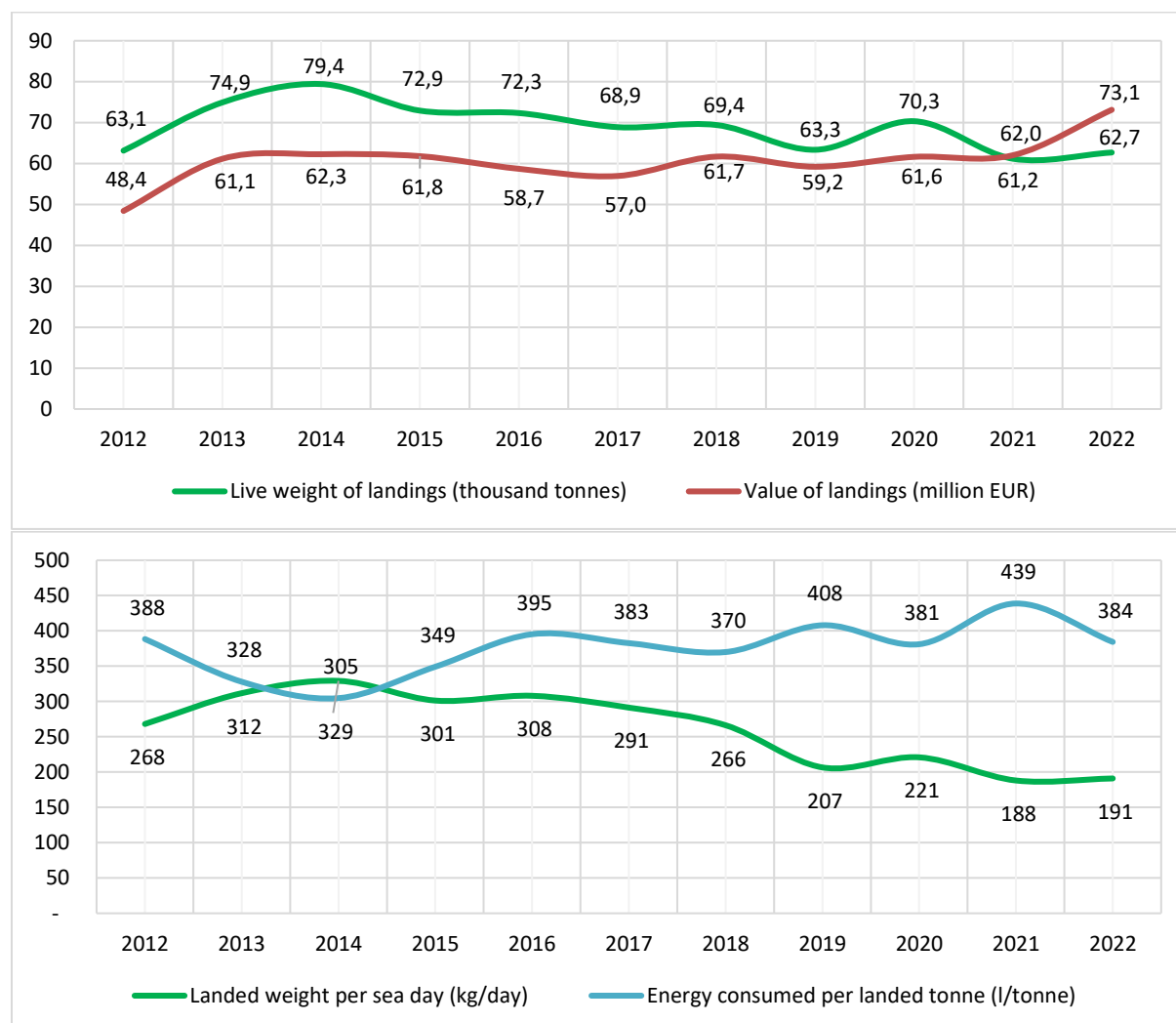
Figure 20. Main trends in productivity and efficiency indicators; landings (kg) per day at sea and energy consumption (litre) per landed tonne.

Energy efficiency over time period 2012-2022 demonstrates variability with no clear evidence of stabilisation and decline. In this period, energy consumed per landed tonne (l/tonne) varied from 305 l/tonne to in 2014 to 439 l/tonne in 2021 (Fig. 20). Energy efficiency is dependent on more factors; weather conditions, resources availability (also migration of fish), spatio-temporal cessations, but is also affected by the old, inefficient vessels in the most important fleet segments and at the same time high intensity fishing operations. Trend of decrease of landed weight in the time series 2012-2022 should be followed by modernization of the engines and vessels overall (considering alternative types of fuel), to improve the energy efficiency of the fleet.

Table 15. Productivity and energy efficiency indicators; landings (in weight and value) in 2022.

Year	Live weight of landings (thousand tonnes)	Value of landings (million EUR)	Landed weight per sea day (kg/day)	Energy consumed per landed tonne (l/tonne)
2012	63,14	48,41	268	388
2013	74,92	61,15	312	328
2014	79,41	62,26	329	305
2015	72,91	61,79	301	349
2016	72,32	58,70	308	395
2017	68,87	56,95	291	383
2018	69,40	61,68	266	370
2019	63,35	59,20	207	408
2020	70,33	61,62	221	381
2021	61,17	62,02	188	439
2022	62,68	73,12	191	384

Segments DTS and DRB demonstrate the weakest performance of energy efficiency, with efficiency indicator results of 55-62% (energy cost/landing income). At the same time, these segments have a high energy intensity with between 0.36 and 0.47 kg of landing weight per litre of fuel. High fuel consumption is a result of specific type of fishing operation – trawling – which is fuel intensive. On the other hand, purse seiners demonstrate better performance, with results of 13-24% of energy efficiency indicator and due to large quantities landed, the best performance in energy intensity (between 6.56 and 12.42 kg/l) and energy consumed per landed tonne (Tables 15 & 16). The largest part of fuel consumption during the fishing operations in the purse seine fleet happens during search for fish and travelling to fishing grounds, which may last for a longer period. Due to small quantities landed, small-scale fleet segments demonstrated low productivity and energy efficiency performance results, but considering value of landed products, their performance was better than large-scale fleet segments. The most favourable results regarding energy efficiency overall are for MGO fleet segment, which is also characterised by more favourable social indicators and a higher proportion of modern, newer vessels.

Fuel efficiency and fuel use intensity vary significantly depending on type of fishing operation and fleet segment – the diversity of the fleet, influenced by the location of fishing grounds, weather conditions, and target species influence fuel consumption and productivity. While engine power has a significant impact on productivity, higher fuel consumption is not necessarily linked with positive balance in terms of fuel efficiency (Table 16).

Table 16. Productivity and energy efficiency indicators by fleet segment in 2022.

Fuel efficiency - ratio between fuel costs and the income from landings expressed as a percentage (%). Fuel use intensity (FUI) - quantity of fuel consumed per quantity of fish landed (litre per tonne).

Fleet segment		Fuel efficiency	Quantity landed per fuel consumed (kg/litre)	Landed weight per sea day (kg/day)	Fuel use intensity (l/tonne)	Average landed price (EUR/kg)
DFN	VL0006	14%	0,83	7	1.210	5,77
	VL0612	30%	0,20	9	4.962	7,16
	VL1218	49%	0,32	24	3.155	6,85
DRB	VL0612	43%	0,42	60	2.366	6,03
	VL1218	45%	0,44	79	2.285	5,58
DTS	VL0612	55%	0,47	61	2.122	4,25
	VL1218	56%	0,44	94	2.254	4,42
	VL1824	63%	0,37	205	2.702	4,77
	VL2440	62%	0,36	264	2.813	5,03
FPO	VL0006	20%	0,23	5	4.268	12,16
	VL0612	20%	0,16	7	6.108	13,08
HOK	VL0006	23%	0,35	6	2.894	8,40
	VL0612	25%	0,20	21	4.955	8,24
MGO	VL0006	12%	1,37	14	729	6,50
	VL0612	4%	0,91	48	1.102	8,86
PGP	VL0006	22%	0,58	3	1.730	4,51
	VL0612	16%	0,22	4	4.450	6,28
PMP	VL0006	25%	0,30	7	3.316	8,93
	VL0612	19%	1,11	15	904	5,25
PS	VL0612	17%	6,56	219	153	0,92
	VL1218	13%	12,42	1.933	81	0,66
	VL1824	19%	8,84	2.506	113	0,67
	VL2440	24%	7,23	3.212	138	0,64
Grand total		30%	2,60	191	384	1,17

3. Section B1: Catch based management

Statistical information in this section will be updated after final validation of ICCAT data.

Four fisheries are managed through catch-based management approach in Croatia.

− **Bluefin tuna**: TAC is set at the level of ICCAT and allocated among the CPCs. National quota for 2022 was set by the Council Regulation (EU) No 2022/109 and amounted to 950,3 tons of which up to 855,27 tons for farming purposes. This quota was nationally allocated to commercial fleets: PS and HL fleet with the quantity also allocated to by-catch from commercial vessels not authorised for BFT fishery, and non-commercial fleets: sports, recreational and scientific. After PS fishing season the remaining quota of 140,65 tons were reallocated; 30 tons to HL segment and 10,65 tons to by-catch. Remaining 100 tons was transferred to Greece through SWAP mechanism. Total amount of catch in 2022 was 813,03 tons (85,6% of the total quota).

− **Swordfish**: in line with the ICCAT recommendation 16-05, the Croatian Administration established the national list of vessels authorised to fish for swordfish and regulated the use of fishing gears; Council Regulation (EU) 2022/109 has set a total quota of 13,74 tons for 2022 for Croatia. This quota may only be fished from 1 April to 31 December. After two quota swaps (+16,316 tons from Spain + 25 tons from Greece), the adjusted Croatian SWO quota was 55,056 tons for 2022. Total amount of catch in 2022 was 38.572 tons (70,1% of adjusted quota). Croatia applies approach of allocating individual quota per vessel for swordfish LL fishery, while swordfish HL fishery operates under the "Olympic" system with only the overall quota for the segment set.

− **Small pelagic species in Adriatic Sea**: in December 2016, for the first time, the Council set a catch limit for the EU concerning small pelagic species in the Adriatic Sea for 2017 (namely 112.700 tonnes of small pelagic species *Engraulis encrasicolus* (anchovy) and *Sardina pilchardus* (sardine) - Annex IL of Regulation 2017/127). Furthermore, the Recommendation GFCM/42/2018/8 set an obligation to progressively over a three-year period (2019-2021)

decrease the level of the catches of sardine and anchovy by 5% annually starting with the level of catches reported for 2014. On Annual Session held in November 2022 the GFCM adopted new Recommendation GFCM/43/2021/20 on multiannual management plan for sustainable exploitation of small pelagic stocks in Adriatic Sea by which a set of transitional precautionary management measures are set for period 2022-2023, with possibility of extension by one year. Transitional fishing regime implies annual reduction of 5% for anchovy and 8% for sardine in 2022, and of 5% for anchovy and 9% for sardine in 2023. Such reductions shall be calculated with respect to 2021 catch limits. This obligation for 2022 was transposed into EU legislation by way of Council Regulation (EU) No 2022/110 (Annex IV) which has for 2022 set a maximum catch limit for sardine and anchovy for Croatia to a level of 56.304 tons.

– **Red coral (*Corallium rubrum*)**: Exploitation of red coral in Croatia is regulated according to Recommendation GFCM/43/2019/4 and Council Regulation (EU) 2022/110 which set the maximum number of fishing authorisations (28) and annual harvest limits for red coral (1,226 tons). National legislation further limits number of fishing authorizations to 10 fishing vessels and reduces the national catch limit.

As the TACs are only applicable for the Bluefin tuna and swordfish stocks in case of Croatia, the measures related to this particular fleet are stemming from the relevant recommendations of the ICCAT. This means that BFT and SWO fleets are under a strict capacity regime, which guarantees that the capacity is in line with the availability of the resources.

Bluefin tuna farming represents one of the pillars of the national fishing sector in general and significantly determines the Croatian mariculture. Investment in this segment proved to be economically very successful in the past. However, decreasing trend has been noted with regards to the price on the market of destination (Japan) which was partially compensated with the increase of the volume of production. Four companies are engaged in tuna farming in Croatia, three of which are in the Zadar and one in the Split area. Total Croatian farming capacity is limited to the capacity of 7.880 tons as reported to ICCAT 1 July 2008. Croatian maximum input of wild caught Bluefin tuna into its farms was limited to 2.947 tons in accordance with level of the input quantities registered with ICCAT by Croatian farms in 2006.

According to the capacity plan for 2022, out of possible 18 vessels, 17 of them were authorized to participate in the BFT PS fishery, and 12 vessels were authorized to participate in commercial HL fishery. The criteria for allocation of individual quotas took into account historical data regarding participation in this fishery and the overall quota. The system of allocation of individual quota was changed in 2019 and should ensure stability for the fleet that met the criteria for a period of 10 years. Introduction of new vessels into the PS and HL commercial BFT fleet depends on the total allocation on regional and subsequently national level.

HL quota has been allocated to 12 hooks and line vessels. Total quota of 90 tons was initially allocated to this segment and individual quotas was assigned to each vessel.

BFT quota for 2022 was 950,3t and it was initially distributed among the fishing fleets as follows:

– 833,46t for PS fleet
– 90t to HL/LL fleet
– 5t to sport fishing
– 12,5t to recreational fishing
– 8,34t to bycatch
– 1t to fishing for scientific purposes.

After PS fishing season additional quota of 30 tons was allocated to HL/LL fleet. Thus, the quota for HL/LL segment for 2022 amounted 120 tons.

The entire catch of purse seine fisheries in 2022 was transferred to farming cages, and there was no landing of purse seines as such, therefore in the further analysis, only catch data is considered. Estimation of value of fish caught using average Bluefin tuna price is not appropriate since quota is caught within Joint fishing operation, and it is mostly owned by the farms and not the vessels. This

means that the value of catch does not represent vessel's income. The majority of vessels are, however, owned by farming companies or are contracted by and collaborate with farming companies.

As for MED SWO fishery, total MED SWO quota at disposal to Croatia for 2022 was 55,056 (after receiving 41,316 tons from ES and EL through swap) and it was initially distributed among the fishing fleets as follows:

- commercial LL fleet (49.981t)
- commercial HL fleet (3,575t)
- by-catch (1,5t).

The total number of vessels authorised for LL MED SWO fishing in 2022 was 19 and for HL Med SWO fishing 20.

Regarding the small pelagic fishery, fleet capacity is frozen pursuant to Recommendation GFCM/40/2016/3 to the level of active purse seine fleet in 2014. In 2022, there were total of 167 vessels authorised for fishing with purse seine net for small pelagic stocks 'srdelara' out of which 149 were active. In 2022, Croatian authorised fleet for purse seine net 'srdelara' caught a total of 53.168,68 tonnes of sardine and anchovy according to preliminary data. Even though catch of anchovy gradually increased in the period, 25% less catch of sardine and anchovy was reported in 2022 in comparison to baseline year 2014, and 12% less than average catch in the period between 2014 and 2021 (Table 17). Overall catch of sardine and anchovy in the observed period was at its lowest in 2021.

Table 17. Catch reduction in purse seine net 'srdelara' in the period 2014-2022.

Small pelagic species	Catch in purse seine net 'srdelara' (tonnes)									Δ 2022 to 2021	Δ 2022 to avg. 14-21	Δ 2022 to 2014
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
Sardine	61.011,47	51.743,06	54.339,44	48.400,47	46.255,56	45.138,28	50.148,17	40.503,66	39.250,58	*-3%*	*-21%*	*-36%*
Anchovy	10.127,28	12.788,92	8.232,34	10.875,09	13.253,17	7.997,00	9.783,13	11.625,72	13.918,11	*20%*	*31%*	*37%*
Σ	**71.138,75**	**64.531,99**	**62.571,78**	**59.275,55**	**59.508,73**	**53.135,28**	**59.931,30**	**52.129,37**	**53.168,68**	*2%*	*-12%*	*-25%*

In the context of the GFCM Multiannual Management Plan for Red Coral in the Mediterranean Sea (Recommendation GFCM/43/2019/4) fishing opportunities for 2022 for union vessels are set in accordance with Council Regulation (EU) 2022/110, which introduced a maximum number of fishing authorisations and harvest limits for red coral. For Croatia, maximum number of fishing authorisations is 28, i.e., number of vessels and/or divers, or a pair of one diver with one vessel, authorised to harvest red coral, and maximum level of harvested quantities of red coral 1,226 tonnes. Considering the conservation status (CR) of red coral in Croatia, national catch limit was further reduced to 425 kg for period 1 January – 30 June 2022. Catch limits are determined per authorized vessel. In 2021, specific authorizations for red coral have been issued to 10 vessels and were valid from 1 April 2021 until 30 June 2022 (Decision on authorization of vessels for harvesting red coral valid until 30 June 2022, OG 32/2021). For period 1 July 2022 until 31 December 2023 new authorizations were issued for 10 vessels and catch limit established for period 1 July 2022 – 31 December 2022 was 425 kg (Decision on authorization of vessels for harvesting red coral valid until 31 December 2023, OG 100/22 and 49/23).

Furthermore, Ordinance on commercial fishing at sea by diving (OG 30/2021, 72/2021, 53/2022 and 99/2022) defined closures for red coral, in accordance with available biological information and ongoing national study on biology and distribution of red coral, and introduced conditions for harvesting (areas, depth, gears etc.). Several mechanisms are prescribed to facilitate monitoring and inspection, including electronic real time catch reporting, prior notification on arrival to port, limited number of landing places (11 fishing ports).

4. Section B2: Impact on fishing capacity of fishing effort reduction schemes adopted under multiannual management or recovery plans and under national schemes

4.1 Statement of effort reduction schemes

In 2018, Croatia has finalised the withdrawal of the vessels from the fleet under the EMFF. In addition, an array of measures for spatial and temporal restrictions of fleet activities were implemented. These

were based on a complex scheme of closed areas, temporal closures, different technical measures applicable in different areas and overall managing of the effort in all segments.

Since October 2013, exploitation of sardine and anchovy is regulated by the GFCM-level management plan for small pelagic stocks in GSA 17, and the amendments to this plan as well as emergency measures pursuant to it were adopted in 2014, 2015, 2016 and 2018. New GFCM management plan was adopted in 2021 and all vessels actively fishing for anchovies and sardines in GSA 17 are subject to the provisions of this plan. Although new Plan does not limit effort management in terms of fishing days, Regulation (EU) No 1343/2011 continues limiting fishing activity to 20 days per month with a total maximum of 180 days per year. Additionally, national legal framework kept yearly limitation of 144 days for vessels targeting anchovies and 144 days for vessels targeting sardines (Ordinance on fishing opportunities in commercial fishery using purse seine net 'srdelara', OG 23/22). The limitation of days has a direct consequence on the effort. Furthermore, in 2022 (as per provisions from 2018) spatial and temporal closures were implemented in this fishery.

On national level in 2022, temporal closures included a total of 97 days of closure for entire PS fleet targeting sardine and anchovy and were as follows:

1. From 1 January to 28 February, (targeting the spawning period of sardine) – entire fleet targeting small pelagics, entire area, total of 59 days.
2. From 1 to 30 May (targeting the spawning period of anchovy) – entire fleet targeting small pelagics, entire area, total of 30 days.
3. From 24 to 31 December (targeting the spawning period of sardine) – entire fleet targeting small pelagics, entire area, total of 8 days.

This spatio-temporal restriction mechanism resulted with a total of 97 days of closure for the entire PS fleet. In comparison to the GFCM management framework, this was 37 days more than the binding obligation. The described scheme was implemented in addition to the national scheme of spatio-temporal restrictions in channel areas through restrictions for vessels over 12 m which lasted 10 and half months in continuity.

The effect of effort management is a reduction in the number of fishing days by 6% in 2022 in the purse seine fleet compared to 2021, and by 22% compared to baseline year 2014 (Table18). As a result, catch of sardine and anchovy decreased by 25% in 2022 (Table 17), while the overall decrease in the catch of small pelagic fish (including anchovy, Jack and horse mackerels, sardine, and Atlantic chub mackerel) in 2022 is 22% compared to baseline year 2014 (Table 13).

Table 18. Effort reduction in the purse seine fleet (PS) during the period 2014-2022 (baseline year: 2014).

Fleet segment		Fishing days									Δ 2022 to avg. 14-21	Δ 2022 to 2021	Δ 2022 to 2014
		2014	2015	2016	2017	2018	2019	2020	2021	2022			
PS	VL0612	3.469	3.046	2.728	2.934	3.007	3.169	2.953	2.525	2.264	*-24%*	*-10%*	*-35%*
	VL1218	4.976	4.210	4.190	3.908	4.053	3.874	4.453	4.496	4.441	*4%*	*-1%*	*-11%*
	VL1824	8.526	6.723	7.891	7.609	6.674	6.455	5.963	6.422	6.054	*-14%*	*-6%*	*-29%*
	VL2440	11.289	10.128	12.085	11.283	10.022	9.694	9.214	10.114	9.284	*-11%*	*-8%*	*-18%*
Total		**28.260**	**24.107**	**26.894**	**25.734**	**23.756**	**23.192**	**22.583**	**23.557**	**22.043**	*-11%*	*-6%*	*-22%*

For bottom trawlers, in 2022 temporal closure was implemented in period from 15 September to 14 October (EMFF fund) (total of 30 days) in the fishing zones C and D and part of the fishing zone E. Number of fishing days of DTS fleet was lowest in 2022 in the period 2014-2022, decreasing by only 12% in 2022 compared to 2021. The effect of catch/effort management was a 18% reduction in the number of fishing days in 2022 in the DTS fleet compared to baseline year 2015 (Table 19). As a result, in 2022 total catch of demersal species in the bottom trawl net (OTB) was reduced by 9% compared to average catch in the period 2015-2021, and by 16% compared to 2015 (Table 20).

Table 19. Effort reduction in the demersal trawl and demersal seine fleet (DTS) during the period 2015-2022 (baseline year: 2015).

Fleet segment		2015	2016	2017	2018	2019	2020	2021	2022	Δ 2022 to avg. 15-21	Δ 2022 to 2021	Δ 2022 to 2015
DTS	VL0612	13.842	12.235	15.154	13.362	12.290	13.854	13.228	10.808	*-19%*	*-18%*	*-22%*
	VL1218	16.761	16.346	17.027	17.659	15.736	16.261	15.518	14.274	*-13%*	*-8%*	*-15%*
	VL1824	4.370	4.887	4.556	4.207	4.649	4.169	4.859	4.669	*3%*	*-4%*	*7%*
	VL2440	3.019	2.303	2.089	1.737	1.731	1.520	1.751	1.278	*-37%*	*-27%*	*-58%*
Total		37.992	35.771	38.826	36.965	34.406	35.804	35.356	31.029	*-15%*	*-12%*	*-18%*

Table 20. Catch reduction in bottom otter trawl net (OTB) in the period 2015-2022.

Demersal species	2015	2016	2017	2018	2019	2020	2021	2022	Δ 2022 to avg. 15-21	Δ 2022 to 2021	Δ 2022 to 2015
Total catch	4.373,76	3.992,77	4.228,98	4.048,21	3.963,81	3.960,77	3.650,63	3.653,51	*-9%*	*0%*	*-16%*

It is important to note that in 2019, a Recommendation GFCM/43/2019/5 on a multiannual management plan for sustainable demersal fisheries in the Adriatic Sea (geographical subareas 17 and 18) was adopted. This Recommendation includes a comprehensive set of management measures aiming at achieving sustainable demersal fishing activities in the Adriatic Sea. Among other, the Recommendation sets an effort regime imposing an obligation to decrease the effort proportionally to the impact of a certain country to the status of the resources against the total effort in the reference year in the area by the gear group, as reported through GFCM Data Collection Reference Framework (DCRF) Task V-2. This provision is transposed into the EU acquis by way of Regulation (EU) 2022/110 which sets for each fleet segment an overall quota of fishing days for Croatia for 2022.

It should be noted here that some methodological differences exist in calculation and presentation of fishing days according to DCF and DCRF and that the information on fishing days for a particular gear calculated according to these two separate methodologies are not directly comparable. In addition, it should be noted that the information presented in the Table 19 represent data for fishing segments and thus include information on fishing days made with gears other than OTB.

Pursuant to the national legislation in force, a diverse set of fisheries management measures is in place in Croatia, including the following: temporal and spatial restrictions for certain fishing gears; engine power restrictions in certain areas and temporal and spatial restrictions and closures for certain species during their spawning periods. Restrictions are permanent in some areas, and some restrictions cover significant parts of internal waters and territorial sea. In line with scientific advice, trawling is under strict temporal and spatial restriction regime, particularly in internal waters while a no-take zone for bottom trawling has been established in the area of the Jabuka/Pomo Pit as permanent measure pursuant to Recommendation GFCM/44/2021/2. This FRA area includes a no-take zone (zone A, Figure 21) where all types of commercial bottom fisheries (bottom trawls, bottom set nets, traps, set longlines) and fishing activity with purse seiners and pelagic trawlers targeting anchovies and sardines as well as recreational fishery are forbidden and zones with a restricted management of fishing activities for HR an IT fleets (zone B and C, Figure 21). In FRA zone C, only Croatian fleet is authorised for operation with bottom trawls (51) and bottom set longlines (12). There were no authorised vessels to operate in the area with nets and traps. Effort in the area is limited by way of allowing authorised bottom trawls to operate only on weekends (Saturdays and Sundays from 05:00 to 22:00) and for authorised bottom set longlines from Monday to Thursday (from 05:00 to 22:00).

For the purpose of managing of resources in line with the provisions of the Council Regulation (EC) No 1967/2006, national management plans were adopted for purse seine net 'srdelara' and trawl nets in 2014, and PS 'srdelara' MP was revised in 2017. Furthermore, management plans for shore seines and small purse seines were implemented based upon the approval of derogations from October 2018 until October 2021. This regime continues to apply for shore seines for picarel and shore seines of small mesh size from October 2021 until October 2023. The management plans adopted contain provisions on future

developments in capacity and effort management for these gears, including temporal and spatial closures and authorisation of fishing license holders.

Croatia is implementing the National program for control, monitoring and surveillance of the GFCM management plans. In respect to the program and in order to ensure that effort restrictions were followed, vessels were continuously monitored via VMS within the Fisheries Monitoring Centre and data was crosschecked with electronic logbook and sales notes data. The inspection was notified immediately upon reaching monthly and annual effort limits. In addition to elements as required by the Basic regulation, the information on fish size of sardine and anchovy was added to the e-logbook for purse seiners. As fisheries in Croatia are managed through national fishing zones, fish size is an important element in terms of indirect monitoring of the stocks. As this data is linked with VMS data, the indication of the movement of fish of a certain size in certain periods and fishing zones is obtained. The analysis of VMS for purse seine fishery combined with the catch data, particularly size indicated through pcs per kg, is conducted continuously from 2016 to 2020 indicated that sardine of smaller size is more densely distributed in the inner fishing zones, while larger vessels able to venture further from the shore target larger sizes of sardine. As a fully recognised biological feature this represented the basis for the spatio-temporal restrictions in inner waters and consequent redistribution of effort directing thus the bulk of capacity towards the open waters with more favourable size structure of the catch.

4.2   Impact on fishing capacity of effort reduction schemes

The GFCM plan for small pelagic species in the Adriatic limits the capacity to the level corresponding to the capacity of all pelagic trawlers and purse seiners fishing actively for small pelagic stocks in 2014. Effort management measures are foreseen under the plan. The Plan is setting transitional measures for period 2022-2023 with possibility of a third transitional measure in 2024. During this transitional period Plan is setting reduction in catch limit in comparison to 2021. Spatial and temporal closures at the fleet level in view of protecting the stocks during the spawning period are also defined.

The GFCM multiannual plan for demersal fishery in the Adriatic (2020-2026) is based on control of fishing effort and foresees establishing of effort quota on an annual basis per CPC.

5. Section C: Statement of compliance with entry / exit scheme and with level of reference

Croatia did not have a capacity ceiling prior to the accession to the EU and its capacity was initially fixed at the levels as at the date of accession. The capacity ceilings and capacity reduction is shown in the table below (Table 21).

The ceiling in 2021 is 48.759,83 GT and 405.211,48 kW.

Table 21. Capacity ceilings as of date of accession to the EU.

CAPACITY CEILING	Total GT	Total kW	Capacity reduction	Cumulative reduction (from 1st July 2013)	Measure of reduction
1 July 2013	53.452,00	426.064,00	None	None	None
31 Dec 2014	53.452,00	426.064,00	None	None	None
31 Dec 2015	52.187,32	421.383,90	1.264,68 GT 4.680,10 kW	2,37 % GT 1,10 % kW	PCFA EFF
31 Dec 2016	51.287,52	416.877,28	899,80 GT 4.506,62 kW	4,05 % GT 2,16 % kW	PCFA EMFF
31 Dec 2017	49.797,12	410.739,93	1.490,40 GT 6.119,35 kW	6,84 % GT 3,60 % kW	PCFA EMFF
31 Dec 2018	48.759,83	405.211,48	1.037,29 GT 5.546,45 kW	8,77 % GT 4,48 % kW	PCFA EMFF
31 Dec 2019	48.759,83	405.211,48	None	8,77 % GT 4,48 % kW	None
31 Dec 2020	48.759,83	405.211,48	None	8,77 % GT 4,48 % kW	None
31 Dec 2021	48.759,83	405.211,48	None	8,77 % GT	None

CAPACITY CEILING	Total GT	Total kW	Capacity reduction	Cumulative reduction (from 1st July 2013)	Measure of reduction
				4,48 % kW	
31 Dec 2022	48.759,83	405.211,48	None	8,77 % GT 4,48 % kW	None

PCFA - Permanent cessation of fishing activities

The entering of the new capacity in the fleet (without public aid) is compensated by prior capacity withdrawal (without public aid) of at least equal amount. Vessels exiting the fleet are replaced by other vessels in line with the provisions of the Marine Fisheries Act and the Ordinance on the fishing license for commercial fishing at sea and fishing license register, in line with the fleet policy requirements.

Croatia ensures that the fishing capacity of its fleet does not exceed at any time the fishing capacity ceilings set in accordance with the provisions of the CFP.

Effective reduction of capacity in PS and DTS segments took place in line with the Action plan submitted in 2015 as well as its revisions for 2016, 2017 and 2018, which included measures for permanent withdrawal within the scope of EMFF OP. The targeted date for achieving these results under the EMFF was end of 2018. Other measures in terms of activity regulation are foreseen in relevant RFMOs' and national legislation. Action plan submitted in 2022 set new targets for permanent withdrawal of vessels in the PS and DTS segments in the period 2023-2026 within the EMFAF framework.

Overall, Croatia complies with the entry/exit scheme and the level of reference.

6. Section D: Summary report on the weaknesses and strengths of the fleet management system with a plan for improvements and information on the general level of compliance with fleet policy instruments

6.1 Summary of weaknesses and strengths of fleet management system

In 2014, two management plans were adopted, the one for purse seines and the one for bottom trawlers. During 2017, the management plan for purse seine 'srdelara' was revised and adopted for the next period. Management plans for shore seine nets and for small purse seine nets including the requested derogations were approved for period October 2018 – October 2021. Derogations included approaching the shore, operating over the seagrass beds, and using gears with mesh sizes smaller than the minimums set by the Mediterranean Regulation. Pursuant to the plans adopted and requested derogations approved, management measures were implemented in 2018 for a limited number of vessels. Plan for shore seines was revised in 2021 and new plan enabled extending a derogation regarding the minimum distance from coast, the minimum sea depth, and the prohibition to fish in protected habitats for shore seine 'girarica' and 'migavica' for a limited number of vessels. Using shore seine 'šabakun' is forbidden from 26 October 2021. Derogations for small purse seines expired on 26 October 2021, therefore until approving new management plan, fishing operations are allowed in accordance with Mediterranean Regulation. The Management plans contain numerous measures, including the effort and capacity management coupled with technical measures. The implementation of the OP for EMFF also contributed to achievement of positive result in terms of fleet management. The impact of capacity reduction through permanent cessation scheme and authorisation process can clearly be observed in effort reduction for PS and DTS segments and overall catch of these segments as a consequence.

Fleet management in Croatia has always been based on effort management rather than capacity management. Effort is regulated through numerous technical provisions as well as through a complex set of temporal and spatial prohibitions and closed areas.

Given the structure of Croatian fleet, whereby the largest share of active vessels use fixed nets and similar gears, it is strongly believed that capacity based management might not be the right option for these segments. This fleet operates locally and only part-time, which in terms of fleet management does not necessarily mean that the capacity can be matched with the resources easily. The activity of the fleet and their total catches do not indicate significant impact on the resources as the overall number of active

days of coastal gears is far less than the one in trawl segment, Croatia firmly believes that significant impact on the status of the resources could be achieved by measures focusing on the trawl segment rather than on the fixed nets segment.

Croatia has adopted the basic rules for entry/exit scheme and adjusted all the elements of fleet register in accordance with the EU requirements. This relates among other things to fleet segmentation in the register.

Since fleets of different EU Member States exploit the resources in the GSA 17, as well as third countries, close sub-regional approach is required in order to achieve the balance of the fleets, particularly in small pelagic fisheries and in bottom trawl fisheries. A long cooperation at the level of scientific and administrative level exists in the GSA 17, and management framework for small pelagic and demersal species in the area was developed in close cooperation of the three MS. Croatia believes that the regional approach is one of the key elements in order to maintain sustainable levels of exploitation.

Croatia emphasizes the need to invest further efforts into gaining a clearer picture of stocks distribution, in particular if sub-stocks have been identified. With the distribution of the fleet and its activity, some of the elements contained in the analysis of harvest indicators might need considerations, given the gaps in data available. This can have an effect on future assessments of biological indicators, which may be linked with general assessment of balance of fleets to the resources. It is believed that effort management measures and technical measures are a more suitable tool in maintaining and/or achieving the sustainable levels of exploitation at the level of GSA 17.

In 2015 Italy and Croatia adopted joint management measures at the national level establishing no-take zone for bottom trawls in the area of Jabuka/Pomo Pit. This regime was introduced from July 2015 to October 2016 after which regime was modified and more stringent one has been established for the three-year period. On the top of national legislations this new regime was also recognised by the GFCM Recommendation 41/2017/3 on the establishment of a fisheries restricted area in the Jabuka/Pomo Pit in the Adriatic Sea. The regime thus established was prolonged for an indefinite period by way of the Recommendation GFCM/44/2021/2.This is the first FRA area in the Adriatic and an important measure for demersal fishery which will have significant impact on the fleets. Croatia believes that the bottom-up approach used for establishing the FRA area in Jabuka/Pomo Pit represents an excellent example of efficient management coordinated at all levels – scientific, sectoral, and administrative and should be applied as such in all future efforts of establishing FRA area in the Adriatic and elsewhere.
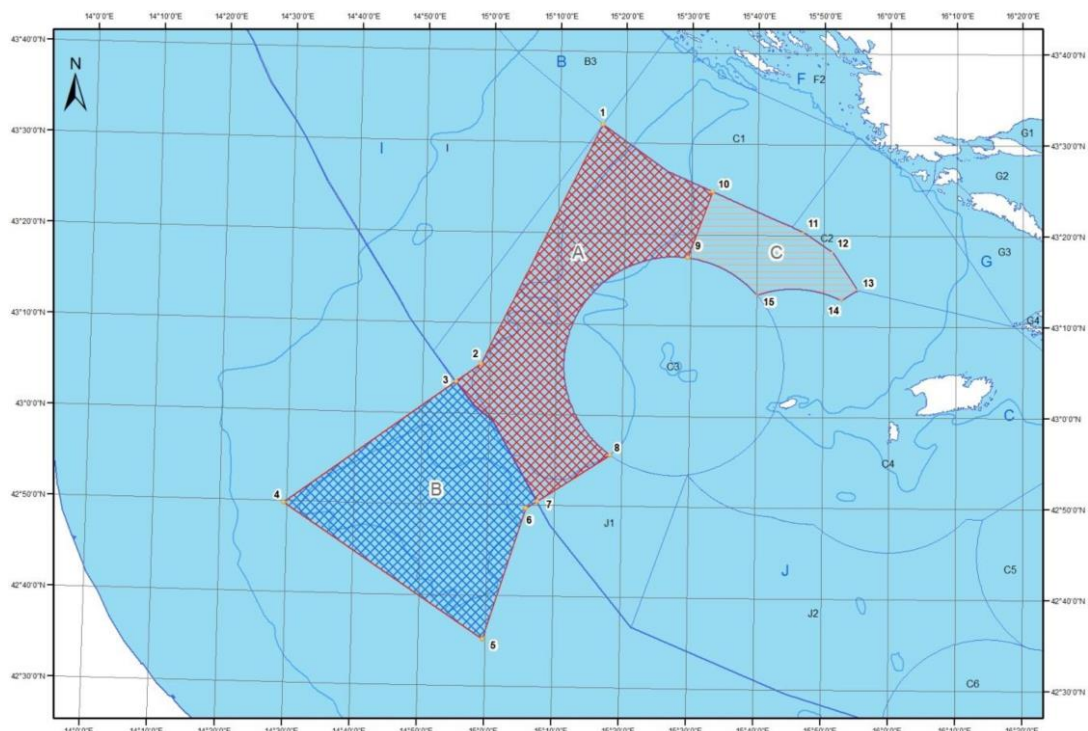
Figure 21. Jabuka/Pomo Pit FRA (1:750.000) (Recommendation GFCM/44/2021/2 and OG 106/19, 141/20, 142/21, 53/22).

6.2   Plan for improvements in fleet management system

With the adoption of management plans for purse seines and bottom trawls, it has become possible to issue authorizations based on historical record and activity in these fisheries. For the first authorisation process that took place in 2014 and 2015 Croatia defined criteria as minimal fishing activities in preceding period from 1 July 2009 – 30 June 2014. Authorisations were issued for period of consecutive 3 years. As a result of the first authorisation process there were a total of 729 special fishing authorizations, out of which 480 for bottom trawls and 249 for purse seines. Given that some vessels had authorizations for both gears, the total number of authorised vessels is less.

For the second authorisation process that began in 2017 stricter criteria have been set in terms of minimum fishing activity for each fleet segment in the period from 1 July 2014 – 1 November 2017. As a result, total of 520 special fishing authorizations, out of which 351 for bottom trawls and 169 for purse seines. Further capacity reduction was addressed through permanent cessation of fishing activities measures that were implemented under the current OP and envisaged for implementation under the EMFF. Croatia intends to further develop the national legal framework in terms of application of the entry-exit scheme. Provisions on effort restrictions in the fleets targeting anchovies and sardines are also expected to show the results in subsequent years. In October 2020 authorization process for purse seine and bottom trawl net extended issued authorizations until 30 June 2022. Last authorization process resulted with valid authorization until 1 March 2024.

With the adoption of management plans for shore seine nets and for small purse seine nets it become possible to issue authorization for limited number of vessels as defined in management plans. Fishing activity in period from 1 January 2008 to 31 December 2012 for shore seine nets and from 1 January 2012 to 31 December 2016 for small purse seine were main criteria for issuing the authorization. At the end, total of 87 authorisations were issued for shore seine fishery (all vessels are smaller than 12 m LOA and 85 kW) and 52 authorisations for small purse seine fishery. With the new authorization process started in October 2021 authorised fleet remained the same in size. Given that some vessels have authorizations for more than one type of gear, the total number of authorised vessels is less.

6.3   Information on general level of compliance with fleet policy instruments

The key legal instrument governing fleet management in Croatia is the Marine Fisheries Act (OG 62/2017, 130/2017, 14/2019 and 30/2023), which is fully in line with current EU legislation. It also contains the key administrative elements, stipulating the key bodies and their activities. Also, the Act provides for the measures of fleet licencing and fleet registration. Pursuant to the Act, a specific Ordinance governing the issue of fleet licencing and licence transfer (OG 116/2017, 29/2018, 75/2018 and 38/2019) as well as Fleet register and entry-exit provisions (OG 5/2019) have been adopted. In administrative sense, the provisions of these two instruments constitute the key framework for fleet management. The Act and the Ordinances contain also numerous provisions guaranteeing the compliance with the fleet policy in general. As the instrument of control, Croatia operates a rather complex system of verifications at the level of general fleet registration (as applicable to all merchant vessels) and at the level of specific provisions on fishing fleet (i.e., engine certification). National control and inspection schemes and programs have been adopted in order to closely follow the fleet in terms of effort management. The most important one relates to the management plan for small pelagic species in GSA 17, for which very specific provisions apply.

Croatia in general complies with the fleet policy instruments.

7. Section E: Information on changes of the administrative procedures relevant to fleet management

Administrative procedures relevant to the management of the fishing fleet remained in 2019 the same as in previous years. The process of authorisation of trawlers and purse seiners, which was implemented for the first time in 2014-2015, and repeated in 2017-2018, represents an additional management instrument for these fleets. Due to the fact that stricter criteria have been used in comparison to the first authorisation process the total number of issued authorisations is significantly reduced. The authorisation process for shore seines and small purse seines in 2018 resulted with reduction of active coastal fleet. In the table below are listed specific authorisations valid in 2022.

Table 22. Specific authorisations valid in 2022.

Type of authorisation		Number in 2022
Authorisations issued by gear type in accordance with relevant national management plans	Bottom otter trawl	349
	Purse seine net 'srdelara'	168
	Purse seine net 'ciplarica'	35
	Purse seine net 'igličara'	4
	Purse seine net 'oližnica'	12
	Purse seine net 'palamidara'	30
	Purse seine net 'lokardara'	40
	Seine net 'girarica'	11
	Seine net 'migavica'	53
	Seine net 'šabakun'	16
	Seine net 'oližnica'	5
Authorisations issued by vessel/gear type according to individual quota allocation	Bluefin tuna purse seine (PS) vessels	17
	Bluefin tuna hook and line (HL) vessels	12
	Swordfish hook and line (HL) vessels	20
	Swordfish drifting longline (LL) vessels	20
Authorisations issued by vessel/gear type in fisheries restricted area (FRA)	Bottom otter trawl vessels in Jabuka (Pomo) Pit	51
	Set longliners in Jabuka (Pomo) Pit	12
Other authorisations	Small-scale vessels for personal needs (specific category)	3.532
	Red coral vessels	10

* Number in 2022 - refers to authorizations valid on 31/12/2022.

8. Section F: Estimation and discussion of balance indicators

The balance indicators were calculated according to the EC 2014 Balance Indicator Guidelines (COM(2014)545) with the aim of identifying the overall trends by fishing method and LOA class and provide a national assessment on the balance between fishing capacity and fishing opportunities for each identified fleet segment. This section contains the indicators as they have been calculated using the results of the National Data Collection Programme under the Data Collection Framework (DCF) submitted to the EC following the Fleet Economic data call in 2022 for the period 2012-2022.

Technical indicators were calculated for the time period 2012-2022. For 2022, technical indicators were calculated for 28 clustered fleet segments out of which 23 were active and 5 were inactive segments. Economic indicators were calculated for the period 2012-2021 for 23 main (clustered) fleet segments that are consistent during the entire time period.

Some of the indicators, in particular some economic indicators, should be interpreted with caution. As Croatia has been a member of the EU since July 1st, 2013, data is not available for a longer time series, therefore any conclusions on trends are limited. Croatian fisheries in some fleet segments include a variety of gears that were grouped in accordance with the DCF methodology, but in reality operate on highly seasonal and local basis with differing operational patterns. In these segments (DFN, HOK, FPO, MGO, PGO, PGP and PMP) socio-economic constrains and realities are particularly important, as these activities include primarily small vessels operating in coastal waters. The point of particular sensitivity is the issue of revenue and activity, whereby all vessels that were active for one day were included in the analysis. With this approach, the number of vessels seems to be disproportionally high in relation to any of the indicators, and in small-scale fleet segments indicates economical unviability in most cases. This approach should be taken with caution, as in most cases fishery is not the only source of income for these fishers and they are usually active in a highly limited area or time, with negligible overall impact. The social dimension in such cases is strongly emphasised, as this forms a key element of

national fisheries management scheme and policies. For certain fleet segments management measures are linked with a multi-gear and multi-species fishery that does not necessarily constitute a high-value or an industrial branch. In such cases, these vessels do not participate in catches and landings in real percentages even in relative terms, and hence the results of the indicators should be interpreted with caution in terms of assessment of balance status.

8.1 Technical indicators

The Inactive Vessel Indicator (IVI)

The Inactive Vessel Indicator was calculated for five fleet segments for the period 2012-2022 (Table 23). The results of the Inactive Vessel Indicator show that the number of inactive vessels has stabilized to around 1.500 vessels (less than 20% of fishing fleet). In terms of percentage of inactive vessels, since 2020 the inactive vessel indicator (IVI) is below the threshold level (19,7% vessels were inactive in 2022 according to preliminary data). Most inactive vessels (17,3%) are shorter than 12 m (641 vessels in VL0006 and 688 in VL0612), while only a small percentage of the large-scale fleet was inactive (2,4% corresponding to 183 vessels) in 2022. As a consequence of the inclusion of small-scale vessels previously categorised for personal needs, a high majority of these inactive vessels have passive gears listed in their licenses (inactive gillnet and trammel net fleet segments).

The segment of vessels up to 12 m LOA, which had the highest percentage of inactive vessels in 2022 (17,1% in number of vessels), was most affected with inclusion of small-scale vessels previously categorised for personal needs in 2015. Decrease of inactive vessels in this segment is a result of gradual issuing licenses for small-scale vessels for personal needs that progressed since 2015 enabling gradual activation of these vessels. Compared to 2015 the number of inactive vessels was reduced by 73% in 2022.

The overall Inactive Vessel Indicator needs to be considered against the applicable rules and technical measures in Croatia. In addition, since even the active fleet in this segment does not use fisheries as the main source of income, the inactive licenses are in most cases kept as the given right rather than the actual activity element, as the owners in all cases have other sources of income. The legal and technical frameworks in Croatia imply a right assigned to the owner without the requirement of activity. This in turn results in a situation whereby the license owners do not depend on this activity directly for the time being but need to keep on the possibility (particularly since the national legal framework does not allow for any ceasing of rights issued).

In accordance with the Croatian national legal system, there is no obligation of activity of the vessel. The licence is issued under certain conditions, but these do not include the obligation of a minimum activity for maintaining it. Furthermore, Croatian national legal system allows for a temporary inactivity while the rights stemming from the licence are not withdrawn. As a result of this system, high percentage of inactive vessels in some segments should not be considered as overcapacity because fishery is not their main activity or economic interest. Gradual decreasing trend since 2015 can be observed for SSCF segments due to the activation of a specific category of small-scale vessels for personal needs (previously 'subsistence' vessels) in the PGP fleet segment while LSF segments show no significant trends. Therefore, the potential threat to delay or hamper the measures of bringing capacity in line with the available fishing opportunities is minimal. According to results of the Inactive Vessel Indicator there is no overcapacity detected in any of the inactive fleet vessel length categories in 2022.

Table 23. Inactive Vessel Indicator (IVI) in 2012-2022.

Proportion of inactive vessels to the total HRV fleet; provided as % in number, % in engine power (kW) and % in gross tonnage (GT). Values > 20% highlighted red (as according to the 2014 Balance Indicator Guidelines).

Length category	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Δ 2022 to avg. 15-21	Δ 2022 to 2021	Δ 2022 to 2015
Number of vessels														
VL0006	648	700	754	1.781	974	944	690	685	666	624	641	-29%	3%	-64%
VL0612	602	679	732	3.062	1.262	1.177	790	747	712	722	688	-43%	-5%	-78%
VL1218	90	96	107	105	111	104	104	108	105	100	109	4%	9%	4%
VL1824	25	32	33	35	35	35	40	34	35	34	32	-10%	-6%	-9%
VL2440	38	44	43	43	40	37	44	39	39	37	42	5%	14%	-2%
Total	**1.403**	**1.551**	**1.669**	**5.026**	**2.422**	**2.297**	**1.668**	**1.613**	**1.557**	**1.517**	**1.512**	**-34%**	**0%**	**-70%**

Length category	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Δ 2022 to avg. 15-21	Δ 2022 to 2021	Δ 2022 to 2015
No. inactive vessels as % of total vessels														
VL0006	15,4	16,1	17,2	22,7	12,6	11,3	8,9	8,7	8,5	8,0	8,3	-28%	4%	-63%
VL0612	14,3	15,6	16,7	39,0	16,3	14,1	10,2	9,5	9,1	9,3	8,9	-42%	-4%	-77%
VL1218	2,1	2,2	2,4	1,3	1,4	1,2	1,3	1,4	1,3	1,3	1,4	6%	10%	6%
VL1824	0,6	0,7	0,8	0,4	0,5	0,4	0,5	0,4	0,4	0,4	0,4	-8%	-5%	-7%
VL2440	0,9	1,0	1,0	0,5	0,5	0,4	0,6	0,5	0,5	0,5	0,5	8%	14%	0%
Total	**33,3**	**35,6**	**38,1**	**64,0**	**31,3**	**27,5**	**21,6**	**20,6**	**19,9**	**19,6**	**19,7**	**-33%**	**0%**	**-69%**
Inactive GT as % of fleet GT														
VL0006	1,5	1,5	1,7	4,4	2,2	2,1	1,5	1,5	1,5	1,4	1,5	-31%	3%	-67%
VL0612	5,1	5,6	5,9	16,0	8,6	8,4	6,5	6,3	6,0	6,1	6,0	-27%	-1%	-62%
VL1218	3,6	3,7	4,1	3,6	4,3	3,9	4,2	4,5	4,2	4,0	4,4	7%	10%	22%
VL1824	2,9	3,5	3,6	3,4	3,5	3,6	4,7	3,8	3,9	3,9	3,5	-8%	-9%	5%
VL2440	13,8	15,2	14,7	11,9	11,9	11,2	13,9	12,8	12,9	12,6	14,6	17%	16%	23%
Total	**26,9**	**29,5**	**30,0**	**39,2**	**30,5**	**29,2**	**30,7**	**28,9**	**28,5**	**27,9**	**29,9**	**-3%**	**7%**	**-24%**
Inactive kW as % of fleet kW														
VL0006	2,5	2,5	2,8	7,0	3,9	3,7	2,5	2,5	2,4	2,3	2,3	-34%	0%	-67%
VL0612	12,7	14,0	14,4	25,9	18,0	18,1	14,6	14,7	13,9	14,3	14,2	-17%	-1%	-45%
VL1218	3,8	4,0	4,4	3,4	4,2	3,8	4,4	4,9	4,4	4,3	4,8	13%	12%	39%
VL1824	1,7	2,0	2,1	1,8	2,0	2,0	2,6	2,1	2,2	2,2	2,0	-5%	-8%	11%
VL2440	5,8	6,3	6,1	4,7	4,6	4,3	5,7	5,0	5,3	5,3	6,5	30%	22%	39%
Total	**26,5**	**28,8**	**29,9**	**42,7**	**32,8**	**31,9**	**29,7**	**29,1**	**28,2**	**28,4**	**29,8**	**-6%**	**5%**	**-30%**

The Vessel Utilization Indicator (VUR)

The vessel utilisation indicators (VUR and VUR220) shown in Tables 24 & 25 were calculated using maximum observed days for each clustered fleet segment (VUR) and theoretical maximum days (VUR220). Considering the methodological and data-availability considerations in mind, as well as the limitations of the indicator itself, the results indicate that the segments have rather stable activity levels over the years.

VUR was calculated for 23 clustered fleet segments in 2022, of which:

- 8 appear to be in balance, of which one segment is 6 – 12 m in length and 7 segments are above 12 m LOA,
- 15 appear not to be in balance, of which 14 are segments 0 – 12 m in length and only one above 12 m LOA.

Trends were calculated for 23 segments, of which:

- none displayed an increasing trend,
- 2 displayed a declining trend (PGP vessels),
- 15 displayed no significant trend,
- 6 displayed flat/null trend.

VUR220 was calculated for 23 clustered fleet segments in 2022, of which:

- 4 appear to be in balance, all of which are DTS and PS vessels over 18 m LOA,
- 19 appear not to be in balance, of which 15 are segments 0 – 12 m in length and only 4 above 12 m LOA.

Trends were calculated for 23 segments, of which:

- none displayed an increasing trend,
- none displayed a declining trend,
- 20 displayed no significant trend,
- 3 displayed flat/null trend.

Among length classes of all gear groups a different situation can be observed, from most homogenous (PSVL1824, PSVL2440 and DTSVL2440) to very low values of utilisation indicator (PGP, MGO). This can be explained by different nature and areas of operation of the vessels, as well as by different operational realities in some gears used in Croatia. Furthermore, for some small gears, this also indicates

and confirms the specific realities of highly seasonal and highly small-scale approach to the activity. In the most significant segments, we can notice that PS segments are rather stable over the past years with slight improvement. This can be explained by the introduction of effort management measures in terms of limiting number of total fishing days targeting small pelagic species. Regarding DTS segments situation is stable with slight improvement in all length classes. Some changes between years are also affected by the changes in the number of vessels which change segments over the years based on their gear activity.

Similarly, as for the inactive vessel indicator, the results of this indicator need to be considered in view of the fleet structure and its activity. Again, it should be noted that particularly in smaller fleet segments fishing activities do not represent the only source of income, and rarely are the main one. Due to this fact, in those segments even though the indicator shows values less than 0,7 it is considered that it is not really a sign of imbalance. This particularly holds true for FPO, HOK and MGO segments with vessels of less than 12 m. With the seasonal character of the vessels, and their overall characteristics of operations, VUR is calculated against the parts of the fleet that are in fact more dependent on this activity than majority.

Vessel utilisation indicators are not applicable in case of PGP segments which are mainly constituted of vessels falling in the specific category for personal needs, since these segments are managed separately from the main commercial fleet, through gear and catch restrictions.

Table 24. Vessel utilisation ratio (VUR) calculated using observed maximum sea days on a vessel level for the period 2013-2022.

VUR calculated as: average days at sea per vessel / maximum days at sea at fleet segment level.
Traffic light system: 0.7< red; 0.7 ≥ yellow > 0.9; ≥ 0.9 green
Trend analysed for the period 2013-2022, using the slope equation and a 5% threshold to indicate significance, as: Slope > 0.05 increasing; Slope < -0.05 decreasing; -0.05 < Slope < 0.05 no significant trend and slope = 0 flat/null trend

Fleet segment		Vessel Utilization Ratio (VUR)										No vessels 2022	Trend 2022	Trend 2013-2022	Status 2022
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022				
DFN	VL0006	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,4	346	flat/null trend		out of balance
DFN	VL0612	0,3	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	698	no significant trend		out of balance
DFN	VL1218	0,6	0,7	0,6	0,7	0,7	0,6	0,6	0,7	0,7	0,8	13	no significant trend		in balance
DRB	VL0612	0,8	0,8	0,7	0,7	0,8	0,8	0,9	0,9	1,0	1,0	9	no significant trend		in balance
DRB	VL1218	0,8	0,8	0,7	0,7	0,7	0,7	0,8	0,8	0,8	0,8	13	no significant trend		in balance
DTS	VL0612	0,4	0,4	0,4	0,4	0,5	0,4	0,4	0,5	0,5	0,5	128	no significant trend		out of balance
DTS	VL1218	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	154	no significant trend		out of balance
DTS	VL1824	0,6	0,7	0,6	0,6	0,7	0,6	0,7	0,7	0,7	0,7	30	no significant trend		in balance
DTS	VL2440	0,7	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0	1,0	8	no significant trend		in balance
FPO	VL0006	0,5	0,5	0,5	0,4	0,5	0,5	0,5	0,5	0,5	0,5	47	no significant trend		out of balance
FPO	VL0612	0,4	0,5	0,5	0,5	0,5	0,5	0,4	0,4	0,4	0,5	125	flat/null trend		out of balance
HOK	VL0006	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	88	flat/null trend		out of balance
HOK	VL0612	0,3	0,3	0,3	0,4	0,4	0,3	0,3	0,3	0,3	0,3	251	flat/null trend		out of balance
MGO	VL0006	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	279	flat/null trend		out of balance
MGO	VL0612	0,5	0,5	0,5	0,4	0,4	0,4	0,4	0,4	0,4	0,4	42	flat/null trend		out of balance
PGP	VL0006	0,8	0,8	0,2	0,0	0,0	0,0	0,1	0,1	0,1	0,1	2923	decreasing		out of balance
PGP	VL0612	0,5	0,5	0,3	0,0	0,0	0,0	0,1	0,1	0,1	0,1	812	decreasing		out of balance
PMP	VL0006	0,5	0,6	0,5	0,5	0,5	0,5	0,6	0,5	0,6	0,6	29	no significant trend		out of balance
PMP	VL0612	0,5	0,5	0,5	0,5	0,7	0,6	0,8	0,6	0,6	0,6	26	no significant trend		out of balance
PS	VL0612	0,5	0,5	0,6	0,5	0,5	0,6	0,6	0,6	0,6	0,6	25	no significant trend		out of balance
PS	VL1218	0,6	0,6	0,7	0,6	0,7	0,7	0,6	0,7	0,7	0,7	36	no significant trend		in balance
PS	VL1824	0,7	0,7	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	39	no significant trend		in balance
PS	VL2440	0,7	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	61	no significant trend		in balance

Table 25. Vessel utilisation ratio (VUR220) calculated using 220 days on a vessel level for the period 2013-2022.

VUR220 calculated as: average days at sea per vessel / 220 i.e., theoretical maximum days at sea.
Traffic light system: 0.7< red; 0.7 ≥ yellow > 0.9; ≥ 0.9 green
Trend analysed for the period 2013-2022, using the slope equation and a 5% threshold to indicate significance, as: Slope > 0.05 increasing; Slope < -0.05 decreasing; -0.05 < Slope < 0.05 no significant trend and slope = 0 flat/null trend

Fleet segment		Vessel Utilization Ratio - 220 (VUR220)										No vessels 2022	Trend 2022	Trend 2013-2022	Status 2022
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022				
DFN	VL0006	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,6	346	no significant trend		out of balance
DFN	VL0612	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,6	698	no significant trend		out of balance
DFN	VL1218	0,2	0,2	0,3	0,2	0,3	0,3	0,3	0,4	0,3	0,4	13	no significant trend		out of balance
DRB	VL0612	0,4	0,5	0,5	0,4	0,5	0,5	0,4	0,5	0,5	0,4	9	flat/null trend		out of balance
DRB	VL1218	0,5	0,6	0,6	0,5	0,5	0,5	0,5	0,5	0,5	0,5	13	flat/null trend		out of balance
DTS	VL0612	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,4	128	no significant trend		out of balance
DTS	VL1218	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,5	0,5	0,5	154	no significant trend		out of balance
DTS	VL1824	0,7	0,7	0,6	0,7	0,8	0,8	0,8	0,7	0,8	0,8	30	no significant trend		in balance
DTS	VL2440	0,9	0,9	0,9	0,8	0,8	1,0	0,9	0,8	0,9	0,8	8	no significant trend		in balance
FPO	VL0006	0,3	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4	47	no significant trend		out of balance
FPO	VL0612	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,6	0,6	125	no significant trend		out of balance
HOK	VL0006	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,3	0,3	88	no significant trend		out of balance
HOK	VL0612	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	251	no significant trend		out of balance
MGO	VL0006	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,5	0,5	279	no significant trend		out of balance
MGO	VL0612	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,6	42	no significant trend		out of balance
PGP	VL0006	0,3	0,2	0,1	0,0	0,0	0,0	0,1	0,1	0,1	0,1	2923	no significant trend		out of balance
PGP	VL0612	0,4	0,3	0,2	0,0	0,0	0,0	0,1	0,1	0,1	0,1	812	no significant trend		out of balance
PMP	VL0006	0,3	0,4	0,2	0,3	0,2	0,4	0,4	0,5	0,5	0,5	29	no significant trend		out of balance
PMP	VL0612	0,4	0,4	0,3	0,4	0,4	0,4	0,5	0,4	0,6	0,5	26	no significant trend		out of balance
PS	VL0612	0,5	0,4	0,4	0,4	0,4	0,6	0,6	0,5	0,5	0,5	25	flat/null trend		out of balance
PS	VL1218	0,6	0,7	0,6	0,6	0,6	0,6	0,5	0,6	0,6	0,6	36	no significant trend		out of balance
PS	VL1824	0,8	0,8	0,7	0,8	0,7	0,7	0,7	0,7	0,8	0,7	39	no significant trend		in balance
PS	VL2440	0,9	0,9	0,8	0,8	0,7	0,8	0,7	0,7	0,8	0,7	61	no significant trend		in balance

8.2   *Biological indicators*

Status of priority species

On its Twenty-fourth session of the Scientific Advisory Committee (SAC) held in FAO headquarters, Italy, 20-23 June 2023, the Committee reviewed the status of Adriatic Sea demersal priority species (Table 26), noting that of the key species under the management plan, common sole, Norway lobster and red mullet, had reached the Fmsy level, while for European hake and deep-water rose shrimp there was a good indication that fishing mortality had been steadily decreasing, providing evidence of the effectiveness of both the management plan and the Jabuka/Pomo pit FRA. The Committee advised on a further decrease in fishing effort for 2024 towards reaching the goal of sustainable exploitation by 2026, taking into account the fishing mortality reductions proposed by the scientific advice (GFCM SAC 2023).

Following establishment of Jabuka/Pomo Pit FRA, according to recent years' monitoring programmes sampling data, including MEDITS and FRA Jabuka/Pomo surveys, results show a significant recovery of demersal resources. Results of surveys show positive trends such as overall decrease of fishing mortality and increase of biomass of the most important demersal species. In addition, the survey in Jabuka Pit and surrounding area shows increase in size structure of populations of the most important demersal species as well as their abundance but also indicates the restoration of the complete ecosystem. This is recognised as very encouraging and proves that a precisely directed management measure has a potential to yield significant results and it is expected that it shall further contribute to improvement of the status of the resources.

Thus, improved assessments for the above-mentioned demersal stocks have affected the results of SHI indicators for relevant fleet segments (all DTS and DRB segments and well as FPO segments).

Furthermore, in relation to small pelagic fishery, the GFCM SAC 2023 reviewed the updated assessments of the status of European anchovy, which was found overexploited and in overexploitation, and a new quantitative assessment of sardine, which resulted at increased risk of being overexploited and in overexploitation, based on reference year 2022, remarking the progressive deterioration in the stock status of both species in the Adriatic Sea (Table 26). The Committee recommended extending for one year the transitional period replicating the existing measures, towards the implementation of long-term management in 2025.

According to most recent scientific advice both stocks showed a worrying progressive deterioration in stock status, and which for sardine was also coupled with the lowest acoustic biomass ever recorded. For both species, fishing mortality remains high, and biomass continues decreasing, apparently not responding to the measures in place and triggering the need for a discussion on future steps in implementing the management plan (SRC-AS 2023).

Croatia will continue to closely monitor developments of the status of the key resources and adjust management framework accordingly.

Relevant information on stocks and selection of stocks for the calculation of SHI and SAR is included in Table 26.

Table 26. Determination of species relevant for SHI and SAR. Stock status of priority species assessed at the level of GFCM determined according to GFCM SRC-AS 2023 Report.

Species	Stock area	Method	Quantitative status	Stock status	Scientific advice	WG comments	SHI	SAR
European hake *Merluccius merluccius*	GSAs 17-18	SS3	F/Fref = 1.7 B/Bthreshold = 1.56 B/Blimit = 2.14	Biomass above the reference point and in overexploitation	Reduce fishing mortality (reduction of F to Fmsy = 41%)	GFCM SRC-AS 2023. Updated benchmark assessment. Blim not considered plausible. Benchmark in need of an overhaul.	Yes	No
Red mullet *Mullus barbatus*	GSAs 17-18	SS3	F/Fref = 0.199 B/Btgt = 2.19 B/Bpa = 4.38 B/Blim = 8.77	Sustainably Exploited	Evaluate potential fishing opportunities (reduction of F to Fmsy = 0%)	GFCM SRC-AS 2023. Benchmark not finalized. Validated quantitative advice based on a seasonal length-based sex-structured Stock Synthesis base-case Model. Reference points are specified based on a precautionary Bmsy proxy for Btgt = SSB35 considering the uncertainty about the stock recruitment relationship. The threshold (Bpa) and limit (Blim) reference points were set with to Btgt at Bpa = 0.5Btgt (also Bpa = 2Blim) Blim = 0.25Btgt (i.e Blim = 2Bpa).	Yes	No
Deepwater rose shrimp *Parapenaeus longirostris*	GSAs 17-20	SPiCT	F/Fref = 1.26 B/Btgt = 0.85 B/Bpa = 1.70 B/Blim = 2.55	Increased risk of being overexploited and in overexploitation	Reduce fishing mortality (reduction of F to Fmsy = 21%)	GFCM SRC-AS 2023. Benchmarked, validated quantitative advice with the surplus production model SPiCT. Target reference points are specified based on Ftgt = Fmsy and Btgt = Bmsy. The threshold (Bpa = Bmsy/2) and limit (Blim = Bmsy/3) reference, consistent with ICES advice framework for surplus production models	Yes	No
Common cuttlefish *Sepia officinalis*	GSA 17	JABBA	F/Fref = 1.37 B/Btarget = 0.27	Overexploited and in overexploitation	Immediate action to ensure a reduction in fishing mortality	GFCM SRC-AS 2023. Revised assessment with a new model.	Yes	No
Spottail mantis shrimp *Squilla mantis*	GSA 17	SS3	F/Fref = 0.96 B/Btarget = 1.04	Sustainably exploited	Do not increase fishing mortality	GFCM SRC-AS 2023. Updated assessment. N/B - Croatian fleet does not target spottail mantis shrimp.	Yes	No
Blackbellied angler *Lophius budegassa*	GSA 17	CMSY	N/A	Possibly in overexploitation	Reduce fishing mortality	GFCM WGSAD 2021. New assessment with large uncertainties in catch data before 2009.	No	No
Great Mediterranean scallop *Pecten jacobaeus*	GSA 17	SS3	F/Fref = 2.86 B/Btarget = 0.08	In overexploitation and depleted	Close the fishery and implement a recovery plan	GFCM WGSAD 2021. New assessment. Limited assessment (only on Italian data).	No	No
Common sole *Solea solea*	GSA 17	SS3 ensemble	F/Fref = 0.75 B/Btarget = 0.86	Overexploited with low fishing mortality	Do not increase fishing mortality (reduction of F to Fmsy = 0%)	GFCM SRC-AS 2023. Updated benchmark assessment	Yes	No
Norway lobster *Nephrops norvegicus*	GSA 17	SS3	F/Fref = 0.72 B/Btarget = 0.78	Overexploited with low fishing mortality	Reduce fishing mortality and/or implement a recovery plan (reduction of F to Fmsy = 0%)	GFCM SRC-AS 2023. New assessment. STF should not yet be used. Stock overexploited (SSB below SSB40%). Explore use of commercial CPUE outside Pomo/Pit area.	Yes	No
European anchovy *Engraulis encrasicolus*	GSAs 17-18	FLSAM	F/Fmsy = 1.24 SSB/SSBlim = 1.25 SSB/SSBpa = 0.94	Overexploited and in overexploitation	Reduce fishing mortality immediately (reduction of F to Fmsy = 19%)	GFCM SRC-AS 2023. Validated quantitative advice based on a statistical catch-at-age model a4a. Fmsy is based on the fishing mortality that corresponds to E=0.4. Blim corresponds to Bloss(year=1987) and Bpa corresponds to Blim* exp (1.645 * sigmaSSB).	Yes	No
European sardine *Sardina pilchardus*	GSAs 17-18	SPiCT	F/Fmsy = 1.44 SSB/SSBlim = 0.68 B/Bpa = 1.35 B/Blim = 2.25	Increased risk of being overexploited and in overexploitation	Reduce fishing mortality	GFCM SRC-AS 2023. Benchmark not finalized. Validated quantitative advice based on a surplus production model SPiCT from catches and combined biomass index. Reference points are specified based on Bmsy. The threshold (Bpa) and limit (Blim) reference points were set with to Bmsy at Bpa = 0.5Bmsy and Blim = 0.3Bmsy.	Yes	Yes
Red coral *Corallium rubrum*	Adriatic (Croatia)	LBSPR	N/A	Possibly overexploited (GFCM); CR - Critically Endangered (IUCN, HRV)	Reduce fishing mortality	GFCM SRC-AS 2023. New assessment; qualitative advice (F/M = 4.56). IUCN - EN in 2014 (Mediterranean); National assessment - CR (Croatia).	No	Yes
European eel *Anguilla anguilla*	Europe			CR - Critically Endangered	IUCN, CITES	IUCN - CR in 2008 (Europe), 2013 (Global). CITES Appendix II.	No	Yes
Swordfish *Xiphias gladius*	Mediterranean	Stock not assessed at GFCM or STECF level		NT - Near Threatened	IUCN, ICCAT	IUCN - NT in 2007 (Mediterranean); assessment needs updating.	No	No
Atlantic bluefin tuna *Thunnus thynnus*				EN - Endangered	IUCN, ICCAT	IUCN - EN in 2009 (Mediterranean); assessment needs updating.	No	Yes

Sustainable Harvest Indicator (SHI)

SHI 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 most recent estimates of $F_{current}$ and F_{msy} (or its proxy F0.1) relevant for GSA 17 were extracted from the relevant STECF or GFCM reports as indicated in Table 27. Following priority stocks were considered for this report for the calculation of SHI:

- small pelagic species: *Sardina pilchardus* (PIL) and *Engraulis encrasicolus* (ANE),
- demersal species: *Mullus barbatus* (MUT), *Sepia officinalis* (CTC), *Parapenaeus longirostris* (DPS), *Merluccius merluccius* (HKE), *Squilla mantis* (MTS) and *Nephrops norvegicus* (NEP) and *Solea solea* (SOL).

SHI indicator was calculated for all segments based on the available assessment. According to the criteria in the 2014 Balance Indicator Guidelines, the SHI indicator values for 11 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.

Results for 12 segments for which assessed species count for more than 40% of landing value are presented in the Tables 27 and 28. As this indicator depends on the stock assessment results, some of the values and stocks included in some segments should be taken with caution due to changes in the assessment methodology or model.

Table 27. Overview of available and significant SHI per fleet segment for the period 2012-2021.

SHI ≥ 1 'out of balance'; SHI < 1 'in balance' (as according to the 2014 Balance Indicator Guidelines)

Fleet segment (FS)		SHI										Share in FS landing value in 2021	Status 2021
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
DFN	VL1218	-	3,7	2,5	2,5	0,6	1,3	1,5	0,7	0,6	-	38%	N/A
DRB	VL0612	-	-	-	-	-	1,0	1,0	1,3	1,5	0,5	92%	in balance
DRB	VL1218	-	-	-	-	-	0,7	0,8	1,2	1,3	0,4	77%	in balance
DTS	VL0612	-	-	-	-	0,3	1,1	1,0	1,2	1,1	0,5	54%	in balance
DTS	VL1218	4,8	4,4	3,3	3,2	0,9	1,2	1,3	1,4	1,3	0,6	62%	in balance
DTS	VL1824	4,6	4,5	3,3	3,3	0,5	1,7	2,1	1,9	1,8	0,9	79%	in balance
DTS	VL2440	-	4,8	3,4	3,3	0,4	1,7	2,1	1,9	1,8	0,9	82%	in balance
FPO	VL0006	-	-	-	-	-	0,9	0,9	0,9	0,8	0,5	63%	in balance
FPO	VL0612	-	-	-	-	-	1,2	1,2	1,2	1,1	0,6	75%	in balance
PMP	VL0612	-	-	-	-	-	-	-	-	1,7	-	21%	N/A
PS	VL0612	-	-	-	-	-	0,7	0,7	2,2	2,8	0,5	47%	in balance
PS	VL1218	3,4	2,3	2,3	2,2	2,4	1,4	1,4	3,5	3,4	0,9	94%	out of balance
PS	VL1824	3,3	2,3	2,3	2,2	2,4	1,5	1,5	3,2	3,2	0,9	95%	out of balance
PS	VL2440	3,3	2,3	2,3	2,2	2,4	1,5	1,5	3,5	3,4	1,0	96%	out of balance

Purse seiners above 12 m LOA continue to show imbalances since they are highly dependent on only two stocks, and at the same time those stocks (sardine and anchovy) are overexploited. Given the need to secure sustainability and safeguard the implementation of the GFCM plan for small pelagic species in GSA 17 and 18, Croatia believes that PS segments above 12 m LOA need to be addressed in terms of imbalance with available resources. In addition to using purse seine net for small pelagic fish, smaller purse seiners below 12 m LOA use also nets with a larger mesh size specialized to target other species, like greater amberjack, Atlantic bonito or mullets, which contributes to the different catch structure than for purse seine segments above 12 m LOA. However, in recent years catch composition was dominantly constituted of small pelagic fish (dominant use of net for small pelagic fish). Notwithstanding, the results of SHI for 2021, low short-term and long-term profitability is clearly indicated for vessels below 12 m

LOA. Considering that urgent actions towards sustainability of small pelagic species should be addressed as soon as possible, this segment is assessed as out of balance.

The indicated imbalance of all DTS segments relates to the overexploitation status of all priority demersal species as assessed in previous reports. Even though most recent stock assessments indicate an improvement in the state of demersal species, it is necessary to take into consideration the overall impact these segments have on the ecosystems in general, and thus continue with adjusting the fleet balance.

Recent assessment of Norway lobster confirmed the previous assessment on the balance for FPO vessels from 6 to 12 m LOA, given that the majority of FPO vessels using pots/traps operate in the northern Croatian channels (Kvarner Bay and Velebit Channel) and target a subpopulation of Norway lobster present in that region (Vrgoč et al., 2004) which appears to be isolated and self-sustaining according to the results of the recent study performed on Norway lobster in the Adriatic Sea (Melaku Canu et al., 2021).

Considering the above, nine segments are considered to be in balance and three segments are considered to be out of balance according to the results of the SHI, while for the remaining segments share of considered stocks is not relevant.

Stocks-at-risk Indicator (SAR)

SAR indicator aims to measure how many stocks are being affected by the activities of a fleet segment that are biologically vulnerable.

It is important to note that fleets targeting stocks including small pelagic species (sardine and anchovy) and large pelagic species (Bluefin tuna and swordfish) are all managed according to catch reduction schemes (ANE, PIL) or quotas (BFT, SWO).

However, conservation status of red coral, *Corallium rubrum*, determined as endangered according to the IUCN 'red list', in Croatia is assessed as critically endangered (CR) (Ordinance on strictly protected species, OG 144/2013 and 73/2016), and it needs to be considered when addressing the balance of fleet segments targeting this species. In Croatia, limited number of vessels included in the MGO fleet segment target red coral, among other benthic and demersal species, using hand gathering gears and diving equipment, and to a lesser extent HOK VL0612 segment. Balance status of MGO fleet segments below 12 m LOA (321 vessels in total in 2022), which include vessels targeting red coral, cannot be considered as out of balance, since only a small share of MGO vessels (only 3%) have been issued specific authorizations for red coral in 2021 and 2022 (10 vessels in total). In addition to limiting number of vessels and establishing catch limits in line with the authorization process carried out in 2021, and repeated in 2022, in the Action Plan additional management instruments are determined specifically for vessels with fishing authorizations for red coral ('red coral fleet').

Following the methodology proposed in the Guidelines and STECF-21-16 report, results of SAR indicator for species selected according to Table 27 (Atlantic bluefin tuna, red coral and European eel) are presented below (Table 29).

For PS segments above 18 m LoA status of SAR is assessed considering catch of Bluefin tuna, as landing is not reported (catch is intended for farming purposes).

Considering the above, two segments are considered to be in balance and eight segments are considered to be out of balance according to the results of the SAR indicator, while for the remaining 13 segments share of considered stocks is not relevant (no SAR found). Results of SAR indicator should be interpreted with caution, considering that a very limited number of vessels in the identified fleet segments targets stocks considered in the SAR calculation, and these vessels are already managed separately from the remainder of the fleet. Vessels targeting *Thunnus thynnus* and *Corallium rubrum* are managed separately based on catch quotas, while catch of *Anguilla anguilla* in Croatia is very limited and only a few vessels in the delta of River Neretva are involved in this commercial fishing activity.

Table 28. Overview of SHI per fleet segment for 2021.

According to the criteria in the 2014 Balance Indicator Guidelines, the SHI indicator values can be used meaningfully to assess the balance or imbalance of fleet segments based on stocks that comprise more than 40% of the total value of landings by those fleet segments (highlighted in red in column 'share' in the table below). Traffic light: SHI ≥ 1 'out of balance'; SHI < 1 'in balance' (according to the 2014 Balance Indicator Guidelines). Landing values in table below are expressed in thousand EUR.

Fleet segment		ANE *Engraulis encrasicolus*		CTC *Sepia officinalis*		DPS *Parapenaeus longirostris*		HKE *Merluccius merluccius*		MTS *Squilla mantis*		MUT *Mullus barbatus*		NEP *Nephrops norvegicus*		PIL *Sardina pilchardus*		SOL *Solea solea*		Total landing value (priority species)	Total landing value (fleet segment)	Share, %	SHI
DFN	VL0006	-	0%	88,95	7%	-	0%	53,74	4%	0,32	0%	6,15	0%	0,61	0%	0,34	0%	88,61	7%	249,74	1.287,97	19%	0,22
DFN	VL0612	0,02	0%	214,65	5%	0,13	0%	235,26	6%	0,51	0%	9,77	0%	24,68	1%	0,26	0%	732,54	17%	1.280,90	4.191,87	31%	0,30
DFN	VL1218	-	0%	2,39	1%	-	0%	0,73	0%	0,05	0%	1,08	1%	0,03	0%	-	0%	67,78	35%	73,55	191,58	38%	0,29
DRB	VL0612	-	0%	41,73	14%	-	0%	0,68	0%	0,04	0%	1,05	0%	-	0%	-	0%	129,37	43%	280,28	303,55	92%	0,51
DRB	VL1218	-	0%	78,11	10%	0,06	0%	3,57	0%	0,47	0%	8,14	1%	0,27	0%	-	0%	250,97	33%	575,86	752,66	77%	0,40
DTS	VL0612	0,61	0%	38,33	1%	95,01	3%	550,66	20%	3,35	0%	291,56	11%	422,83	15%	0,18	0%	17,43	1%	1.508,77	2.774,44	54%	0,53
DTS	VL1218	0,09	0%	56,44	1%	487,61	9%	1.264,60	23%	7,52	0%	711,87	13%	588,29	11%	0,07	0%	52,98	1%	3.380,57	5.452,13	62%	0,63
DTS	VL1824	-	0%	4,06	0%	840,75	22%	960,16	25%	0,57	0%	184,11	5%	845,23	22%	-	0%	3,49	0%	3.053,35	3.855,75	79%	0,86
DTS	VL2440	-	0%	1,98	0%	548,21	25%	428,14	20%	0,00	0%	91,39	4%	563,42	26%	-	0%	0,05	0%	1.761,47	2.155,19	82%	0,85
FPO	VL0006	0,03	0%	4,06	2%	-	0%	1,42	1%	-	0%	0,14	0%	151,04	60%	0,11	0%	1,49	1%	158,65	251,66	63%	0,47
FPO	VL0612	-	0%	3,72	0%	-	0%	14,44	1%	0,01	0%	0,01	0%	860,56	73%	-	0%	10,73	1%	890,27	1.184,75	75%	0,55
HOK	VL0006	-	0%	2,45	1%	-	0%	16,51	7%	-	0%	0,10	0%	0,79	0%	-	0%	0,18	0%	20,47	234,42	9%	0,14
HOK	VL0612	-	0%	7,68	0%	0,12	0%	417,66	17%	-	0%	0,04	0%	0,02	0%	-	0%	0,61	0%	428,67	2.443,85	18%	0,29
MGO	VL0006	-	0%	31,43	1%	-	0%	3,97	0%	0,01	0%	0,09	0%	-	0%	0,01	0%	3,23	0%	49,00	2.353,00	2%	0,02
MGO	VL0612	-	0%	1,42	0%	-	0%	0,08	0%	0,00	0%	0,24	0%	-	0%	-	0%	6,40	0%	14,40	2.628,44	1%	0,00
PGP	VL0006	-	0%	6,88	1%	0,05	0%	56,88	12%	0,02	0%	2,13	0%	5,97	1%	0,00	0%	2,52	1%	75,36	464,21	16%	0,24
PGP	VL0612	-	0%	3,35	1%	-	0%	50,30	15%	0,04	0%	0,68	0%	5,07	2%	0,01	0%	0,73	0%	62,58	334,77	19%	0,28
PMP	VL0006	-	0%	6,32	5%	-	0%	0,86	1%	-	0%	0,11	0%	0,03	0%	-	0%	4,31	3%	11,85	129,35	9%	0,10
PMP	VL0612	-	0%	7,98	3%	-	0%	7,18	3%	0,01	0%	1,11	0%	-	0%	11,09	5%	11,65	5%	52,55	245,05	21%	0,20
PS	VL0612	33,49	11%	3,91	1%	-	0%	12,22	4%	-	0%	1,42	0%	-	0%	91,90	31%	-	0%	143,01	301,12	47%	0,66
PS	VL1218	1.456,54	32%	-	0%	0,48	0%	1,42	0%	0,18	0%	0,77	0%	-	0%	2.739,21	61%	-	0%	4.198,72	4.485,10	94%	1,28
PS	VL1824	3.415,64	40%	-	0%	-	0%	-	0%	-	0%	1,25	0%	-	0%	4.788,31	55%	-	0%	8.205,20	8.639,56	95%	1,29
PS	VL2440	5.483,06	32%	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%	11.129,47	64%	-	0%	16.612,53	17.356,75	96%	1,32
TOTAL		10.389,47		605,84		1.972,42		4.080,46		13,12		1.313,22		3.468,83		18.760,97		1.385,07		43.087,77	62.017,15	69%	0,87
Fcurr/Funique		1,24		1,37		1,26		1,69		0,97		0,20		0,72		1,44		0,75					

Source of information on Fcurr/Funique:
Report of the Subregional Committee for the Adriatic Sea (SRC-AS), including the working group on Management Strategy Evaluation (WGMSE) (Split, Croatia, 29 May–2 June 2023) (SRC-AS 2023).

Table 29. Overview of available and significant SAR per fleet segment for 2021.

SAR ≥ 1 'out of balance'; SAR < 1 'in balance'. No SAR found when SAR = -1 (according to the 2014 Balance Indicator Guidelines)

Fleet segment		STOCKS AT RISK – LANDING (KG) – GSA 17 – 2021									Total FS Landing (kg)	SAR	Status 2021
		Thunnus thynnus			Corallium rubrum			Anguilla anguilla					
		Landing	1	2	Landing	1	2	Landing	1	2			
DFN	VL0006	-	0%	0%	-	0%	0%	93,30	0%	24%	243.310,87	1	Out of balance
DFN	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	647.302,72	-1	No SAR found
DFN	VL1218	-	0%	0%	-	0%	0%	-	0%	0%	28.813,12	-1	No SAR found
DRB	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	43.098,79	-1	No SAR found
DRB	VL1218	-	0%	0%	-	0%	0%	-	0%	0%	135.474,48	-1	No SAR found
DTS	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	758.038,96	-1	No SAR found
DTS	VL1218	-	0%	0%	-	0%	0%	-	0%	0%	1.482.530,09	-1	No SAR found
DTS	VL1824	-	0%	0%	-	0%	0%	-	0%	0%	987.453,00	-1	No SAR found
DTS	VL2440	-	0%	0%	-	0%	0%	-	0%	0%	540.026,85	-1	No SAR found
FPO	VL0006	-	0%	0%	-	0%	0%	-	0%	0%	26.269,11	-1	No SAR found
FPO	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	99.625,76	-1	No SAR found
HOK	VL0006	-	0%	0%	-	0%	0%	-	0%	0%	31.940,78	-1	No SAR found
HOK	VL0612	81.601,20	24%	98%	34,50	0%	16%	-	0%	0%	346.996,29	1	Out of balance
MGO	VL0006	-	0%	0%	44,70	0%	21%	-	0%	0%	424.177,33	1	Out of balance
MGO	VL0612	-	0%	0%	132,55	0%	63%	-	0%	0%	222.383,04	1	Out of balance
PGP	VL0006	-	0%	0%	-	0%	0%	25,00	0%	6%	112.049,03	0	In balance
PGP	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	55.990,30	-1	No SAR found
PMP	VL0006	-	0%	0%	-	0%	0%	196,30	1%	50%	18.458,35	1	Out of balance
PMP	VL0612	-	0%	0%	-	0%	0%	77,00	0%	20%	83.086,07	1	Out of balance
PS	VL0612	-	0%	0%	-	0%	0%	-	0%	0%	325.608,44	-1	No SAR found
PS	VL1218	364,43	0%	0%	-	0%	0%	-	0%	0%	7.833.675,98	0	In balance
PS	VL1824	805,69	0%	1%	-	0%	0%	-	0%	0%	15.050.564,99	1	Out of balance
PS	VL2440	665,57	0%	1%	-	0%	0%	-	0%	0%	31.669.372,85	1	Out of balance
TOTAL		83.436,88			211,75			391,60			61.166.247,20		

Criteria to determine SAR balance status:

1 - The share of stock at risk in the catches by the fleet segment. In case the stocks make up to 10% or more of the catches by the fleet segment, it is considered out of balance; or

2 - The share of stock at risk caught by the fleet segment in the total catches from that stock. In case the fleet segment takes 10% or more of the total catches from that stock it is considered out of balance.

8.3   *Economic indicators*

The monetary values of economic data for calculating economic indicators in this report are not adjusted for inflation (unless specified). This is important in terms of comparing results of balance indicators in the framework of STECF working groups as the results may differ slightly.

Following the methodology proposed in the Guidelines, results of two economic indicators are presented below: RoFTA (long-term return) and the CR/BER ratio of current revenue to break-even revenue (short-term return).

For Croatia, these indicators were calculated for the period 2013-2021 for 23 clustered fleet segments that are consistent in the period. Although considerable resources have been devoted to collecting economic and social data it is important to emphasize that the economic analysis is limited by the limitation of the economic indicators as well as the relatively short time series of data related to the period of major changes in Croatia - Croatia's accession to the EU and the beginning of the EFF and EMFF measures implementation in Croatia, all of which have an impact on the reliability and quality of economic data. Unfortunately, economic indicators as such cannot sufficiently reflect the full range of factors that affect the fishing sector in Croatia and the results need to be interpreted with caution. For this reason a section on social indicators has been included in the SSCF chapter. However, because of the shortcomings of economic and social indicators, additional information is required in order to assess the situation and allocate appropriate measures to a particular segment of the fleet, and representatives of the fisheries sector in Croatia as well as the scientific and advisory bodies are important stakeholders in this process. Therefore, although the results of the balance analysis are informative, the overall balance assessment and the necessary activities take into account additional information at the Member State level.

In 2020-2021, the economic performance of the overall fleet deteriorated compared to previous years. Revenue decreased by 2%, amounting to EUR 97.9 million; GVA EUR 61.9 million (9%) and gross profit EUR 30.4 million (15%) decreased while net profit increased to EUR 18 million (26%). One of the reasons for deteriorated performance is decrease in landings in 2021 (13%), landings are lowest in the period since 2013 (-14% compared to 2013-2020 average), but also consequences of global events.

Total operating costs increased in 2021 by 6% compared to 2020 and amounted to EUR 64.7 million. Increased fuel costs (30% compared to 2020) are a result of increased fuel prices in 2021, from 0.45 EUR/litre in 2020 to 0.58 EUR/litre in 2021, while energy consumption has remained almost the same (+0,12% increase in 2021). Fuel prices in 2021 started a trend of growth, which, according to preliminary insights, continues in the following years. As in previous years, crew costs have the highest share of (32%) in operating costs, followed by fuel costs (18%) and repair/maintenance costs (9%). The cost structure changes depending on the fleet segment, therefore some segments which depend on fishing grounds further from the coast, or use towing gears, are more fuel intensive and the share of fuel costs is higher.

The overall landing has been gradually decreasing since 2014 due to management measures in the Adriatic Sea. Compared to 2014 when it has reached its highest, landings decreased by 23% to 61.166 tonnes of landed seafood products in 2021, and by 21% to 62.681 tonnes of landed seafood products in 2022, while landed value has decreased by 3%, amounting to EUR 60.39 million in 2022, and increased by 3.6% amounting to EUR 64.3 million in 2022 (adjusted for inflation).

Prices obtained for the key species targeted by the fleet generally remain stable in the period 2012-2022. Slight annual variations of the prices mostly result from changes in landings volume over the period. Annual variations in prices are more evident for higher-value demersal species.

Overall, in 2022 purse seine segments amount to almost 90% of volume and over 50%fof value of products landed.

In 2022, average landed (real) price of EUR 1.78 per kg further increased by 10% compared to 2021 and by 27% compared to the average in the period 2012-2020. Of the top six commercially most important species, Norway lobster and Atlantic bluefin tuna had the highest prices (14.2 and 10.87

EUR/kg, respectively) in 2022, while sardine and anchovy were sold at relatively low prices (0.48 and 0.82 EUR /kg, respectively).

For the demersal trawl (DTS) and purse seine (PS) segments, the economic development trend suggests a further improvement compared to the previous period, especially for vessels over 12 m LOA, which have been more heavily affected by management measures. As the latest analysis of biological indicators suggests that DTS segments are in imbalance with available resources, the indication on economic performance of DTS segments may not be a real indicator of profitability as profitability is related to other factors which are not necessarily related to an imbalance between capacity and available resources (fish prices, market trends etc.). Croatia will continue to closely follow these segments and related stocks in the future.

Although economic results indicate that PS vessels over 24 m LOA are not sufficiently profitable, it is important to note that this segment is involved in Bluefin tuna purse seining. As the entire catch of Bluefin tuna is immediately transferred to cages for farming, there is no landing per se. The potential value of this catch is afterward recorded through tuna farm revenues and not fisheries. Furthermore, a large quantity of small pelagic fish caught by these vessels is designated for tuna feeding. The small pelagic species intended for tuna feeding have a lower market value. In this capacity, the aim of this fishery is not the profitability of a single vessel but the contribution to the overall operation of the company which owns both the farm and vessels. In general, indicators for purse seiners are showing more favourable opportunities in 2021, showing slow but steady progress in achieving balance.

With the exemption of DRB vessels, an improved economic development trend is indicated for most fleet segments, driven majorly by the increase in the value of products landed.

Current Revenue against Break-Even Revenue (CR/BER)

For the 23 clustered fleet segments in 2021 CR/BER (short-term return) indicates that for:
– 16 fleet segments values are over threshold; and
– 7 fleet segments values are below threshold.

An increasing trend for CR/BER was assessed for 16 fleet segments while a decreasing trend was observed for 3 segments. No significant trend is observed for 4 segments.

Return of Fixed Tangible Assets (RoFTA)

RoFTA (long-term return) indicates that for:
– 10 fleet segments values are out of balance;
– 12 fleet segments are in balance; and
– One is considered as not sufficiently profitable.

An increasing trend for RoFTA was assessed for 22 fleet segments while a decreasing trend was observed for one segment.

Almost all segments showed improved economic development trend in 2021 compared with the previous year. Based on the net profit margin, 10 fleet segments showed high profitability, one segment a reasonable profitability and 12 a weak profitability. Net losses are registered for 8 segments (DTS0612, DTS2440, PS0612, DFN1218, PGP0006, PGP0612, FPO0006 and PMP0006). The results of CR/BER and RoFTA analysis indicate coherent results. However, for DRB, CR/BER and RoFTA indicated an improved profitability and an improved economic development trend compared to 2020. Insufficiently generated net profit, in addition to relatively high estimated replacement values of the vessel may result in weak profitability. In addition, some segments (PGM, PMP) have a high share of income of other sources (such as agriculture, tourism, transport etc.) which is not included in the estimation of economic indicators. For PGP and PMP segments, economic indicators are not reliable in assessing balance.

Table 30. Current revenue to break-even revenue ratio (CR/BER) (Short-term) for 2013-2021.

Calculated as: Current revenue (CR) / Break Even Revenue (BER),
where, CR = income from landings + other income
and BER = fixed costs / (1-[variable costs / current revenue]) excluding opportunity cost of capital
and Fixed costs = non variable costs + annual depreciation
and Variable costs = crew wage + unpaid labour + energy costs + repair costs + other variable costs.

Traffic light system (status in 2021): green ≥1; red < 1.0; (negative values highlighted in dark red) (according to the 2014 Balance Indicator Guidelines).

Trend analysed for the period 2013-2021, using the slope equation and a 5% threshold to indicate significance, as: Slope > 0.05 increasing; Slope < -0.05 decreasing; -0.05 < Slope < 0.05 no significant trend and slope = 0 flat/null trend.

Fleet segment		Current revenue to break-even revenue ratio (CR/BER)									Trend (5%)	Trend 2013-2021	Status 2021
		2013	2014	2015	2016	2017	2018	2019	2020	2021			
DFN	VL0006	0,6	0,6	-0,5	-0,3	0,8	2,5	7,2	4,1	4,6	increasing		in balance
	VL0612	0,4	1,0	0,6	0,1	2,1	4,0	3,4	3,5	3,5	increasing		in balance
	VL1218	0,4	0,5	-0,3	-1,7	0,2	0,7	0,8	0,9	0,6	increasing		out of balance
DRB	VL0612	1,8	1,9	3,0	2,0	0,8	1,5	-0,7	1,6	1,3	decreasing		in balance
	VL1218	0,4	1,1	1,8	0,3	-1,1	-1,5	3,1	1,3	1,9	increasing		in balance
DTS	VL0612	0,0	0,2	0,5	0,2	2,4	0,3	1,0	1,1	0,4	increasing		out of balance
	VL1218	0,6	1,0	0,4	0,5	1,6	1,1	2,0	2,1	1,2	increasing		in balance
	VL1824	0,1	0,3	0,3	0,5	0,6	1,8	1,4	1,5	1,0	increasing		in balance
	VL2440	-0,3	-0,1	0,2	-0,1	0,2	0,3	0,2	0,0	-0,3	no significant trend		out of balance
FPO	VL0006	1,0	21,6	-1,1	2,7	-0,6	-0,1	-1,3	-1,5	0,2	decreasing		out of balance
	VL0612	-2,1	-0,4	0,7	0,6	2,4	2,3	5,9	3,9	4,6	increasing		in balance
HOK	VL0006	-4,2	11,5	-3,7	-2,0	20,5	-1,3	4,1	1,7	2,2	increasing		in balance
	VL0612	2,0	0,3	0,9	1,9	5,6	1,6	1,9	1,9	2,0	increasing		in balance
MGO	VL0006	2,2	2,5	1,0	1,9	8,7	15,8	15,2	11,6	12,4	increasing		in balance
	VL0612	-0,5	-0,1	0,9	0,9	1,7	2,1	4,3	3,5	11,3	increasing		in balance
PGP	VL0006	-0,2	-0,3	-0,1	-0,3	-0,1	-0,1	0,0	0,1	0,1	no significant trend		out of balance
	VL0612	-1,0	0,3	-0,4	0,0	-0,2	-0,1	0,1	0,5	0,2	increasing		out of balance
PMP	VL0006	0,2	0,6	2,0	-0,4	-1,8	-0,4	0,1	0,4	0,8	no significant trend		out of balance
	VL0612	-1,3	3,3	-1,1	-0,7	0,5	-0,7	19,2	8,4	7,7	increasing		in balance
PS	VL0612	0,8	0,6	0,2	-0,3	1,0	2,8	-1,7	0,9	-1,2	decreasing		out of balance
	VL1218	0,7	0,8	0,8	-0,1	0,7	1,0	4,0	4,8	3,8	increasing		in balance
	VL1824	1,1	1,2	1,3	0,9	1,6	1,2	0,7	1,8	0,8	no significant trend		in balance
	VL2440	1,0	0,8	0,7	0,6	0,7	1,2	1,5	1,2	0,8	increasing		in balance
Total		0,7	0,9	0,6	0,5	1,5	1,7	2,3	2,1	1,9	increasing		in balance

Table 31. Return on Fixed Tangible Assets (RoFTA, %) (Long-term profitability) for 2013-2021.

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).

Compared against TRP, where TRP = 5-year (2017-2021) average risk free long term interest rate. Average long-term interest rate for Croatia: 2021 - *0,45*; 2017-2021 - *1,50* (Source: ECB).

Comments on balance (status in 2021): RoFTA ≥ TRP "in balance"; > 0 RoFTA ≤ TRP "not sufficiently profitable" and RoFTA < 0 "out of balance".

Trend analysed for the period 2013-2021, using the slope equation and a 5% threshold to indicate significance, as: Slope > 0.05 increasing; Slope < -0.05 decreasing; -0.05 < Slope < 0.05 no significant trend and slope = 0 flat/null trend.

Fleet segment		Return on Fixed Tangible Assets (RoFTA, %)									Trend (5%)	Trend 2013-2021	Status 2021
		2013	2014	2015	2016	2017	2018	2019	2020	2021			
DFN	VL0006	-4,0	-5,0	-18,5	-14,1	-2,2	17,6	79,3	40,3	46,6	increasing		in balance
	VL0612	-6,1	0,1	-4,0	-10,5	9,6	28,9	24,7	25,5	25,6	increasing		in balance
	VL1218	-6,4	-5,5	-15,2	-29,4	-10,3	-3,2	-2,8	-1,6	-4,7	increasing		out of balance
DRB	VL0612	11,0	10,6	17,8	8,7	-2,0	4,4	-14,3	5,3	3,0	increasing		in balance
	VL1218	-6,1	1,7	9,0	-7,2	-22,0	-23,0	30,2	3,6	18,6	increasing		in balance
DTS	VL0612	-9,5	-7,9	-5,0	-7,6	12,5	-6,6	-0,1	0,7	-5,8	increasing		out of balance
	VL1218	-4,0	0,1	-6,2	-4,6	5,7	1,3	9,8	10,9	2,2	increasing		in balance
	VL1824	-9,2	-6,5	-6,2	-4,3	-3,0	6,0	3,0	4,2	0,1	increasing		not sufficiently profitable
	VL2440	-12,4	-11,9	-8,5	-10,3	-6,9	-6,1	-6,6	-8,8	-11,3	increasing		out of balance
FPO	VL0006	-0,4	258,0	-15,4	18,8	-19,8	-14,9	-25,4	-27,6	-9,3	decreasing		out of balance
	VL0612	-28,9	-16,7	-4,3	-4,7	16,7	16,1	50,8	29,5	36,4	increasing		in balance
HOK	VL0006	-43,6	94,9	-43,3	-36,5	155,6	-26,3	38,7	8,2	15,2	increasing		in balance
	VL0612	9,0	-6,4	-0,9	8,8	38,8	4,9	8,4	8,0	9,0	increasing		in balance
MGO	VL0006	24,3	27,9	-0,8	24,6	158,0	217,2	318,8	237,6	260,2	increasing		in balance
	VL0612	-15,8	-15,0	-1,5	-2,6	7,3	14,6	33,5	25,7	107,7	increasing		in balance
PGP	VL0006	-85,5	-57,8	-9,0	-10,8	-8,2	-7,9	-7,5	-7,4	-7,4	increasing		out of balance
	VL0612	-23,8	-7,8	-14,4	-7,2	-8,1	-7,9	-6,4	-3,7	-5,5	increasing		out of balance
PMP	VL0006	-21,0	-30,2	9,8	-13,9	-18,3	-13,6	-14,0	-10,0	-3,1	increasing		out of balance
	VL0612	-29,1	22,3	-19,3	-19,5	-5,0	-18,3	279,0	109,8	106,0	increasing		in balance
PS	VL0612	-1,4	-4,2	-7,5	-12,3	0,3	14,9	-26,9	-0,8	-23,0	increasing		out of balance
	VL1218	-3,4	-2,4	-2,3	-12,3	-3,9	0,2	31,3	38,2	28,0	increasing		in balance
	VL1824	1,7	2,8	3,5	-1,4	5,4	1,8	-2,7	7,5	-1,7	increasing		out of balance
	VL2440	-0,5	-2,8	-3,5	-4,3	-3,1	1,5	5,0	1,9	-1,6	increasing		out of balance
Total		-3,7	-1,3	-3,9	-5,3	4,5	6,1	12,3	10,7	8,6	increasing		in balance

9. Overall: Statement on balance of fleet capacity with fishing opportunities

The national assessment of overall balance status per fleet segment provided in Table 32 was made taking into consideration firstly the available biological indicators (SHI - Sustainable Harvest Indicator and SAR - Stocks-at-risk Indicator) and assessment on the balance of related fleet segments presented in the previous chapter, taking into account trends and previous years assessments. For fleet segments for which SHI or SAR is not available or relevant, technical, economic and social indicators (SSCF chapter) were used for the assessment, but also additional information on fleet behaviour.

Overall, Croatia considers that there are some imbalances in its fleet primarily when compared to the status of the stocks according to the balance status determined for each indicator as presented in Chapter 6. As imbalance has been assessed in all **PS segments**, Croatia considers that purse seiners should be given due attention in terms of capacity and effort reduction. In the PS segment, the intention to maintain the balance in relation to the availability of small pelagic resources is further supported by measures within the GFCM multiannual management plan for small pelagics adopted in 2021 (and previously, emergency measures that have been set for the period 2019-2021). Capacity reduction, effort management and catch control by applying catch limits implemented over the past years show improvement in balance, and Croatia intends to continue with the measures provided within the framework of the structural funds in the future period. This particularly stands for temporal cessation which has significant impact on improvement of spawning biomass and recruitment, but also permanent cessation. In addition, Croatia intends to continue implementing fishing effort limitation schemes and other national and regionally agreed measures as is further described in the Action plan. The new GFCM Multiannual plan for small pelagics in the Adriatic is considered a key piece of legislation that will set the framework and streamline further activities with regards to the purse seine fisheries management.

In accordance with the latest stock assessment, for all DTS segments an improvement is indicated according to biological indicators, however there are still some signs of overcapacity but with nonconclusive economic results. Establishment of the Jabuka/Pomo Pit FRA including a no-take zone, coupled with capacity and effort management are expected to have impact on this fleet in the coming years. Following capacity and effort management measures imposed upon this fleet in the previous years with the support of the EMFF, Croatia considers that these measures should be continued in the future.

Results of the latest available stock assessment were also reflected on the balance of the small-scale fleet mostly using fixed nets and trammel nets (DFN segments) where a positive change of SHI value in 2021 for VL1218 segment can be observed. In addition to positive economic indicators for these segments, Croatia overall considers all DFN segments to be in balance. However, Croatia will continue to closely monitor the situation.

Indication of imbalance exists in some other segments of the fleet with low dependency on overfished stocks, specifically in terms of economic and technical indicators (DFNVL1218, FPOVL0006 and PMPVL0006). However, these fleets are considered highly local and operating in very restricted areas with limited impact on resources, so for further consideration of their balance Croatia shall continue to follow closely these fleet segments so as to prevent a possible negative impact on stocks.

According to the results of the analysis and national assessment on the overall status for 2022, out of 28 fleet segments, of which 23 are active segments, 15 are considered to be in balance and 8 segments out of balance with their fishing opportunities.

Segments in balance are considered to be DFN, FPO, HOK, MGO, PGP, PMP and DRB.

Segments out of balance are **all PS and DTS segments**.

However, a part of MGO and HOK segment ('**red coral fleet**') which also include a small fleet authorised for red coral fishery should be excluded and considered as imbalanced due to a conservation status of red coral. This fishery is subject to specific regulation and only a small number of vessels is authorised, but due to segmentation procedures they cannot be analysed and presented as such. As for DRB segment, negative trends have been observed with regards to SHI in previous years, and fluctuating economic performance represent a basis for including this segment in the Action Plan with a delayed effect (in case imbalance is determined according to future assessments).

PGPVL0006 and PGPVL0612 mainly consists of vessels which are managed as a specific category separately from the main commercial fleet, through strict gear and catch restrictions. Effect of these segments on priority stocks is negligible.

Due to the small size of some segments, it was not possible to determine their independent status. However, because of their characteristics it was considered that their status is equal to the status of segments to which they are clustered to (as indicated in the table). Therefore, in case of clustered fleet segments, overall status is determined according to the overall status of the specified main fleet segment.

In conclusion, overview of balance status per indicator and an overall national assessment on balance by fleet segment is provided in the table below (Table 32).

Table 32. Overview of results of most recent available values of balance indicators and overall status assessment.

Fleet segment		No vessels 2022	VUR 2022	VUR220 2022	SHI 2021	SAR 2021	CR/BER 2021	RoFTA, % 2021	OVERALL STATUS	Basis for assessment
DFN	VL0006	346	0,4	0,6	0,2	1	4,6	46,6	in balance	Economic indicators indicate high profitability with an increasing trend. SAR indicates several "eel vessels", which are managed separately.
DFN	VL0612	698	0,4	0,6	0,3	-1	3,5	25,6	in balance	Economic indicators indicate high profitability with an increasing trend.
DFN	VL1218	13	0,8	0,4	0,3	-1	0,6	-4,7	in balance	High variability of economic indicators with an increasing trend. No dependency on overfished stocks.
DRB	VL0612	9	1,0	0,4	0,5	-1	1,3	3,0	in balance	Highly fluctuating results of economic indicators, with decreasing trend in previous years. In previous years results of SHI indicated high dependency on overfished stocks.
DRB	VL1218	13	0,8	0,5	0,4	-1	1,9	18,6	in balance	
DTS	VL0612	128	0,5	0,4	0,5	-1	0,4	-5,8	out of balance	In previous years SHI indicated high dependency on overfished stocks. Fluctuating economic results. Includes DTSVL0006 (1 vessel in 2022).
DTS	VL1218	154	0,5	0,5	0,6	-1	1,2	2,2	out of balance	
DTS	VL1824	30	0,7	0,8	0,9	-1	1,0	0,1	out of balance	In previous years SHI indicated high dependency on overfished stocks. Fluctuating economic results.
DTS	VL2440	8	1,0	0,8	0,9	-1	-0,3	-11,3	out of balance	
FPO	VL0006	47	0,5	0,4	0,5	-1	0,2	-9,3	in balance	No dependency on overfished stocks.
FPO	VL0612	125	0,5	0,6	0,6	-1	4,6	36,4	in balance	Economic indicators indicate high profitability with an increasing trend.
HOK	VL0006	88	0,3	0,3	0,1	-1	2,2	15,2	in balance	Increasing trend of economic indicators with no dependency on overfished stocks.
HOK	VL0612	251	0,3	0,3	0,3	1	2,0	9,0	in balance	Economic indicators indicate high profitability with an increasing trend. Includes HOKVL1218 (7 vessels). SAR is indicated for BFT HL/LL quota vessels which are managed separately, and "red coral vessels".
MGO	VL0006	279	0,3	0,5	0,0	1	12,4	260,2	in balance	Economic indicators indicate high profitability with an increasing trend. SAR is indicated for "red coral vessels" which are managed separately.
MGO	VL0612	42	0,4	0,6	0,0	1	11,3	107,7	in balance	Economic indicators indicate high profitability with an increasing trend. SAR is indicated for "red coral vessels" which are managed separately. Includes MGOVL1218 (2 vessels).
PGP	VL0006	2.923	0,1	0,1	0,2	0	0,1	-7,4	in balance	Mostly vessels falling in the specific category for personal needs managed separately from the main commercial fleet, through gear and catch restrictions. PGPVL0612 includes PGPVL1218 (1 vessel).
PGP	VL0612	812	0,1	0,1	0,3	-1	0,2	-5,5	in balance	
PMP	VL0006	29	0,6	0,5	0,1	1	0,8	-3,1	in balance	No dependency on overfished stocks. Decreasing trend and negative values of economic indicators in 2021. Multipurpose low activity vessels which use active and passive gears seasonally with relatively low fishing effort and mostly not reliant on fisheries. Includes PGOVL0006 (3 vessels). SAR indicates several "eel vessels", which are managed separately.
PMP	VL0612	26	0,6	0,5	0,2	1	7,7	106,0	in balance	Segment is highly variable and not stable, includes multipurpose vessels which use active and passive gears. Includes PGOVL0612 (1 vessel) and PMPVL1218 (1 vessel). SAR indicates several "eel vessels", which are managed separately.
PS	VL0612	25	0,6	0,5	0,7	-1	-1,2	-23,0	out of balance	Includes PSVL0006 (1 vessel in 2022). Negative short-term and long-term profitability.
PS	VL1218	36	0,7	0,6	1,3	0	3,8	28,0	out of balance	SHI indicates high dependency on overfished stocks.
PS	VL1824	39	0,8	0,7	1,3	1	0,8	-1,7	out of balance	SHI indicates high dependency on overfished stocks. SAR is indicated for BFT PS quota vessels.
PS	VL2440	61	0,8	0,7	1,3	1	0,8	-1,6	out of balance	SHI indicates high dependency on overfished stocks. SAR is indicated for BFT PS quota vessels.

10. ACTION PLAN

Based on the overall status of the analysed fleet segments Croatia presents an updated Action plan concerning imbalanced segments. Presented Action plan is continuation of Action plan from 2022 which is hereby updated and supplemented with additional information considering STECF EWG 22-15 comments.

As a short-term priority, it is planned to address the issue of overcapacity in Croatian key fisheries – PS and DTS. Over a medium term it is planned to extend this measure to DRB segment as well. Mentioned fleet segments are characterised with relatively high activity which makes them suitable to be targeted by permanent cessation scheme as it is a very efficient measure for balancing the fleet in terms of capacity under such circumstances.

Having a high dependency of PS segments on only two species (sardine and anchovy) and their respective stock status, it is clear that imbalance in **PS segments** needs to be further addressed. For that reason, this Action plan has been updated putting a stronger focus towards balancing the fleet capacity with the availability of resources. Foreseen measures will address the overcapacity issue through a permanent cessation scheme, while at the same time, further decrease of catches, implementation of closure seasons (also by applying temporary cessation of fishing) together with protection of juveniles by keeping fleets outside the areas identified as nurseries or important for protection of early age classes of sardine and anchovy, will complete the package.

For the DTS segments which are assessed as imbalanced, Croatia plans to continue implementing strong management package including the implementation of temporary cessation of fishing activities during key periods for recruitment of target species, spatio-temporal measures including the Jabuka FRA and a stronger capacity reduction in a form of permanent cessation. A strong capacity reduction measure coupled with evidently improving state of the Adriatic demersal stocks should bring the relevant fleet segments in balance with the resources by the end of management period foreseen by GFCM multiannual management plan for sustainable demersal fisheries in the Adriatic Sea, i.e., 2026.

As for **DRB segment** negative SHI in previous years as well as economic indicators coupled with fluctuating negative trends concerning catch and effort could signal imbalance which calls for close attention. To this end, capacity control measures for limiting the active capacity is planned as a first step, and in case the negative trends persist, further decrease shall be considered through permanent cessation scheme. As an additional effort, spatio-temporal scheme shall be thoroughly revised and adjusted according to scientific data.

Buy-off scheme for withdrawal of authorisations for fishing with shore seines (SB), small purse seines (PS) and hatchet for red coral is planned in parallel while effort and spatio-temporal restrictions in all unbalanced fleet segments shall continue under the multiannual management frameworks.

More effective measures which are directed to address the identified imbalance, their targets, timeframe for implementation and expected outcomes are presented in Tables 1 and 2 of the Action Plan.

Table 1. Main Action plan measures.

Fleet segment		Temporary cessation of fishing activities			Permanent cessation of fishing activities		
		Target	Time frame	Expected outcome	Target as number of vessels to be removed from the fleet	Time frame for implementation	Expected outcome as reduction of catch per gear in the length segment[4]
DRB[5]	VL0612	All authorised vessels for DRB for at least 30 days per year	In line with MP and scientific advice and upon the authorisation process in 2022	Reduction of fishing effort and catch. By implementing the measure in the spawning period of target species (scallops and oysters), further improvement of spawning biomass and recruitment can be expected.	5 vessels authorised for DRB	2025-2027	20% - 55%
	VL1218				6 vessels authorised for DRB	2025-2027	20% - 25%
DTS	VL0612	All authorised vessels for OTB for at least 30 days per year	In line with MP and scientific advice (September-November)	Reduction of fishing effort and catch. By implementing the measure in the spawning period of target species (hake during period of intensive spawning and Norway lobster with external eggs), further improvement of spawning biomass and recruitment can be expected.	15 vessels authorised for OTB	2023-2026	10% - 15%
	VL1218				32 vessels authorised for OTB	2023-2026	10% - 20%
	VL1824				12 vessels authorised for OTB	2023-2026	20% - 25%
	VL2440				4 vessels authorised for OTB	2023-2026	35% - 40%
PS	VL0612	All authorised vessels for PS (small pel.) for at least 30 days per year	In line with MP and scientific advice (January/February for sardine and May for anchovy)	Reduction of fishing effort and catch. By implementing the measure in the spawning period of target species (sardine during winter and anchovy during spring/summer), further improvement of spawning biomass and recruitment can be expected.	5 authorised for PS for small pel.	2023-2026	5% - 20%
	VL1218				7 vessels authorised for PS for small pel.	2023-2026	10% - 15%
	VL1824				15 vessels authorised for PS for small pel.	2023-2026	35% - 40%
	VL2440				15 vessels authorised for PS for small pel.	2023-2026	5% - 10%

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[4] Based on average minimum and maximum range of annual catches of the vessels having minimum number of fishing days required for permanent cessation from length segments operating with subject gears over the period 2021-2022.

[5] Measures indicated for DRB shall remain an option in case of persistent negative trends.

On top of measures targeting overcapacity presented in the Action Plan Table 1, Croatia will also continue with implementation of measures listed in the GFCM regional plans for small pelagics and demersal fisheries. These measures are directly related to limitation of catch and fishing effort, and they are expected to contribute to improvement of the status of targeted stocks as presented in Table 2 of the Action Plan.

Table 2. Supplementary Action plan measures

Fleet segment		Measure	Targets	Time-frame
PS	VL0612	▪ Limitation of effort and maintaining capacity limit ▪ Time and spatial regulation (whole period) pursuant to GFCM MAP (including temporary closures of 30 days in sardine and anchovy spawning period as well as spatio-temporal regulation in channel areas) ▪ Limitation of catch through annual catch limits pursuant to GFCM MAP for small pelagics ▪ Improvement of survey and stock assessment (cont.)	▪ Improvement of SHI *(Improvement of stock status of target species following GFCM MAP and improvement of recruitment through time-spatial regulation)* ▪ Improvement of economic performances *(Further increase of average price at first sale with impact on economic indicators, aiming to improve levels as assessed in this Fleet report)*	2023-2028
	VL1218			
	VL1824			
	VL2440			
DTS	VL0006	▪ Maintaining capacity limit ▪ Limitation and reduction of fishing effort pursuant to GFCM MAP ▪ Time and spatial regulation pursuant to GFCM and national legal framework (including temporary closure of 30 days) ▪ Implementation of Jabuka FRA and possible implementation of additional no-take zones (depending on scientific recommendation) ▪ Improvement in MSC (cont.)	▪ Improvement of SHI *(Improvement of stock status of target species following GFCM MAP and improvement of recruitment through time-spatial regulation and FRA implementation)* ▪ Improvement of economic performances *(Further increase of average price at first sale through improvement of catch composition (benefits of FRA) with impact on economic indicators aiming to achieve positive trends)*	2023 -2026
	VL0612			
	VL1218			
	VL1824			
	VL2440			
DRB	VL0612	▪ Limitation of capacity through authorisation process ▪ Revision of spatio-temporal management measures (including temporary closure of 30 days) ▪ Improvement in MSC (cont.)	▪ Improvement of SHI *(Improvement of stock status of target species)* ▪ Improvement of economic performances *(Further increase of average price at first sale with impact on economic indicators, aiming to improve level as assessed in this Fleet report)*	2024
	VL1218			

Expected outcomes of the Action plan implementation

Expected outcomes of the main measures are presented in the Table 1 of the Action plan. On the other hand, for other measures that are listed in the Table 2 of the Action plan, direct outcome is not possible to be quantified since they are directed to overall improvement of the fisheries and status of targeted stocks. However, experiences of the effects that these measures have had over the years provide assurance that they will contribute to stopping negative trends and continuing recovery of the key stocks.

Buy-off of fishing gears

Measure of fishing gears buy-off is newly introduced under the EMFAF OP. It is directed to permanent removal of active vessels holding fishing authorisations (which are related to certain fishing gear) by deleting the authorisation including corresponding fishing rights from the fishing licence (deleting of fishing gear from the licence). By doing so, certain vessel will be removed from the particular fishery, but having a chance to continue participating in the fisheries using other gears with lower impact on stock and/or environment. When applying this measure, vessel will be subject to further limitation in order to prevent the possibility to re-activate in the subject fishery by transferring non-active authorisation or licence.

This measure will be directed to following groups:

- **Shore seines (SB)** – shore seines operate under derogation from the Mediterranean Regulations for minimum distance from the shore and for operating above *Posidonia* beds. In light of green transformation of EU fisheries, Croatia intends to gradually phase-out this fishery. However, since all of the vessels involved are less than 12 m and 85 kW there is no financial interest for them to be a part of permanent cessation. At the same time fleet is distributed along the coast and islands where it is important to maintain their activity. For this reason, they will be allowed to continue with other fishing practices with lower impact on the stocks and environment. Vessels which were up till now authorised for shore seine fishing have been actively engaged in fishing with passive gears as well and it is expected that they should remain active in that category. Given that they are uniformly distributed along the eastern Adriatic coast, it is not expected that they should cause any major disturbance in either biological or economical sustainability of the DFN, HOK, FPO, MGO or PMP where they might end up upon completion of buy-off, on local or larger scale. Population of vessels to be targeted by the buy-off scheme numbers total of 70 vessels.

- **Small purse seines (PS)** – similarly as SB, small purse seines are gears that operated under derogations from the Mediterranean Regulation for approaching the shore. These gears are 'ciplarica' fishing for mullets (Mugilidae), traditional purse seine 'palamidara' fishing for bonito (*Sarda sarda*), bullet tuna (*Auxis rochei*), little tunny (*Euthynnus alletteratus*) and greater amberjack (*Seriola dumerili*), traditional purse seine 'oližnica' fishing for sand smelt (*Atherina boyeri*) and traditional purse seine 'igličara' fishing for needle fish (*Belone belone*). These fleets are distributed along the coast and islands where it is important to keep their activity. For this reason, they will be allowed to continue with other fishing practices with lower impact on the stocks and environment. The entire small PS population numbers a total of 52 vessels, uniformly distributed along the eastern Adriatic coast. It is not expected that all of them would apply for the buy-off measure. It is assumed that it will be interesting particularly to those vessels operating with small purse seine nets which cannot operate without derogation ('oližnica', 'igličara') while 'ciplarica', and 'palamidara' authorisation holders might decide to continue operating in line with spatial restrictions imposed by the Mediterranean Regulation. Taking into account all the mentioned parameters and particularly the size of the segment, it is not expected that transition of the vessels subject to buy-off scheme would have any major impact to the economic or biologic sustainability of any other fleet segment.

- **Red coral vessels** – currently, there are only 10 vessels holding the authorisation for red coral fishing by using hatchet for red coral. It needs to be stressed that Croatia addressed the issue of the overcapacity in this fishery segment by applying the mechanism of authorisation based on criteria including the historical activity and catches and thus reduced the fleet from 51 vessels to 10. This process took place in 2021. Considering the critical status of red coral and its fragile nature and pending results of scientific studies which are currently being implemented and which should give a clearer insight into the status of this stock along the eastern Adriatic coast, Croatia plans to, by applying a precautionary approach, further decrease the fleet capacity in this small fishery segment through the buy-off scheme applied to the entire authorised fleet.

It is important to stress that withdrawal of these gears will not have negative effect on those types of fishing that are under management plans or other restrictive management, such as bottom trawls or PS for small pelagics, since these fleets are limited by their capacity and effort or catch and it is not possible to issue any additional authorisations for those fisheries.

It is worth noting that this measure is difficult to be implemented at the level of fleet segments, because the vessels are segmented based on their dominant gear in terms of fishing days (51% of effort) and they have been distributed over different segments, out which not all are assessed as out of balance. By doing so, this Action plan also brings to the light other consideration besides default indicators. Nevertheless, we find this necessary to be in line with general transition towards fisheries that is not only balanced with available recourses and profitable (in line with biological and economic indicators) but also which have low negative impact on the environment and habitats on which fishing vessel is operating. At the same time, removal of such fishing practices will contribute to further improvement of status for all related segments, regardless on their balance assessment. Expected outcome of the implementation of the buy-off scheme is presented in Table 3 of the Action Plan.

Table 3. Expected outcome of the implementation of the buy-off scheme

Fishing gear	Allocation of authorised vessels to fleet segments in 2022[6]	No of active vessels	Target reduction and expected outcome	Time frame for implementation
Buy-off of fishing gears				
Shore seines (SB) and small purse seines (PS)	DFN VL0006	6	Withdrawal of all authorisations for shore seines (SB) and all authorisations for small purse seines (PS) that require derogation through phasing-out	2023-2025
	DFN VL0612	29		
	DRB VL0612	1		
	DTS VL0612	26		
	DTS VL1218	1		
	HOK VL0612	3		
	INACTIVE VL0006	3		
	INACTIVE VL0612	6		
	INACTIVE VL1218	1		
	PMP VL0612	3		
	PS VL0612	19		
	PS VL1218	14		
	PS VL1824	2		
	PS VL2440	1		
Hatchet for red coral ('red coral vessels')	DFN VL0612	2	Withdrawal of all authorisations for red coral	2023-2024
	FPO VL0006	1		
	HOK VL0612	2		
	MGO VL0612	4		
	PMP VL0612	1		

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[6] Distribution of authorized vessels in the different fleet segments is indicated in the table according to 2022 fleet segmentation, however allocation of vessels to fleet segments is subject to change as it depends on fishing activity in a certain year. Fleet segment is not relevant in the context of the buy-off scheme.

APPENDIX 1. LIST OF ACRONYMS

General acronyms

CFP	Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species
DCF	Data Collection Framework
DG MARE	Directorate-General for Maritime Affairs and Fisheries of the European Commission
EFF	The European Fisheries Fund (2007-2013)
EMFF	European Maritime and Fisheries Fund (2014-2020)
EMFAF	European Maritime, Fisheries and Aquaculture Fund (2021-2027)
EFCA	European Fisheries Control Agency
EMSA	European Maritime Safety Agency
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIS	Fisheries Information System
FR	Fleet Report (=Balance Report)
GFCM	General Fisheries Commission for the Mediterranean
GSA	Geographical subarea
HRV / HR	Croatia
ICCAT	International Commission for the Conservation of Atlantic Tunas
IUCN	International Union for Conservation of Nature
MA-DoF	Directorate of Fisheries, Ministry of Agriculture, of Republic of Croatia
MED	Mediterranean Sea
MS	EU Member State
STECF	Scientific, Technical and Economic Committee for Fisheries

Fisheries acronyms

DAS	Days at sea
FMC	Fisheries Monitoring Centre
FRA	Fisheries Restricted Area
FS	Fleet Segment
GT	Gross Tonnage
LOA	Length overall
LPUE	Landing Per Unit Effort
LSF	Large-Scale Fleet
SSCF	Small-Scale Coastal Fleet
TAC	Total Allowable Catch
VMS	Vessel Monitoring System

Balance indicators

CR/BER	Current Revenue Against Break-Even Revenue
RoFTA	Return of Fixed Tangible Assets
VUI	Vessel Utilisation Indicator
VUR	Vessel Utilisation Ratio
SHI	Sustainable Harvest Indicator
SAR	Stocks at Risk Indicator

Fishing techniques

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

VL0006	Vessel less than 6 meters in length.
VL0612	Vessel between ≥6 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.

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