Ministry of Agriculture,
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NLD

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Summary of report

The report deals with the year 2017.

The fleet for fisheries had 533 vessels with 259.438 kW and 116.491 GT.
The fleet for aquacult. had 107 vessels with 56.708 kW and 16.913 GT.
Changes to the previous year: fisheries +4 vessels and aquaculture +1 vessel.

Fleet management: by a system of governmental fishing licences.
Entry/exit and effort is managed on a national level.
Percentage used effort in the demersal fleet was around 70% and in the pelagic 105%.

The main fleet has four segments.
The species caught most (up to at least 80% of total volume) in 2017 were:
- <24m BT: North Sea Brown shrimp (54%), sole (27%);
- >24m BT: Plaice (60%), Sole (18%), Turbot (4%);
- demersal TR: Plaice (24%), Grey Gurnard (15%), Mackerel (8%), Squid (7%), Nephrops (7%), Striped red mullet (7%), Whiting (6%), Cod (3%), Horse mackerel (3%).
- Pelagic: Herring (31%), Blue whiting (28%), Mackerel (14%), Sardines (10%).

Balance indicators

Economic & social indicators 2017	<24mBT	>24mBT	demersalTR	Pelagic	Total fleet
Economic:					
- Revenue over Break Even Revenue:	1,8	2,5	1,5	1,3	1,8
- Return on investment (%):	19,3	13,8	11,6	7,8	12,7
Social:					
- Average Crew wage (euro/FTE):	79.000	84.000	82.000	86.000	79.500
- GVA (million euro):	63	94	24	58	242
- GVA per FTE (euro):	126.000	161.000	132.000	154.000	140.000
- GVA per active vessel (euro):	354.000	1.111.00	670.000	7.269.000	461.000

Inactive vessels (in % of total number of vessels):
<10m: 43%, 10-12m: 42%, 12-18m: 47%, 18-24m: 7%, 24-40m: 23%, >40m: 11%.

Sustainable Harvest indicator (weighted F/F_{max}): Pelagic fleet:0,83; large beamtrawl:0,89.
The indicator for the other fleet segments can't be calculated due to missing F/F_{max}-data.
None of the fleet segments depends on stocks at risk.

Statement on balance of fleet capacity and fishing opportunity.

There is no significant imbalance between fleet capacity and fishing opportunities.

The economic, social and sustainable harvest indicators for the beam trawl, demersal and pelagic fleet are quite positive, with no stocks exploited at high levels of biological risk.

1 Fleets

1.1 Description of fleets

The main fleet (Mfl) is segmented in two parts: Mfl1 are the vessels that target species with individual catch quota and Mfl2 are the vessels that target species with no individual catch quota (e.g. North Sea shrimps). Aquaculture vessels harvest mussels and oysters.

1.2 Link with fisheries

The Mfl1-segment mainly consists of beam trawlers, of which some also have a licence for shrimp fisheries. In addition, a group of vessels with TR-gear that focuses on demersal fishing for plaice, sea bass, mullet and gurnard. Within this segment there is also fisheries on Nephrops and squid.

The Mfl2-segment mainly consists of cutters that fish shrimps and some that fish sea bass, mullet and gurnard. The Mfl2 segment is mostly fishing within the coastal zone. Only 20 of these vessels have a tonnage greater than 100 GT and 26 have an engine with an output of over 221 kW. About 50% of Mfl2 are vessels <18 m and 50% are 18-44 m.

The aquaculture vessels operate on mussel and oyster plots within the baselines and are therefore exempted from the entry/exit regime.

1.3 Development in fleet numbers

Table 1.1. Number of vessels at the end of the year.

	2018	**2017**	**2016**	**2015**
Main fleet	**723**	**735**	**731**	**716**
Mfl1	524	527	530	513
cutters	*517*	*519*	*516*	*505*
freezetrawlers	*7*	*8*	*8*	*8*
Mfl2	199	208	201	203
Aquaculture	**110**	**107**	**106**	**107**

1.4 Development in engine power (kW) and gross tonnage (GT)

	kW 31 Dec 2017	kW + or – 2016	kW + or – 2016		GT 31 Dec 2017	GT + or – 2016	GT + or - 2016
Main fleet	254.439	+4.527	+1,8%		116.491	+1.704	+1,5%
Aquacult	56.708	+837	+1,5%		16.913	+187	+1,1%

1.5 Development in capacity

Article 22.7 of Regulation (EU) nr. 1380/2013 (CFP) limits the capacity of the Dutch fleet to 166.849 GT and 350.736 kW. The actual figures are about 70/75%. See also:
http://ec.europa.eu/fisheries/fleet/index.cfm?method=RES1.Stat&country=NLD&date_from=2003-01-01&date_to=2018-01-01

1.6 Statement of compliance with entry/exit scheme and with level of reference.

The system of fishing licenses has functioned satisfactorily and the actual capacity of the fleet has never been above the allowed fleet ceiling and reference level.

1.7 Other fleet-segments

The Netherlands has a national register of vessels that are active on the inland lake 'IJsselmeer'. On 31-12-2017 the register numbered 69 vessels. However, fishing on this lake is not regulated by licenses for vessels, but by licences for nets. Therefore the fleet is not in the EU fleet register.

The vessels of fishers that are active on other inland waters are not registered. Commercial fishing on those waters is regulated by licences for each of the specified areas of fishing waters.

2 Effort reduction

2.1 Statement of effort reduction schemes

The Netherlands manages the available effort nationally. It is not managed at the level of individual vessels, because that would increase administrative burden and out of fear that it would start trade in effort. To get access to a gear category a vessel must be in possession of track records.

The maximum allowable effort referred to in Article 9(2) of Regulation (EC) No 676/2007 for the management period 2017 was only regulated for gear group BT1 + BT2: beam trawls (TBB) of mesh equal to or larger than 80 mm

The maximum allowable fishing effort in 2017 for fisheries on sole and plaice in ICES subarea IV by The Netherlands was 37 956 887 kilowatt days.

2.2 Impact on fishing capacity of effort reduction schemes

The table below summarises the final total effort uptake by the BT1+BT2 gear group in 2017:

Effort group	Available effort (*)	Used kW day	% used effort
BT1 ≥ 120mm		3.037.073	
BT2 80 – 119mm		19.774.324	
Sum BT	37.956.887	22.811.397	60,1

3 Fleet management system

The system of fishing licenses is used as fleet regulating system. Fishing licenses are not transferable property of the operator, but are linked to the vessel and are regulated by the government. The Dutch government manages the system of licenses with the self-built programs 'VIRIS'.

The Dutch authorities have implemented a restrictive policy regarding the provision of safety tonnage. Since 2003, in total 213 BT was allocated to safety tonnage.
Since 2008 decommissioning is no longer part of the Dutch fleet policy.

The licences are property of the national authorities. They are issued temporary to vessel-owners as a utility-permit for as long as the vessel-owner wants to utilise the vessel as a fishing vessel. When the vessel is sold to another fisherman, the licence has to be returned to the national authorities and is subsequently re-issued by the national authorities to the new owner of the vessel. If the vessel is being taken out of the fleet with public aid, the licence is taken in by the national authorities and scrapped indefinite.
If the vessel is being taken out of the fleet without public aid, the licence has to be returned to the national authorities. The former owner receives a sort of 'letter of preference'; i.e. for a period of 6 years the former owner has the preferential right to re-enter the fleet with a vessel of the same (or less) capacity. In that case the national authorities will renew the licence and grant the right to use it to the former owner of the vessel. However, the national authorities are allowed to refuse this when they have legitimate reasons. But the former owner of the vessel may bring that refuse to court for a decision whether his legitimate expectations prevail over the 'reasons' of the national authorities or not.

3.1 Summary of weaknesses & strengths of fleet management system

Strength is that it provides vessel owners (more) possibilities to switch fishing techniques and so more flexible operations within the current legislation. Given the current economic situation in fisheries, this flexibility is necessary. The expectation is that more flexibility shall be needed with the coming landing obligation.

3.2 Plans for improvement in fleet management system

The fleet management system functions satisfactorily. Small adjustments are necessary to be able to deal with the consequences of the landing obligation.

3.3 Information on general level of compliance with fleet policy instruments

Fleet management was fully in compliance.

3.4 Information on changes of the administrative procedures relevant to fleet management

In 2017 there were no changes in the administrative procedures.

4 Economic and social indicators for the Dutch demersal and pelagic fleet segments

Katell Hamon

There were 735 vessels in the Dutch fleet in 2017 (723 vessels in 2018), that were allowed to fish commercially in marine waters. From these vessels 522 were considered active based on logbook information. The so called active fleet, which included all vessels that use active gears and obtain a total revenue of more than 50 k EUR consisted of 289 vessels and cumulated about 96% of the landings value. The other 233 vessels are mainly smaller vessels operating in small scale fisheries. The small scale fleet represents about 4% of the total value of landings. They are a heterogeneous group of vessels.

All the indicators in this chapter have been calculated using the formulas in *Guidelines for analysis of the balance between fishing capacity and fishing opportunities according to Art. 22 of Regulation 1380/2013 of the European Parliament and the Council on the Common Fisheries Policy (COM(2014)545).* The long term interest rate, used to calculate the Break Even Revenue, is based on the 5-years long term interest rate moving average (see below).

	2008	2010	2012	2014	2015	2016	2017
5-yrs Long Term Interest Rate average (%)	3.9	3.6	2.7	1.8	1.3	1.0	0,7
Used Long Term Interest Rate years	2005-2009	2007-2011	2009-2013	2011-2015	2012-2016	2013-2017	2014-2018

4.1 Economic and social indicators

The economic indicators of the **Dutch fleet** demonstrate a positive return of investment since 2014indicating that the fleet is viable in the long run. The years before 2014 an annual negative return of investment was shown. The negative return of investment and very low ratio of revenue over break-even revenue before 2014 were caused by the economic results of the pelagic fleet segment. The social indicators of the total fleet are positive with the average crew share above the Dutch average salary[1] and a gross value added (GVA) of more than 242 million euro in 2017.

Economic and social indicators total fleet*

	2008	2010	2012	2014	2015	2016	2017
Economic indicators:							
Ratio revenue over Break_Even Revenue	0.8	0.8	0.7	1.3	1.4	2.0	1.8
Return On Investment (%)	-3.6	-2,8	-5.5	5.5	5.8	16.9	12.7
Social Indicators:							
Average Crew wage (thousand euro/FTE)	52.5	50.8	55.8	63.3	71.1	96.3	79.5
Gross Value Added (million euro)	148	139	128	182	184	284	242
Gross Value Added per FTE (thousand euro)	79	78	74	108	114	172	140
Gross Value Added per vessel* (1.000 euro)	259	241	233	334	351	539	461

* only active vessels are used here

Below the results for specific segments are discussed in more detail.

[1] Average Dutch wage was around 52 k€/year in 2017
https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84163NED/table?ts=1558951433485

The fleet segment **beamtrawlers shorter than 24 meters** consists of 184 vessels fishing mainly for shrimps (more than 72% of their fishing revenue in 2017) and sole (12% of the revenue in 2017). The return of investment for the small beamtrawlers has been high in since 2012 with extreme values in 2016 (because of high shrimp prices) but between 2008 and 2011 the values were negative. The ratio of current revenue over break-even revenue shows a similar pattern indicating a viable segment in the last years. During the same period, the average crew wage was higher than the Dutch minimum salary[2] and Dutch average wage[i]. The GVA of the small beamtrawlers is positive, indicating that the fleet has a value for society, in 2017 it still represented more than 25% of the total GVA for the Dutch fleet. In addition, the GVA per FTE is higher than the average crew wage for the whole period, meaning that the labour costs are covered. Depreciation and opportunity cost of capital were also covered for the years 2012-2017.

Economic and social indicators beamtrawlers <24 metres*

	2008	2010	2012	2014	2015	2016	2017
Economic indicators:							
Ratio revenue over Break_Even Revenue	1.0	0.9	1.3	1.4	1.5	3.0	1.8
Return On Investment (%)	0,1	-3,5	10	9.3	10.2	45	19.3
Social Indicators:							
Average Crew wage (thousand euro/FTE)	46.9	39.1	52.2	55.6	55.8	105.4	79
Gross Value Added (million euro)	31.0	19.2	33.2	41.7	39.7	91.6	63
Gross Value Added per FTE (thousand euro)	68.4	47.1	82.8	86.2	87.4	199.7	126
Gross Value Added per vessel* (1.000 euro)	184.3	111.5	198.6	245.1	228.2	526.6	354

* only active vessels are used here

The **large beamtrawlers** consists of 162 vessels fishing mainly flatfish. Sole and plaice represent almost 77% of the value of their landings in 2017 (77% in 2018). Over the period 2008-2012 the average return on investment was around or below zero and the fleet was obtaining revenues below or slightly above the break even revenue (5 years average of 0.9). Both indicators have reached positive values in the period since 2013. This was mainly due to the lower fuel costs and the transition to innovative pulse gears, but also the increased fish prices. The high return on investment in 2014-2017 and the fact that the current revenue is much higher than the break-even revenue indicates an economically very viable segment. The social indicators show that the average crew wage is higher than the average Dutch salary[i] and 84 thousand euro per FTE in 2017. The GVA of the large beam trawler is positive and contributes to 35% of the total GVA for the Dutch fleet.

Economic and social indicators beamtrawlers >24 metres (active vesssels only)

	2008	2010	2012	2014	2015	2016	2017
Economic indicators:							
Ratio revenue over Break_Even Revenue	0.7	1.1	1.0	1.8	2.3	2.9	2.5
Return On Investment (%)	-6.4	1.4	0.7	12.2	16.5	18.5	13.8
Social Indicators:							
Average Crew wage (thousand euro/FTE)	46.0	58.8	58.7	68.7	79.8	93.8	84
Gross Value Added (million euro)	45.2	57.8	46.0	64.8	85.1	103.9	94
Gross Value Added per FTE (thousand euro)	73.2	101.7	90.3	130.8	161.2	195.5	161
Gross Value Added per vessel* (1.000 euro)	476	602	548	820	1105	1252	1111

[2] Minimum Dutch salary is about 20 k€/year bruto in 2017
https://www.salaris-informatie.nl/wettelijk-minimumloon#1-juli-2017

The **demersal trawl fleet segment** consists of 33 vessels targeting various species such as nephrops, squid, plaice and mulet (those four species make up for about 62 % of the value of landings in 2017). The fleet shows an average return of investment above zero and a revenue over break-even revenue above one over the last seven years. In 2017, the return on investment was 11.6% and the ratio revenue over break even revenue was 1.5, both were well above the average values over the previous nine years (2.8 and 1.2, respectively). Since 2014, the ROI (positive) and ratio revenue over break even revenue (>1) indicate an economically viable fleet segment. The average crew wage has been above average wage in the Netherlands in all years[i]. The GVA of the demersal fleet is positive and contributes to around 10% of the total GVA for Dutch fleets.

Economic and social indicators demersal fishing fleet*

	2008	2010	2012	2014	2015	2016	2017
Economic indicators:							
Ratio revenue over Breakeven Revenue	0.9	0.7	1.0	1.2	2.0	1.7	1.5
Return On Investment (%)	-2.4	-6.6	0.5	4.1	18.3	15.7	11.6
Social Indicators:							
Average Crew wage (thousand euro/FTE)	52.0	46.3	52.3	58.3	82.2	75.5	82
Gross Value Added (million euro)	11.1	9.7	13.4	14.7	24.3	25	24
Gross Value Added per FTE (thousand euro)	70.9	62.2	78.0	91.5	142	133.7	132
Gross Value Added per vessel* (1.000 euro)	308.4	263.3	382.7	460.0	675.5	782.4	670

* only active vessels are used here

The **pelagic fleet** consists of 7 vessels in 2017 targeting pelagic species on large trawlers. In 2017 the three main species (herring, mackerel and blue whiting) amounted for 71% of the revenue of the fleet. It has sustained a calculated loss every year over the period 2008-2015 with negative gross profits. However, there is a tidy positive result with a positive Return On Investment (ROI) and revenue above the breakeven revenue since 2016. Because the pelagic fleet is vertically integrated in companies the calculated losses do not mean that the sector is unprofitable: the prices used to calculate revenue are internally applied transfer prices provided by the fishing companies as the fish is not sold in auction but transformed and traded directly by the companies. The crew wage is higher than the average Dutch salary[i] and the GVA is positive. In 2017, this GVA contributed to 24% of the total Dutch GVA.

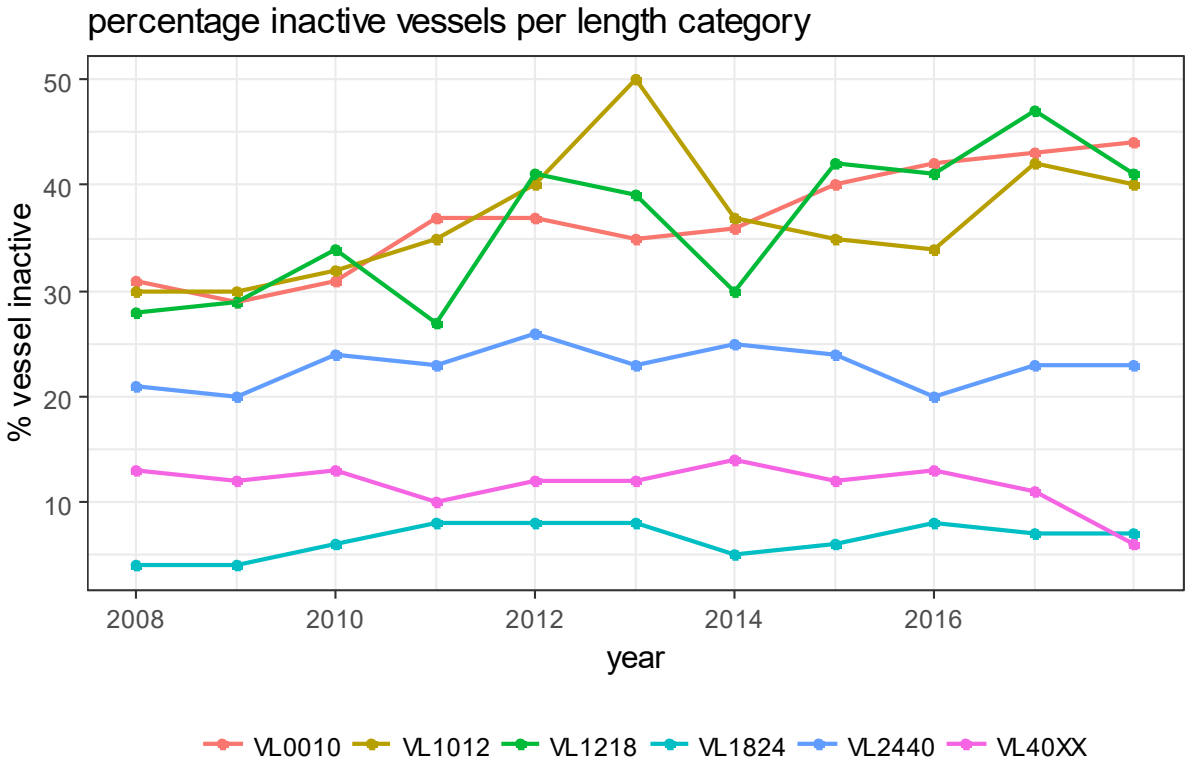
Economic and social indicators pelagic fleet*

	2008	2010	2012	2014	2015	2016	2017
Economic indicators:							
Ratio revenue over Break_Even Revenue	0.9	0.6	0.1	0.7	0.3	1.2	1.3
Return On Investment (%)	-3.1	-5.2	-18.3	-5.9	-14.4	5.4	7.8
Social Indicators:							
Average Crew wage (thousand euro/FTE)	76.6	65.2	64.3	84.1	89.4	81.9	86
Gross Value Added (million euro)	50.3	42.3	27.1	49.1	27.0	54.7	58
Gross Value Added per FTE (thousand euro)	106.6	92.8	55.9	120.4	80.3	158.1	154
Gross Value Added per vessel* (1.000 euro)	3354	3255	1937	4466	3855	7814	7814

* only active vessels are used here

4.2 Vessel Use Indicators

Different fleets show different level of activity. The categories consisting of smaller vessels show the highest inactivity. The percentage of inactive vessels in the categories <10m, 10-12m and 12-18m were 43%, 42% and 47% respectively for the year 2017. The inactivity percentage of the categories <10m and 12-18m has been growing over time.
The larger vessel categories show a lower inactivity percentage. The percentage of inactive vessels in the categories 18-24m, 24-40m and >40m were 7%, 23% and 11% respectively for the year 2017. Over the whole period the inactivity for the large vessels has remained relatively stable. The inactivity percentage for the large vessels is relatively high because cockle vessels are also included in this category. These vessels are used in the hand cockle fisheries or other activities where no landing registrations are required (and in this way registered as inactive).



Percentage inactive per vessel length category in terms of vessel number, KW and tonnage

	Vessels										
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
<10 m	31	29	31	37	37	35	36	40	42	43	44
10-12 m	30	30	32	35	40	50	37	35	34	42	40
12-18m	28	29	34	27	41	39	30	42	41	47	41
18-24m	4	4	6	8	8	8	5	6	8	7	7
24-40m	21	20	24	23	26	23	25	24	20	23	23
>40m	13	12	13	10	12	12	14	12	13	11	6

	kW										
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
<10 m	17	17	18	19	16	18	23	21	27	23	**23**
10-12 m	25	27	32	31	24	54	33	19	31	47	35
12-18m	22	25	31	26	46	43	28	37	45	34	26
18-24m	3	3	5	7	8	7	5	6	7	6	6
24-40m	11	13	15	16	16	12	16	16	11	13	13
>40m	4	4	4	3	4	4	5	4	6	4	2

	Tonnage										
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
<10 m	25	22	26	30	28	28	32	35	38	37	38
10-12 m	31	31	33	36	37	49	43	40	40	50s	45
12-18m	21	27	30	22	40	34	25	38	39	17	12
18-24m	3	3	4	5	6	6	4	5	6	5	5
24-40m	13	14	17	16	16	12	15	15	11	13	13
>40m	3	3	3	2	2	2	3	2	6	2	1

4.3 Fleet utilisation [3]

Looking at the utilisation of the active fleet in terms of fishing effort:

- The small scale vessels are largely underutilised, at around 40% of the KW-days of the maximum observed effort (max observed days in based on average days at sea of 10 most active vessels). Which comes from very heterogeneous levels of effort in the fishery (note that days at sea are real 24h days so for small scale fleets with day trips 3 x 8 hours trip would make a day). The maximum number of days at sea observed has also sharply declined in 2018.
- The smaller beam trawlers also have very heterogeneous levels of activity in the fleet and are utilised at around 60% of the KW-days. For this fleet the maximum nber of days at sea observed has decreased slightly to 204 days in 2018.
- The large beam trawls are around 70% for all years. The slight decrease in utilisation in the most recent years is due to the increasing trend in the maximum number of days at sea observed for this fleet. From 222 in 2008 up to 309 days in 2018, the most active vessels are now longer at sea than the pelagic trawlers.
- The demersal fleet utilisation remains around 70%.
- The utilisation of pelagic fleet has increased over the last years. In 2018 7 pelagic vessels were fishing under Dutch flag utilising 105% of the KW-days and GT-days.

[3] The calculation of the utilisation of the fleet was modified in 2018. Previously we used the max days at sea (of the 10 most active vessels), the average vessel power (KW) and tonnage (GT) and KWfishing days and GTfishingdays (as submitted in the frame of the DCF). Several problems occur when using this data:

1) Inconsistency between days at sea and fishing days so the ratio fishing days/days at sea underestimate the utilisation of the fleets.
2) Using the product of the max days at sea and the average capacity (in power and tonnage) can lead to bias (overestimation of the utilisation if the most active vessels have higher capacity than average/ underestimation of the utilisation if the most active vessels have lower capacity than average)

The new method uses extra data to calculate the observed maxgtseadays and maxkwseadays

Ratio between actual per vessel effort deployed and **observed** maximum effort in KW- and GT-days for active vessels

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Small scale	**Observed max days**	100	104	112	62	80	106	108	101	143	115	78
	Technical indicator (KW)	0.58	0.48	0.42	0.44	0.37	0.35	0.26	0.29	0.27	0.18	0.22
	Technical indicator (GT)	0.9	0.8	0.72	0.74	0.77	0.69	0.56	0.77	0.54	0.34	0.42
Beamtrawl <24m	**Observed max days**	193	237	183	188	208	219	198	203	217	210	204
	Technical indicator (KW)	0.56	0.53	0.6	0.53	0.62	0.59	0.6	0.6	0.62	0.57	0.6
	Technical indicator (GT)	0.62	0.56	0.65	0.59	0.67	0.63	0.64	0.64	0.66	0.62	0.6
Beamtrawl >24m	**Observed max days**	222	240	245	247	246	253	242	252	269	286	309
	Technical indicator (KW)	0.75	0.72	0.72	0.73	0.72	0.7	0.7	0.7	0.68	0.65	0.63
	Technical indicator (GT)	0.74	0.71	0.71	0.72	0.72	0.7	0.69	0.7	0.68	0.65	0.63
Demersal trawlers	**Observed max days**	189	194	207	203	232	208	214	206	225	213	223
	Technical indicator (KW)	0.77	0.79	0.71	0.77	0.71	0.81	0.8	0.73	0.69	0.72	0.73
	Technical indicator (GT)	0.77	0.8	0.74	0.77	0.74	0.83	0.81	0.76	0.71	0.74	0.75
Pelagic trawlers	**Observed max days**	286	251	280	273	218	199	221	223	261	257	236
	Technical indicator (KW)	0.76	0.71	0.73	0.65	0.76	0.73	0.87	0.94	0.78	0.8	1.05
	Technical indicator (GT)	0.74	0.69	0.74	0.66	0.76	0.75	0.87	0.93	0.78	0.8	1.05

Ratio between actual per vessel effort deployed and **theoretical** maximum effort in KW- and GT-days

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Small scale	**Theoretical max days**	220	220	220	220	220	220	220	220	220	220	220
	Technical indicator (KW)	0.16	0.16	0.13	0.11	0.11	0.12	0.1	0.1	0.13	0.13	0.07
	Technical indicator (GT)	0.29	0.28	0.24	0.18	0.22	0.26	0.2	0.2	0.28	0.31	0.06
Beamtrawl <24m	**Theoretical max days**	220	220	220	220	220	220	220	220	220	220	220
	Technical indicator (KW)	0.48	0.54	0.48	0.43	0.56	0.56	0.52	0.53	0.58	0.53	0.54
	Technical indicator (GT)	0.53	0.59	0.53	0.49	0.61	0.62	0.56	0.58	0.63	0.58	0.49
Beamtrawl >24m	**Theoretical max days**	220	220	220	220	220	220	220	220	220	220	220
	Technical indicator (KW)	0.73	0.75	0.76	0.78	0.78	0.77	0.74	0.77	0.8	0.8	0.83
	Technical indicator (GT)	0.73	0.75	0.77	0.78	0.79	0.77	0.74	0.77	0.8	0.8	0.82
Demersal trawlers	**Theoretical max days**	220	220	220	220	220	220	220	220	220	220	220
	Technical indicator (KW)	0.65	0.67	0.66	0.68	0.72	0.75	0.77	0.67	0.69	0.68	0.74
	Technical indicator (GT)	0.65	0.67	0.67	0.68	0.75	0.76	0.77	0.69	0.7	0.69	0.73
Pelagic trawlers	**Theoretical max days**	220	220	220	220	220	220	220	220	220	220	220
	Technical indicator (KW)	0.99	0.81	0.93	0.81	0.75	0.66	0.87	0.96	0.92	0.94	1.13
	Technical indicator (GT)	0.97	0.79	0.94	0.82	0.76	0.68	0.88	0.95	0.92	0.94	1.13

NOTE both observed and theoretical indicators are provided here, however the observed indicators are preferable because of inconsistency between the definition of days at sea (24h vs part of the day).

5 Biological sustainability indicators for the Dutch demersal and pelagic fleet segments

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The procedure to calculate the biological sustainability indicators follows the guidelines as set out in the guidelines provided by DGMARE (2014).

Tables 5a and 5b in Annex 1 present an overview of the top 80 percent landed fish species calculated as the percentage in weight and value. It shows that for the Dutch demersal fleet in 2017 a limited number of species (5) account for ≥80% of the value of all the landings in that fleet (Annex 1). For the pelagic fleet the valuable species are less diverse, consisting of sardines, herring, blue whiting, horse mackerel, and mackerel but these are caught from a wide area.

Two indicators (i.e. Sustainable Harvest indicator and Stock-at-risk indicator) are used to assess whether the Dutch fleet is relying on overfished stocks, or is involved in causing a high biological risk to a depleted stock (see Annex 2 and 3 for a more detailed explanation of the biological sustainability indicators). Calculation of the indicators depends on the availability of quantified scientific advice for the fish stocks in question.

The Dutch fleet is divided into two large fleet segments, namely a demersal and a pelagic segment. The demersal segment is again divided into four smaller fleets: i: the large and ii) small beamtrawl fleet and iii) the remaining part of the Dutch demersal segment that do not fit the beamtrawl fleet ("other demersals"). Finally, also a iv) small scale fleet is present.
Owing to the need to cluster fleets, some detailed information is lost. For example, there is no information about the diversity in gear and fishing method (i.e. large and small beamtrawlers, and flyshooters), or periodical diversity (i.e. shrimp-targeted fishery, flatfish-targeted fishery).

5.1 Sustainable Harvest indicator

The Sustainable Harvest Indicator (SHI) consists of two calculation steps.
First, the ratio of fishing mortality to fishing mortality at maximum sustainable yield (F_{msy}) is calculated at a stock level. A ratio larger than 1 indicates a certain degree of overfishing (by the entire international fleet).
Second, to derive an indicator relevant for the Netherlands, the ratio of all stocks of interest is weighted against the value of the Dutch catch of that stock compared to the entire Dutch fishery. In cases where the Netherlands catches the majority of a stock that is overfished, the SHI will increase as well and may become larger than 1. Where the Netherlands catches only small fractions of stocks that are overfished, the SHI will hardly be influenced by the F/F_{msy} ratio of that stock. A further explanation about the Sustainable Harvest indicator can be found in Annex 2.

In cases where more than 60% of the value of the catch is made up of stocks for which values of F and F_{msy} are unavailable, the indicator is deemed to be uninformative (DG Fisheries and Maritime Affairs Guidelines).

Table 1 shows the Sustainable Harvest indicator score of the pelagic fleet segment for 2017. For the demersal fleet segment (large and small beamtrawl, 'other demersals', and small scale fleet) Table 2a-b-c-d show the indicator score .

Table 1: Sustainable Harvest indicator for the Dutch pelagic fleet segment in 2017. Species that, together, contribute ≥80% of the value of all landings of the Dutch pelagic fleet segment have been included.

Fish stock pelagic (ICES stock code)	**Value of landings** (kEUR)	**F**	**F_{msy}**	**(F/F_{msy})**	**Weighted F/F_{msy}**
Herring (3a47d)	30022	0.210	0.26	0.808	0.205
Herring (irls)	229	0.410	0.260	1.577	0.003
Herring (6a7bc)	295	0.061	0.160	0.381	0.001
Herring (24a514a)	2361	0.174	0.157	1.108	0.022
Herring (20-24)	30	0.330	0.310	1.065	0.000
Blue whiting (comb)	24454	0.470	0.320	1.469	0.303
Mackerel (nea)	26687	0.287	0.230	1.248	0.258
Horse mackerel (western)	7721	0.067	0.108	0.621	0.016
Total	118400				
Sustainable Harvest indicator					***0.833***

Table 2a: Sustainable Harvest indicator for the Dutch large beamtrawl fleet segment in 2017. Species that, together, contribute ≥80% of the value of all landings of this fleet segment have been included.

Fish stock small beamtrawl (ICES stock code)Sole (27.4)	**Value of landings** (kEUR)	**F**	**F_{msy}**	**(F/F_{msy})**	**Weighted F/F_{msy}**
Sole (27.4)	83210	0.220	0.202	1.089	0.539
Plaice (27.420)	46539	0.199	0.210	0.948	0.262
Turbot (27.4)	15626	0.350	0.360	0.972	0.090
Total	168186				
Sustainable Harvest indicator					***0.891***

Table 2b: Sustainable Harvest indicator for the Dutch small beamtrawl fleet segment in 2017. Only species that, together, contribute ≥80% of the value of all landings of this fleet segment have been included.

Fish stock large beamtrawl (ICES stock code)	**Value of landings** (kEUR)	**F**	**F_{msy}**	**(F/F_{msy})**	**Weighted F/F_{msy}**
Brown shrimp	73827				
Sole (27.4)	12150	0.220	0.202	1.089	0.129
Ensis	9000	-	-	-	-
Total	102888				
Sustainable Harvest indicator					***<60%***

Table 2c: Sustainable Harvest indicator for the Dutch 'other demersals' fleet segment in 2017. Species that, together, contribute ≥80% of the value of all landings of this fleet segment have been included.

Fish stock 'other demersals' (ICES stock code)	**Value of landings** (kEUR)	**F**	**F_{msy}**	**(F/F_{msy})**	**Weighted F/F_{msy}**
Nephrops (FU5)	2377	-	-	-	-
Nephrops (FU33)	5269	-	-	-	-
Squid	7578	-	-	-	-
Plaice (27.4.20)	6378	0.119	0.210	0.948	0.136
Red striped mullet ()	5851	-	-	-	-
Grey gurnard ()	3392	-	-	-	-
Mackerel (nea)	2149	-	-	-	-
Turbot (27.4)	1674	0.350	0.360	0.972	0.037
Turbot (3a)	13	-	-	-	-
Brown shrimp	1573	-	-	-	-
Total	44464				**-**
Sustainable Harvest indicator					***<60%***

Table 2d: Sustainable Harvest indicator for the Dutch small scale fleet segment in 2017. Species that, together, contribute ≥80% of the value of all landings of this fleet segment have been included.

Fish stock small scale fleet (ICES stock code)	**Value of landings** (kEUR)	**F**	**F_{msy}**	**(F/F_{msy})**	**Weighted F/F_{msy}**
Seabass (27.44bc7ad-h)	1238	0.101	0.171	0.590	0.211
Sole (27.4)	817	0.220	0.202	1.089	0.257
Edible crab	411				
European lobster	259				
Brown shrimp	191				
Total	3460				
Sustainable Harvest indicator					***<60%***

In 2017, none of the Dutch fleet segments had a Sustainable Harvest Indicator higher than 1. However, not all of the stocks harvested by the fleet segments could be taken into account for the calculation. This is because these stocks are data limited and full analytical assessments are not presently possible to construct. In cases where more than 60% of the value of the catch is made up of stocks for which values of F and F_{msy} are unavailable the indicator is deemed to be invalid (DG Fisheries and Maritime Affairs Guidelines). This was the case for three of the demersal fleet segments; the "other demersals" fleet, the small beamtrawl fleet, and the small scale fleet.

5.2 Stock-at-risk indicator

The Stock-at-risk indicator is used for situations where stocks at high levels of biological risk are being exploited. In this context, "exploited" means that the stock in question accounts for more than 10% of the catches of the fleet, or that the fleet takes more than 10% of the total catches of the stock. This indicator is a measure of how many stocks are being affected by the activities of the fleet segment.

If a fleet segment takes more than 10% of its catches from a stock which is at high biological risk, this is treated as an indication of an imbalance for that stock. For this calculation, a stock at high biological risk means a stock which falls into one or more of the following categories (status of the stock in 2017):

A. assessed as being below Blim (Biomass limit reference point); or,
B. subject to an advice to close the fishery, to prohibit directed fisheries, to reduce the fishery to the lowest possible level, or similar advice from an international advisory body, even where such advice is given on a data-limited basis; or,
C. subject to a fishing opportunities regulation which stipulates that the fish should be returned to the sea unharmed or that landings are prohibited; or,
D. a stock which is on the IUCN "red list" or is listed by CITES.

For the pelagic fleet (Table 3), the herring stock in 6a7bc is exploited at high levels of biological risk, but in line with ICES advice to maintain a fishery for data collection purposes. For the demersal fleet (Table 4) no stocks are being exploited at high levels of biological risk.

Table 3: Stock-at-risk indicator for the Dutch pelagic fleet segment in 2017.
Stocks included are those that account for more than 10% of the catches of the fleet, or that the fleet takes more than 10% of the total catches of the stock.
Definitions of A-B-C-D are described in the text above.

Fish stock pelagic	**A**	**B**	**C**	**D**	**Stock at high biological risk (Y/N)**
Herring (3a47d)	0	0	0	0	N
Herring 6a7bc	1	1	0	0	Y
Mackerel (nea)	0	0	0	0	N
Blue whiting comb	0	0	0	0	N
Horse mackerel (western)	0	0	0	0	N
Horse mackerel (NS)	NA*	NA*	NA*	NA*	NA*

*NA: no information available

Table 4: Stock-at-risk indicator for the Dutch demersal fleet segment in 2017.
Stocks included are those that account for more than 10% of the catches of the fleet, or that the fleet takes more than 10% of the total catches of the stock.
Definitions of A-B-C-D are described in the text above.

Fish stock demersal	**A**	**B**	**C**	**D**	**Stock at high biological risk (Y/N)**
Plaice (27.420)	0	0	0	0	N
Brown shrimp	NA*	NA*	NA*	NA*	NA*
Sole (27.4)	0	0	0	0	N

*NA: no information available

Annex 1: Important fish species for the Dutch fleet

Table 5a: Important fish species for the Dutch fleet in 2017 in **value**
(contributing to ≥ 80% of the total value of landings for each fleet segment).

Demersal fleet				**Pelagic fleet**
Demersal trawlers			**Small scale**	
Small beamtrawl	**Large beamtrawl**	**Other demersals**		
Total value: 102.887 kEUR	Total value: 168.186 kEUR	Total value: 44.464 kEUR	Total value: 3.461 kEUR	Total value: 118.400 kEUR
Brown shrimp (72%)	*Sole (49%)*	*Nephrops (17%)*	*Seabass (36%)*	*Herring (25%)*
Sole (12%)	*Plaice (28%)*	*Squid (17%)*	*Sole (24%)*	*Mackerel (23%)*
	Turbot (9%)	*Plaice (14%)*	*Edible crab (12%)*	*Blue whiting (21%)*
		Red striped mullet (13%)	*Europ. lobster (7%)*	*Horse mackerel (7%)*
		Grey gurnard (7%)	*Brown shrimp (6%)*	
		Mackerel (5%)		
		Turbot (4%)		
		Brown shrimp (3%)		

Table 5b: Important fish species for the Dutch fleet in 2017 in **weight**
(contributing to ≥80% of the total weight of landings for each fleet segment).

Demersal fleet				**Pelagic fleet**
Demersal trawlers			**Small scale**	
Small beamtrawl	**Large beamtrawl**	**Other demersals**		
Total weight: 22.314 tonnes	Total weight: 42.890 tonnes	Total weight: 14.379 tonnes	Total weight: 718 tonnes	Total weight: 295.313 tonnes
Brown Shrimp (54%)	*Plaice (60%)*	*Plaice (24%)*	*Edible crab (21%)*	*Herring (31%)*
Ensis (27%)	*Sole (18%)*	*Grey gurnard (15%)*	*Flounder (13%)*	*Blue whiting (28%)*
	Turbot (4%)	*Mackerel (8%)*	*Seabass (12%)*	*Mackerel (14%)*
		Nephrops (7%)	*Sole (11%)*	*Sardines (10%)*
		Squid (7%)	*Lobster (9%)*	
		Red striped mullet (7%)	*Brown shrimp (6%)*	
		Whiting (6%)		
		Cod (3%)		
		Horse mackerel (3%)		

Annex 2: Sustainable Harvest indicator

Sustainable Harvest indicator

This indicator reflects the extent to which a fleet segment depends on overfished stocks. Here, "overfished" means that a stock is fished above F_{msy}, the fishing mortality rate corresponding to maximum sustainable yield (MSY). Data requirements are: full biological assessments of the stocks fished, i.e. where current fishing mortality has been determined; estimates of F_{msy}, or existing proxies to it (F_{max} or $F_{0.1}$) and the value of the catch of each stock taken.

Where a fleet segment fishes a single stock, the indicator is calculated as:

$$\frac{F}{Fmsy}$$

where F is the most recent value of fishing mortality available from scientific assessment (i.e. ICES advice) and F_{msy} is the fishing mortality at maximum sustainable yield (MSY).

The indicator has been extended to cover fleets active in different fisheries (during the year) and mixed-fisheries situations. When a fleet segment catches a number of species (n) then the indicator is an average of the indicator above for each stock (i), weighted by the value of that stock (L_i). The indicator is calculated as:

$$\frac{\sum_{i=1}^{i=n} Vi \frac{Fi}{Fmsyi}}{\sum_{i=1}^{i=n} \sum Vi}$$

where F_i = most recent value of fishing mortality of stock i available from scientific assessment (i.e. ICES advice), $F_{msy,i}$ = fishing mortality at maximum sustainable yield of stock i, V_i = value of the landings of stock i caught by the Dutch fishing fleet.

This indicator performs in the same way whether the fleet segment makes catches from different stocks in the same fishing operations or whether this occurs in a sequence of different targeted fisheries within the same fishing year.

It should be noted that the calculation of this indicator depends on the availability of quantified scientific advice for the stocks in question. In cases where more than 60% of the value of the catch is made up of stocks for which values of F and F_{msy} are unavailable, the indicator is deemed to be unavailable (DG Fisheries and Maritime Affairs Guidelines). Additionally, at present the indicator is not weighted by the actual TAC the Netherlands obtains each year.

Annex 3: Stock-at-risk indicator

Stock-at-risk indicator

The Sustainable Harvest indicator does not identify cases where stocks are being exploited at high levels of biological risk.

As a complementary indicator to identify such situations, the Stock-at-risk indicator counts the number of stocks currently assessed exploited by the fleet in question as being at high biological risk. In this context, "exploited by" means that the stock(s) at high risk each make up more than 10% of the catches of the fleet, or that the fleet takes more than 10% of the catches of the stock.

For this calculation, a stock at high biological risk means a stock which is either:

A. assessed as being below the Blim biological level; or,
B. subject to an advice to close the fishery, to prohibit directed fisheries, to reduce the fishery to the lowest possible level, or similar advice from an international advisory body, even where such advice is given on a data-limited basis; or;
C. subject to a fishing opportunities regulation which stipulates that the fish should be returned to the sea unharmed or that landings are prohibited; or
D. a stock which is on the IUCN "red list" or is listed by CITES.

(The status of the stock should be considered in a logical timeframe. For instance, only the status of these stocks in 2016 were considered for this report.)

This can be expressed, for each fleet segment catching n stocks of fish, as:

$$\sum_{i=1}^{i=n} (1 \; if \; (Ci > 0.1Ct) \; or \; (Ci > 0.1Ti); otherwise \; 0)$$

where C_i= catch of stock i, C_t = total catch of all stocks taken by the fleet segment, T_i = total catch of stock i taken by all segments, for n stocks that fall into any one of categories A. to D. above.

Annex 4: References

ICES advice reports 2018,
these are available at the ICES website http://ices.dk/publications/library/Pages/default.aspx

DG Fisheries and Maritime Affairs Guidelines for analysis of the balance between fishing capacity and fishing opportunities. (COM(2014)545 final; 2.9.2014)