

Economics 1

Economics and Social Science: business decisions in the real world

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16 May 2019

This session:

- Economic data for fisheries management
- Data collection – how we do it
- Outputs – evidence bases – what they mean
- Bespoke analyses, Economic Impact Assessments
- Economic advice in fisheries management
- Economic principles in fisheries management

Economic data for fisheries management:

- Current data collection practices
- DCF – EU Data Collection Framework
- MMO / Marine Scotland / IFISH
- Seafish data collection
 - Review and discuss Seafish survey form for economic data

← FSEC19 survey SAVE

22 On average, how much fuel did the vessel use per day at sea? In LITRES

23 Was the vessel used for any other income generating activities in 2018?

☐ Yes

☐ No

24 Which of the following income generating activities was the vessel involved in?

☐ Oil/Guarding

☐ Renewable Energy

☐ Aquaculture

☐ Tourism

← FSEC19 survey SAVE


42 I am the vessel owners and I hereby give my permission for Seafish Economists to obtain from my accountant my complete financial accounts for:

☐ The financial year 2018/19, and the next five financial years (until 2024/25)

☐ The financial year 2018/19, and the next three financial years (until 2021/22)

☐ I do not wish to supply my financial accounts to the sample

43 Please sign here to confirm you are happy for Seafish to obtain your accounts for the above stated period.



• STECF Annual Economic Report

seafish



JRC SCIENCE FOR POLICY REPORT

Scientific, Technical and Economic Committee for Fisheries (STECF)

The 2018 Annual Economic Report on the EU Fishing Fleet (STECF 18-07)

Edited
Natacha Carva
Michael Keating
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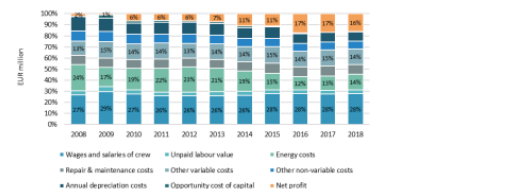
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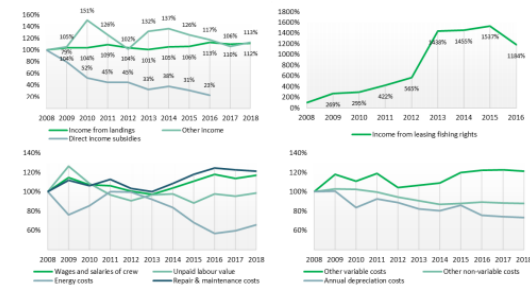
United Kingdom		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Trend 2008-2018	Δ 2016 to 2015	Δ 2016 to avg. 08-15
Total number of vessels		6,706	6,681	6,531	6,467	6,435	6,376	6,338	6,307	6,304	6,263	4,630		0%	-3%
	SCF	3,271	3,256	3,277	3,338	3,320	3,205	3,149	3,164	3,257	3,300	3,281		3%	0%
	LSF	1,628	1,582	1,497	1,460	1,442	1,425	1,416	1,420	1,380	1,366	1,348		-3%	-7%
Vessel tonnage		215.9	209.9	216.8	204.0	202.7	202.1	198.3	195.8	193.5	200.5			-2%	-6%
	SCF	13.6	13.3	13.3	13.5	13.2	13.0	13.5	13.1	13.4	13.6			3%	1%
	LSF	185.3	180.9	191.1	177.0	177.9	172.7	170.2	169.9	168.2	173.8			-1%	-6%
Engine power		868.6	849.4	847.9	816.3	810.4	808.2	799.1	794.2	790.9	798.4			0%	-4%
	SCF	195.1	195.0	194.3	200.2	198.8	197.6	196.5	194.7	203.6	207.5			5%	4%
	LSF	554.9	536.8	547.6	515.1	514.2	505.1	499.5	495.2	487.6	493.6			-2%	-6%
Total employed		12,614	12,212	12,703	12,405	12,445	12,235	11,845	12,107	11,757	11,774	11,617		-3%	-5%
	SCF	5,429	5,617	5,958	6,092	5,797	5,910	5,738	5,743	5,422	5,467	5,386		-6%	-6%
	LSF	6,595	6,745	6,313	6,648	6,325	6,107	6,364	6,335	6,307	6,231			0%	3%
	Wages and salaries of crew	9,549	9,245	9,034	8,563	7,870	7,769	8,223	8,888	8,395	8,481			8%	3%
	Unpaid labour value	2,021	2,053	2,130	1,848	1,837	2,037	2,103	2,106	1,755	1,708			0%	6%
	Repair & maintenance costs	7,528	7,192	6,904	6,715	6,033	5,732	6,120	6,782	6,640	6,773			11%	2%
	Other variable costs	433.3	429.2	420.0	411.6	401.3	428.2	431.7	431.0	379.6	379.5			0%	1%
	Other non-variable costs	221.0	224.8	228.3	221.2	215.6	238.8	244.9	238.3	195.5	190.6			-3%	4%
	Annual depreciation costs	212.4	204.4	191.7	190.4	185.7	189.4	186.7	192.8	184.0	188.9			3%	-2%
	Opportunity cost of capital	348.4	343.2	337.3	337.2	323.4	325.1	304.1	321.0	324.6				6%	-5%
	Net profit	158.0	159.8	166.1	169.6	160.9	163.3	147.3	157.2	167.6				7%	-4%
	Income from landings	190.4	183.5	171.2	167.6	162.5	161.8	156.8	163.8	157.0				4%	-6%
	Direct income subsidies	582.8	608.4	603.7	634.4	628.5	758.9	709.0	700.6	715.2	702.2			-2%	10%
	Other income	39.2	42.7	44.6	48.9	50.7	50.3	44.5	50.3	45.9	40.5			13%	11%
	Income from leasing fishing rights	543.7	565.7	559.2	585.5	577.7	708.5	664.5	650.3	669.2	661.7			-2%	10%
	Wages and salaries of crew	880.3	938.7	1,026.8	1,010.6	887.8	1,072.1	1,070.6	1,130.1	1,053.1	1,082.2			6%	16%
	Unpaid labour value	110.3	119.5	123.4	128.1	116.3	129.2	132.7	143.6	127.4	132.9			8%	16%
	Repair & maintenance costs	769.9	819.2	903.4	882.5	771.6	943.0	937.9	986.5	925.7	949.3			5%	16%
	Other variable costs	908.6	970.2	1,055.7	1,064.2	936.6	1,119.6	1,112.5	1,172.6	1,122.0	1,122.9			5%	16%
	Other non-variable costs	112.9	123.8	129.0	135.3	123.2	135.9	136.3	150.7	138.8	140.0			13%	16%
	Annual depreciation costs	795.7	846.4	926.7	928.9	813.4	983.7	976.2	1,021.9	993.1	983.9			5%	15%
	Opportunity cost of capital	442.0	431.6	467.5	479.0	412.0	584.5	561.3	650.9	610.1	599.0			16%	38%
	Net profit	61.8	64.8	60.3	64.6	59.4	68.7	70.3	85.8	80.3	81.8			22%	30%
	Income from landings	378.3	366.9	407.2	414.5	352.6	515.8	491.0	565.1	529.8	517.2			15%	39%
	Direct income subsidies	200.1	203.2	225.1	226.5	198.4	318.5	277.2	351.3	321.1	311.3			27%	57%
	Other income	20.4	19.7	16.8	18.4	16.8	20.9	20.8	33.1	32.2	32.9			59%	72%
	Income from leasing fishing rights	179.7	183.5	208.3	208.1	181.6	297.6	256.3	318.3	288.9	278.2			24%	55%
	Wages and salaries of crew	119.8	129.3	161.8	162.6	133.9	243.2	189.3	292.3	273.4	262.8			54%	95%



Data source: MS data submissions under the DCF 2018 Fleet Economic (MAR/AJAC(2018)). Newcast values for 2017 and 2018
Figure 3.25 Trends in income (left) and costs (right) generated by the EU fleet



Data source: MS data submissions under the DCF 2017 Fleet Economic (MAR/AJAC(2017)). All monetary values adjusted for inflation; constant prices (2015). Newcast values for 2017 and 2018
Figure 3.26 Trends on costs as a % of revenue for the EU fleet



Data source: MS data submissions under the DCF 2018 Fleet Economic (MAR/AJAC(2018)). All monetary values adjusted for inflation; constant prices (2015). Newcast values for 2017 and 2018
Figure 3.27 Left: Variations in income and costs for the EU fleet (based on 2008=100)

Seafish time series

Seafish single year report



Economics of the UK Fishing Fleet 2017
Fleet size and activity

Table 1. Fleet size, activity, fishing income (nominal figures) and main stocks, 2016-2017

Segment	Number of vessels		Average days at sea		Average fishing income (£'000)	
	2016	2017	2016	2017	2016	2017
Area VISA demersal trawl	15 ↑	13 ↓	128 ↑	144 ↑	200 ↑	225 ↑
Area VISA nephrops over 250kW	32 ↓	30 ↓	140 ↑	137 ↓	276 ↑	294 ↑
Area VISA nephrops under 250kW	42 ↑	37 ↓	136 ↑	124 ↓	160 ↑	158 ↓
Area VIBCCDEFGHK 24-40m	11 ↓	13 ↑	289 ↑	251 ↓	1,824 ↑	1,501 ↓
Area VIBCCDEFGHK trawlers 10-24m	63 ↓	61 ↓	170 ↑	162 ↓	251 ↑	290 ↑
North Sea beam trawl over 300kW	9 ↓	9 ↓	247 ↑	191 ↓	2,267 ↑	1,458 ↓
North Sea beam trawl under 300kW	22 ↑	20 ↓	86 ↓	104 ↑	108 ↑	96 ↓
North Sea nephrops over 300kW	48 ↑	55 ↑	203 ↑	219 ↑	591 ↑	691 ↑
North Sea nephrops under 300kW	54 ↑	69 ↑	136 ↑	101 ↓	180 ↑	184 ↑
NSWOS demersal over 24m	44 ↓	43 ↓	206 ↑	210 ↓	1,942 ↑	2,047 ↑
NSWOS demersal pair trawl seine	25 ↑	26 ↑	200 ↑	212 ↑	1,737 ↑	1,980 ↑
NSWOS demersal seiners	16 ↓	17 ↑	158 ↑	181 ↑	1,123 ↑	1,393 ↑
NSWOS demersal under 24m over 300kW	33 ↓	37 ↑	191 ↑	200 ↑	955 ↑	1,101 ↑
NSWOS demersal under 24m under 300kW	13 ↓	19 ↑	124 ↑	97 ↓	304 ↑	240 ↓
South West beamers over 250kW	23 ↓	26 ↑	209 ↑	226 ↑	833 ↑	991 ↑
South West beamers under 250kW	23 ↓	22 ↓	233 ↑	227 ↓	681 ↑	722 ↓
UK scallop dredge over 15m	92 ↑	89 ↓	184 ↑	176 ↓	518 ↑	498 ↓
UK scallop dredge under 15m	180 ↑	208 ↑	112 ↑	90 ↓	157 ↑	143 ↓
Under 10m demersal trawl/seine	192 ↑	174 ↓	109 ↑	95 ↓	72 ↑	78 ↑
Under 10m drift and/or fixed nets	223 ↑	184 ↓	83 ↓	82 ↓	43 ↑	43 ↓
Under 10m pots and traps	1,086 ↑	1,156 ↑	125 ↓	95 ↓	82 ↑	60 ↓
Under 10m using hooks	167 ↑	235 ↑	72 ↓	62 ↓	40 ↑	36 ↓
WOS nephrops over 250kW	24 ↓	24 ↓	184 ↑	184 ↑	264 ↑	244 ↓
WOS nephrops under 250kW	24 ↓	24 ↓	184 ↑	184 ↑	264 ↑	244 ↓



Economics of the UK Fishing Fleet 2017

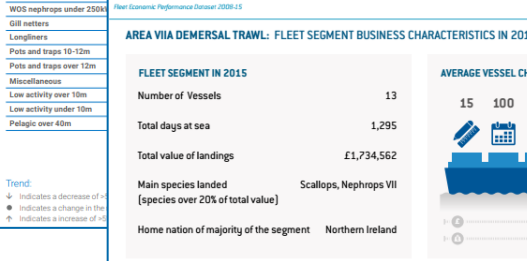


FIG. 1. TOP SPECIES BY VALUE AS % OF TOTAL VALUE LANDED IN 2015

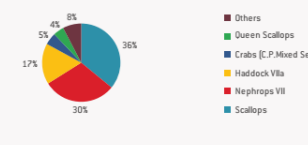


FIG. 2. VALUE OF LANDINGS BY SPECIES AND MONTH IN 2015

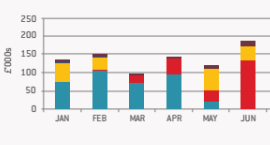


FIG. 3. DAYS AT SEA BY GEAR TYPE AS % OF TOTAL DAYS AT SEA IN 2015

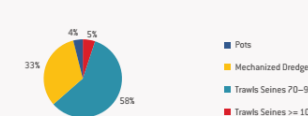
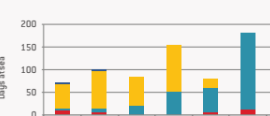


FIG. 4. TOTAL DAYS AT SEA BY GEAR TYPE AND MONTH IN 2015



AREA VIA DEMERSAL TRAWL: FLEET SEGMENT BUSINESS PERFORMANCE, 2008-2015

In the eight years to 2015, the number of vessels in the fleet segment decreased from 15 to 13 vessels, however the number of vessels dipped to five in 2012 and 2013 (see table). In each year since 2008 the segment as a whole has been profitable. Figure 7 presents the relationship between income and costs per kW day at sea since 2008. A relatively wide gap between the two lines indicates a period of higher profit margins in the fleet segment. A dip was experienced in 2011 due to static income per kW day and rising fuel and vessel costs. The lower profit margins in 2011 may have influenced more than half of the vessel owners to leave the fleet segment, or change fishery, in 2012. Since 2012 a higher proportion of the fleet's income has been earned from scallops, for example in 2011, 21% of the value of landings was scallops and queen scallops, in 2012 this increased to 52%. For further detail on landings by stock see the Seafish Economic Performance Dataset (Excel Tables).

FIG. 5. ECONOMIC PERFORMANCE OF FLEET SEGMENT, 2014 (TOTAL)

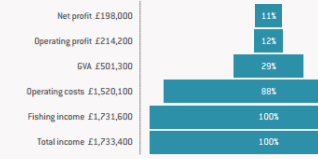


FIG. 6. AVERAGE PER VESSEL: OPERATING COST STRUCTURE COMPARED TO INCOME

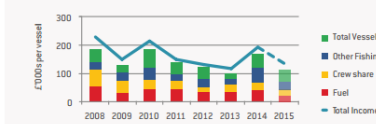
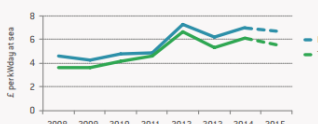


FIG. 7. OPERATING COSTS COMPARED TO INCOME PER KW DAY AT SEA (£)



AVERAGE PER VESSEL		Trend 2008-2014										2015
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Active vessels (#)		15	15	14	12	5	5	9	13			
Days at Sea (days)		131	108	121	107	104	114	131	100			
Landings (tonnes)		103.7	91.1	159.2	93.7	161.6	95.0	112.0	85.2			
Landings per day at sea (tonnes)		0.79	0.84	1.32	0.88	1.55	0.83	0.85	0.85			
Average price per tonne landed (£)		2,050	1,603	1,333	1,581	810	1,227	1,718	1,567			
Total Income (£'000)		2,297	1,493	2,126	1,483	1,312	1,166	1,926	1,337			
Total Operations Costs (£'000)		185.5	128.5	183.8	138.7	119.2	100.0	168.9	110.8			
Gross Value Added (£'000)		102.1	62.7	61.5	37.5	30.1	48.1	55.7	45.2			
Operating Profit (£'000)		44.2	21.4	28.8	9.7	12.0	16.5	23.8	22.9			

Seafish time series in Excel – let's take a look

<http://www.seafish.org/research-economics/industry-economics/seafish-fleet-economic-performance-data>

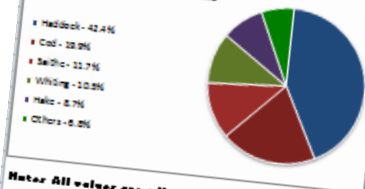


NSWOS demersal pair trawl seine

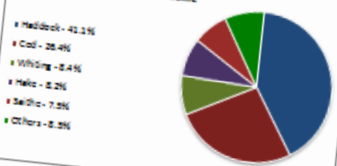
Variable	Trawl 2006-2016	2006	2007	2008	2009	2010	2011	2012	2013	2014
Active vessels (#)	41	36	39	37	38	34	30	28	25	21
Power (kW)	11,783	11,362	10,574	10,385	13,198	17,415	16,242	15,564	15,661	15,111
Registered Tonnage (GT)	7,344	6,936	7,419	7,246	7,665	6,988	6,576	6,376	6,376	6,376
VCU (unit)	14,433	11,049	14,877	14,544	15,177	13,728	12,639	12,125	11,821	11,821
Landing (tonnes)	18,812	18,836	19,079	21,093	22,197	19,302	21,621	20,008	19,008	19,008
Fishing Income (£ million)	28.8	30.1	6,811	6,652	5,439	4,713	4,590	4,590	4,590	4,590
Days at Sea (days)	7,048	6,710	6,811	6,652	5,439	4,713	4,590	4,590	4,590	4,590
FTEs (#)	288	294	276	255	232	220	220	220	220	220
Length (m)	23.4	24.2	24.1	24.4	24.5	24.6	25.2	25.4	25.4	25.4
Power (kW)	434	482	476	497	505	512	541	556	556	556
Registered Tonnage (GT)	179	193	190	196	202	206	219	228	228	228
VCU (unit)	361	329	301	393	398	404	423	433	433	433
Landing (tonnes)	458.6	524.3	489.2	569.8	584.1	567.1	727.4	833.2	833.2	833.2
Fishing Income (£'000)	703.4	836.3	711.6	733.1	887.0	938.9	1,033.7	1,248.4	1,248.4	1,248.4
Days at Sea (days)	172	195	175	185	175	160	157	164	164	164
Vessel Age (year)	23	21	22	23	23	22	24	24	24	24
Landing per day at sea (tonnes)	2.67	2.82	2.80	3.08	3.34	3.55	4.63	5.47	5.47	5.47
Average price per tonne landed (£)	1,533	1,530	1,455	1,287	1,510	1,654	1,421	1,339	1,339	1,339
Landing per kW day at sea (£)	5.88	5.75	5.77	6.10	6.50	6.73	8.29	9.10	9.10	9.10
Fishing income per kW day at sea (£)	9.01	9.36	8.40	7.89	9.87	11.13	11.78	11.78	11.78	11.78
Total cost per kW day at sea (£)	1.76	1.90	1.78	1.56	1.97	10.35	11.02	11.02	11.02	11.02
Operating profit per kW day at sea (£)	1.77	1.56	0.66	0.46	1.01	1.27	1.20	1.20	1.20	1.20
Fishing income per FTE (£'000)										
Operating profit per FTE (£'000)										
Fishing Income (£'000)	103.4	836.3	711.6	733.1	887.0	938.9	1,033.7	1,248.4	1,248.4	1,248.4
Non Fishing Income (£'000)	25.0	27.7	9.6	12.0	9.6	41.2	37.1	37.1	37.1	37.1
Total Income (£'000)	128.4	864.0	721.2	745.0	896.5	980.1	1,071.4	1,285.5	1,285.5	1,285.5
Fuel (£'000)	87.0	105.6	124.4	103.7	112.2	137.8	143.1	143.1	143.1	143.1
Crew share (£'000)	199.6	258.8	206.8	215.3	224.4	240.6	265.1	265.1	265.1	265.1
Other Fishing Costs (£'000)	157.3	186.2	166.1	212.7	217.1	270.2	269.8	269.8	269.8	269.8
Total Fishing Costs (£'000)	444.5	550.7	505.8	531.7	553.7	648.6	678.6	678.6	678.6	678.6
Total Vessel Costs (£'000)	145.3	170.5	165.8	170.7	193.8	193.8	193.8	193.8	193.8	193.8
Total Costs (£'000)	590.4	721.2	671.6	702.4	747.5	842.4	872.4	872.4	872.4	872.4
Gross Value Added (£'000)	337.6	401.6	262.8	257.3	314.8	329.6	366.6	366.6	366.6	366.6
Operating Profit (£'000)	138.0	142.8	56.0	42.6	30.4	106.8	105.0	105.0	105.0	105.0
Depreciation (£'000)	13.1	25.3	30.5	32.9	36.9	39.5	43.1	43.1	43.1	43.1
Interest (£'000)	13.2	24.5	24.1	0.8	0.1	3.6	3.6	3.6	3.6	3.6
Other Finance Costs (£'000)	111.7	32.4	1.5	0.1	43.1	54.3	43.1	43.1	43.1	43.1
Net Profit (£'000)										

Notes All values are nominal values. 2016 fishing income based on provisional data from MMO. 2016 costs and profit based on official data. Sample rate for vessel characteristics and fishing income is 100%, taken from official data. Sample rates for non-fishing income and costs vary due to avail.

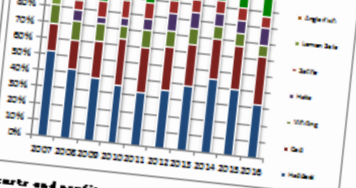
Top 5 landed species by volume in 2015
NSWOS demersal pair trawl seine



Top 5 landed species by value in 2015
NSWOS demersal pair trawl seine



Top 5 landed species by value 2007-2016
NSWOS demersal pair trawl seine



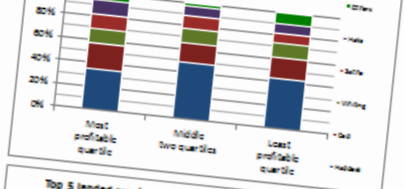
Notes All values are adjusted to 2015 prices. 2016 fishing income based on provisional data from MMO. 2016 costs and profit are projections. Sample rate for vessel characteristics and fishing income is 100%, taken from official data. Sample rates for non-fishing income and costs vary due to avail.

Quantiles

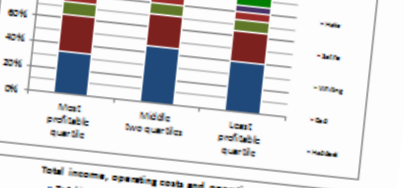
Variable	Most profitable quartile	Middle two quartiles	Least profitable quartile	Segment average
Active vessels (#)	7	15	7	29
Length (m)	25.2	26.3	24.7	25.6
Power (kW)	453	585	539	542
Registered Tonnage (GT)	204	270	214	240
VCU (unit)	388	463	423	435
Landing (tonnes)	1,079.9	1,069.9	620.0	963.7
Fishing Income (£'000)	1,596.7	1,564.2	927.1	1,419.2
Days at Sea (days)	203	203	170	195
Vessel Age (year)	26	22	26	24
Average price per tonne landed (£)	5.32	5.28	3.45	4.94
Landing per kW day at sea (£)	1,479	1,462	1,495	1,472
Fishing income per kW day at sea (£)	11.57	9.74	6.91	8.97
Total cost per kW day at sea (£)	17.10	12.78	10.34	13.19
Operating profit per kW day at sea (£)	14.31	10.93	9.15	11.28
Annual catch of fuel (£'000)	91.8	118.7	97.4	107.1
Annual fuel use (litre)	257,571	332,933	273,214	300,328
Fuel use per day (litre)	1,270	1,642	1,607	1,541
Cost of fuel per day (£)	493	585	573	549
Cost of fuel per tonne landed (£)	85	111	157	111
Total income (£'000)	1,694	1,659	982	1,504
Operating costs (£'000)	1,434	1,433	976	1,299
Operating profit (£'000)	260	226	107	206

Notes All values are nominal values. Quantiles are based on operating profit margin. Sample rate for vessel characteristics and fishing income is 100%, taken from official data. Sample rates for non-fishing income and costs vary due to avail.

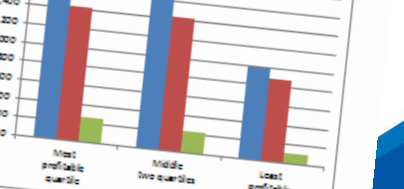
Top 5 landed species by volume in 2015



Top 5 landed species by value in 2015



Total income, operating costs and operating profit in 2015



Bespoke analyses

Economic impact assessments

seafish



How we give advice

STECF

Government working groups, projects, meetings

Enquiries, presentations, conferences

Industry meetings, workshops, discussions

Ad-hoc enquiry service

Informing decisions

Evidence

Expert advice on “how to achieve...”

Expert advice on “what would happen if...”

Not advising what “should” be done



35. The impact of chokes will vary, as Hazel Curtis told us: “Different groups of vessels have different degrees of choke problem, depending on the quota allocation they currently have. Some of them would run out early in the year, some would get halfway through the year, and some would get nearly all the way through the year.”⁵⁷

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60. Hazel Curtis identified significant benefits in the opportunity to trade quota:

“In our modelling work, we looked at what would happen if people had only the quota they were allocated at the start of the year versus the quota they ended the last year with, after all the trading and international swaps. That can make a really big difference to the degree of choke. In some sea areas and for some vessel types, it would make the difference between being able to fish for maybe only 60% of the days at sea they had last year and, after swaps and moving quota around, fishing for 98% of last year’s days at sea.”⁸⁹

62. Hazel Curtis noted that “there is no mechanism at the moment to oblige anybody to move quota around. It is a commercial transaction.”⁹² Barrie Deas told us: “Whether there could be more understanding between Member States about the need to move quota around is something that has been put to the regional groupings of Member States. They have decided not to do anything at this stage but to see what the level of uptakes is early in the new year.”⁹³

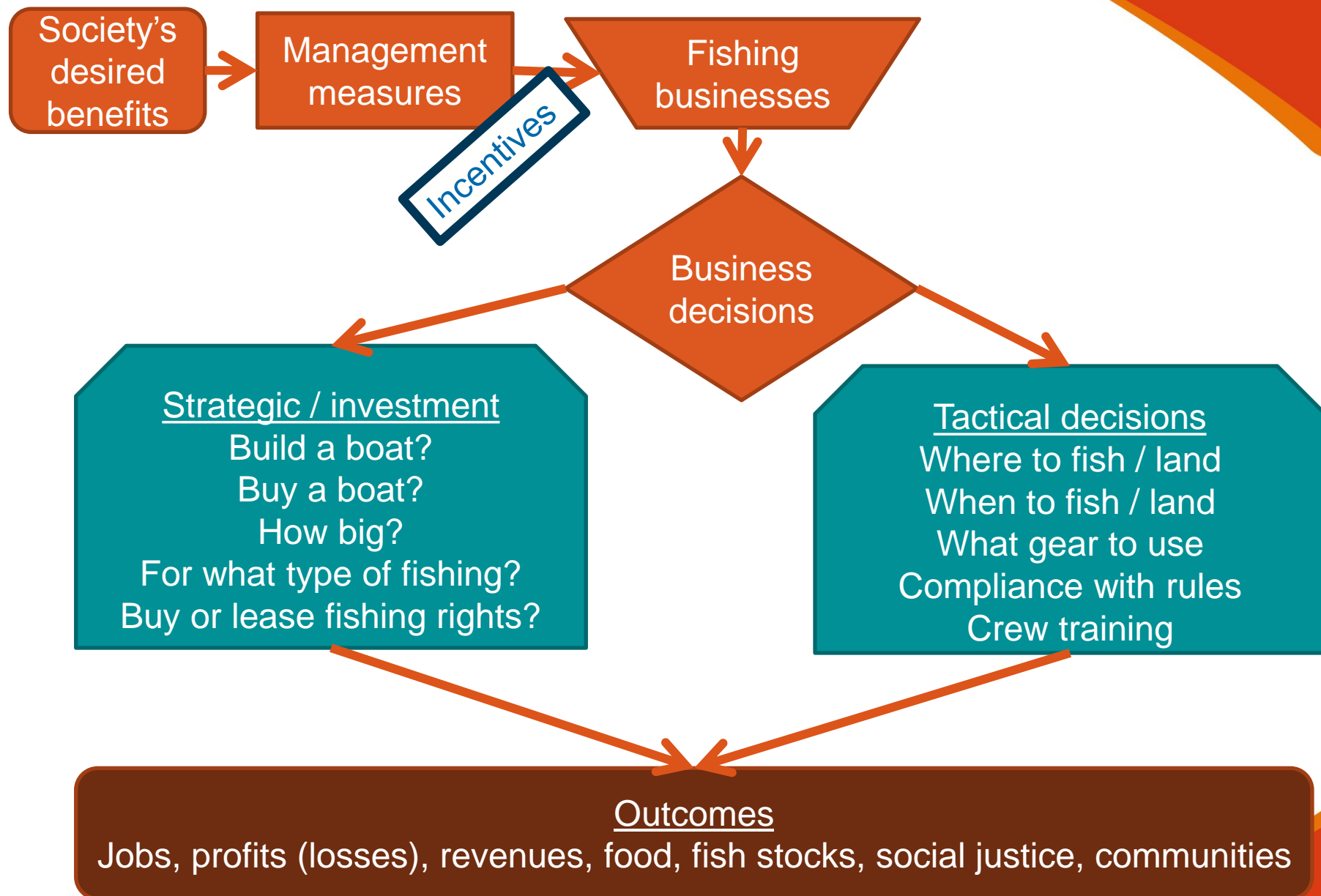
The harvest opportunities are agreed in total. Now...

- How do we make them come true?
- How do we ensure harvesting activities don't have negative side effects on the environment?

*** Ask the audience ***

What are we trying to achieve for society, what does society want from its fish stocks?

- Its own fishing industry? Good jobs.
- Revenues. Could sell our fishing rights to others?
- Food?
- Strong communities?



Let's go fishing!

Incentives

- Strategic / investment decisions
- Tactical decisions

Recap of today's session:

- **Economic data for fisheries management**
- **Data collection – how we do it**
- **Outputs – evidence bases – what they mean**
- **Bespoke analyses, Economic Impact Assessments**
- **Economic advice in fisheries management**
- **Economic principles in fisheries management**

Thank you!

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