Assessment of the socio-economic impacts of implementing the MAP for the Western Italian fleet

Focus Group Western Mediterranean

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Western Mediterranean MAP framework – focus on EMU 2

2019

Adoption of Regulation (EU) 2019/1022

Western Mediterranean Multiannual Plan enters into force

2020–2024

Progressive reduction of fishing effort (trawlers)

2025

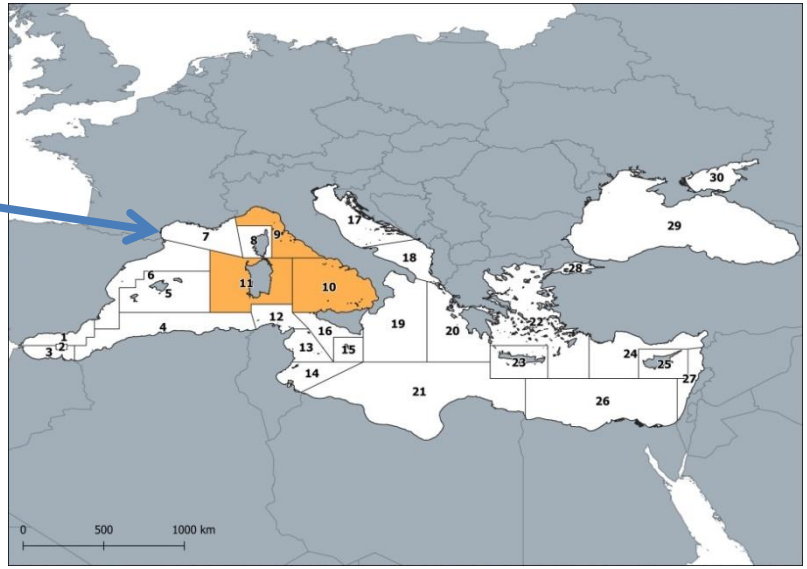
Adaptive management phase

Focus on stock recovery and mixed-fisheries balance

Two Effort Management Units (EMUs)

EMU 1: Northern WMED (GSA 1–7)

EMU 2: Southern WMED(GSA 8–11)



Demersal priority stocks under MAP

European hake (*M. merluccius, HKE*)

Deep-water rose shrimp (*P. longirostris, DPS*)

Norway lobster (*N. norvegicus, NEP*)

Red mullet (*M. barbatus, MUT*)

Giant red shrimp (*A. foliacea, ARS*)

Blue and red shrimp (*A. antennatus, ARA*)

Fishing opportunities 2024 versus FDI data

For Italian trawlers, the 2024 Regulation resulted in a 13 % higher number of fishing days than those declared in the FDI dataset for 2024.

Stock group	Fleet segment	FDI baseline: average of 2015-2017 fishing effort $E_{2015-2017}$	FDI Fishing effort in 2020	2020 Regulation	FDI Fishing effort in 2021	2021 Regulation	FDI Fishing effort in 2022	2022 Regulation	FDI Fishing effort in 2023	2023 Regulation	FDI Fishing effort in 2024	2024 Regulation	% of change between the 2024 Regulation and 2024 FDI effort	2025 Regulation
Red mullet in GSAs 9, 10 and 11; Hake in GSAs 9-10-11; Deep-water rose shrimp in GSAs 9-10-11; Norway lobster in GSAs 9 and 10.	< 12 m	3374	4472	3081	7664	2824	6934	2534	4212	2294	3396	1969	-72%	1202
	≥ 12 m and < 18 m	52679	31427	46350	34290	42487	29077	38110	27100	34505	20984	29613	29%	18064
	≥ 18 m and < 24 m	35031	24557	31170	27528	28572	23035	25629	22975	23205	19229	19915	3%	12148
	≥ 24 m	4680	4619	4160	5786	3813	3652	3421	3122	3097	1636	2658	38%	1622
Giant red shrimp in GSAs 9, 10 and 11.	< 12 m	567	130	510	101	101	57	57	31	31	78	326	76%	199
	≥ 12 m and < 18 m	3345	3963	3760	1297	1221	2859	2702	3460	3338	2953	2402	-23%	1465
	≥ 18 m and < 24 m	2838	3744	3028	1202	1039	2933	2492	2558.4	2346	2767	1934	-43%	1180
	≥ 24 m	450	1231	405	489	232	788	363	592	202	560	259	-116%	158
TOTAL FISHING EFFORT OF ITALIAN TRAWLS		**102964**	**74143**	**92464**	**78357**	**80289**	**69335**	**75308**	**64050**	**69018**	**51603**	**59076**	**13%**	**36038**

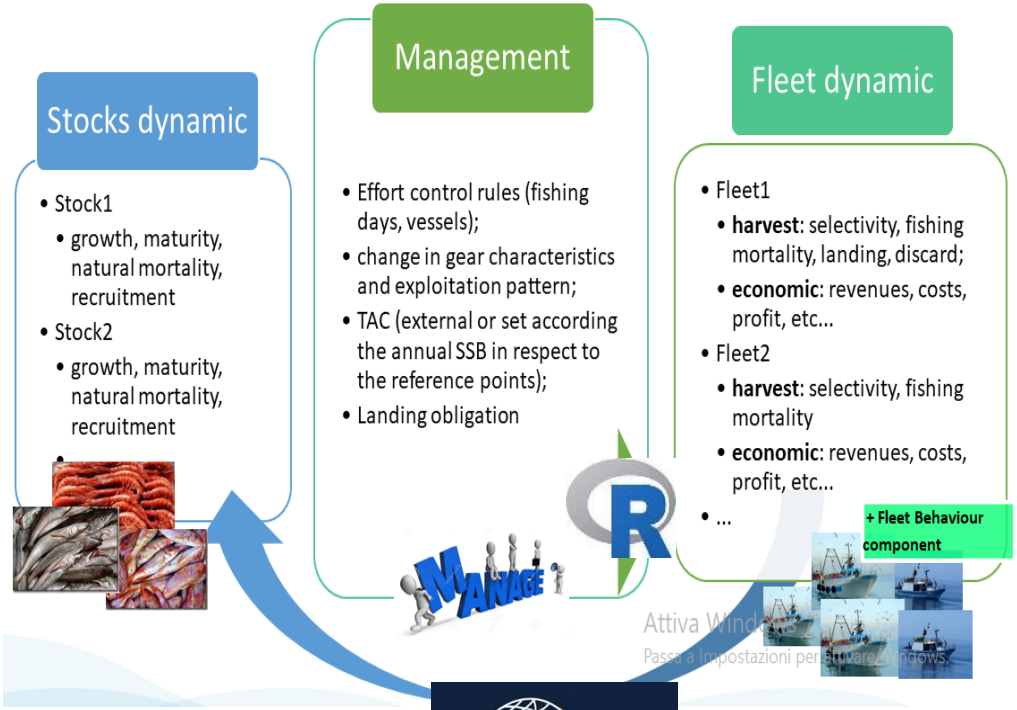
Source: MS data submission under the 2025 Fisheries Dependent data call - MARE/D/MM (2025).

BEMTOOL bio-economic model

BEMTOOL is a MULTI-FLEET and MULTIPLE STOCK bio-economic simulation model for MIXED FISHERIES to provide advice within Management Strategy Evaluation dimensions.

Data used

- Stock assessment results, including process error (e.g. GFCM and STECF reports);
- Transversal data (e.g. effort, FDI data)
- Socio-economic data (e.g. fixed, variable costs, employment, AER data).
- Other relevant information (e.g. historical management measures applied).



The model is used by the STECF

Western Med MAP working group **since 2019**

BEMTOOL is freely available on:

https://github.com/ices-tools-dev/SEAwise_ecoMSE

How BEMTOOL simulates the effort allocation

Fishing Technique	VL	GSA9					GSA10					GSA11			
		LLS	NETS	OTB_DEF	OTB_DWS	OTB_MDD	LLS	NETS	OTB_DEF	OTB_DWS	OTB_MDD	NETS	OTB_DEF	OTB_DWS	OTB_MDD
PGP	VL0018														
HOK	VL0024														
DTS	VL0612														
DTS	VL1218														
DTS	VL1824														
DTS	VL2440														

25% of the total production and of the total F

Reallocation mechanisms in the model

When one of the **two red shrimps catch limit** is reached → deep-water effort (DWS/MDD) stop and the remaining effort becomes demersal (DEF)

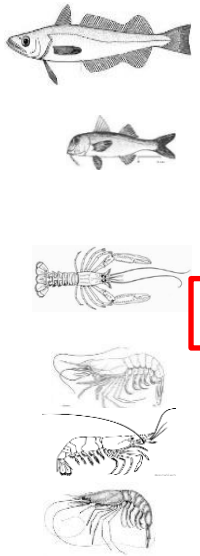
Hake catch limit reached → gillnets and trammel nets stop (no effort reallocation)

Updating BEMTOOL with the latest available data

Assumed the 2025 effort following the regulations:
Effort quotas modified in the model according to:

- *COUNCIL REGULATION (EU) 2025/219 of 30 January 2025 fixing for 2025 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas,available here*
- *Decree on total GT reduction on the permanent cessation of fishing activity in accordance with Article 20 of Regulation (EU) 2021/1139 updated with the Annual report on the efforts made by Italy in 2024 to reach a sustainable balance between fishing capacity and fishing opportunities (pursuant to Article 22 of Regulation (EU) No 1380/2013), available here)*
- *Compensation mechanism applied by Italy in 2025 (+18%, due to closure of area deeper than 800 m and to the additional fishing ban in October), available here.*

Stocks status from STECF Expert Working Group 25-09



Stock	F current	Fmsy	ratio F/Fmsy	B current	Bpa	Blim
HKE891011	0.49	0.41	1.20	4746	8604	4302
MUT10	Catch-based advice					
MUT9	0.64	0.55	1.16	1108	730	365
NEP9	0.336	0.142	2.37	343	486	243
NEP11	**0.44**	**0.16**	**2.75**	**49.4**	**80**	**40**
ARS91011	0.66	0.48	1.375	400.6	352	156
DPS891011	Catch-based advice					
ARA91011	Catch-based advice					

Exploration of scenarios to allow ALL the stocks to be exploited at Fmsy

Testing management options to reach FMSY for Norway lobster in EMU 2

- Norway lobster (NEP) in GSA 9 and 11 is the most overexploited stock in EMU 2
- Management measures under Regulation (EU) 2022/110 help approach Fmsy for giant red shrimp, but not sufficient for Norway lobster
- Additional measures tested (EWG 25-11): effort reductions for trawlers + selectivity improvements, combined with existing limits on nets and longlines

Scenarios

SQ catch limits (on OTB and NETS) set in 2025 continue onward, compensation mechanisms applied in 2025. In 2026 the effort return to the 2024 level.

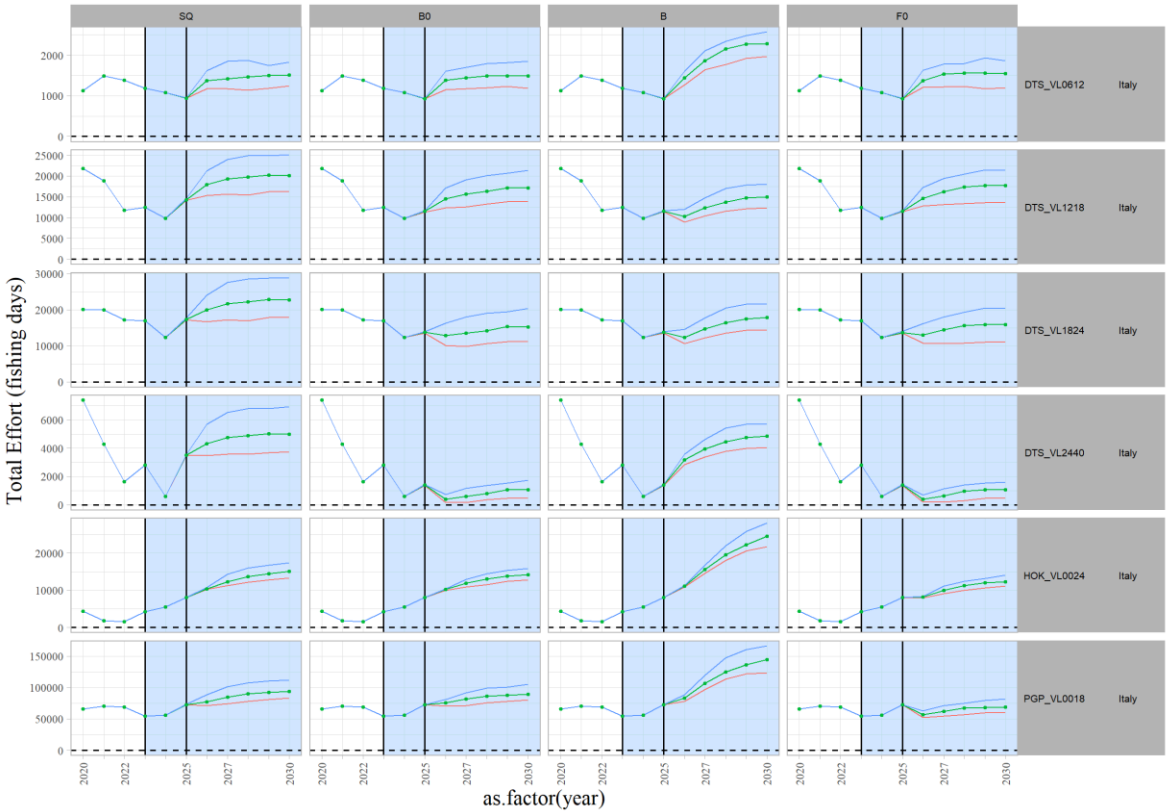
B0 as SQ + temporary selectivity improvement (square mesh size of 45 mm) only in 2026.

B as B0 + reduction of -80% demersal trawlers effort to allow Norway lobster to achieve Fmsy. No compensation mechanism applied.

F0 red shrimps catch limits reduction towards giant red shrimp Fmsy; hake catch limit reduced -25%; longlines effort quotas reduced -25%. In 2026 the effort return to the 2024 level.

F as F0 + reduction of -80% demersal trawlers effort to allow Norway lobster to achieve Fmsy. No compensation mechanism applied.

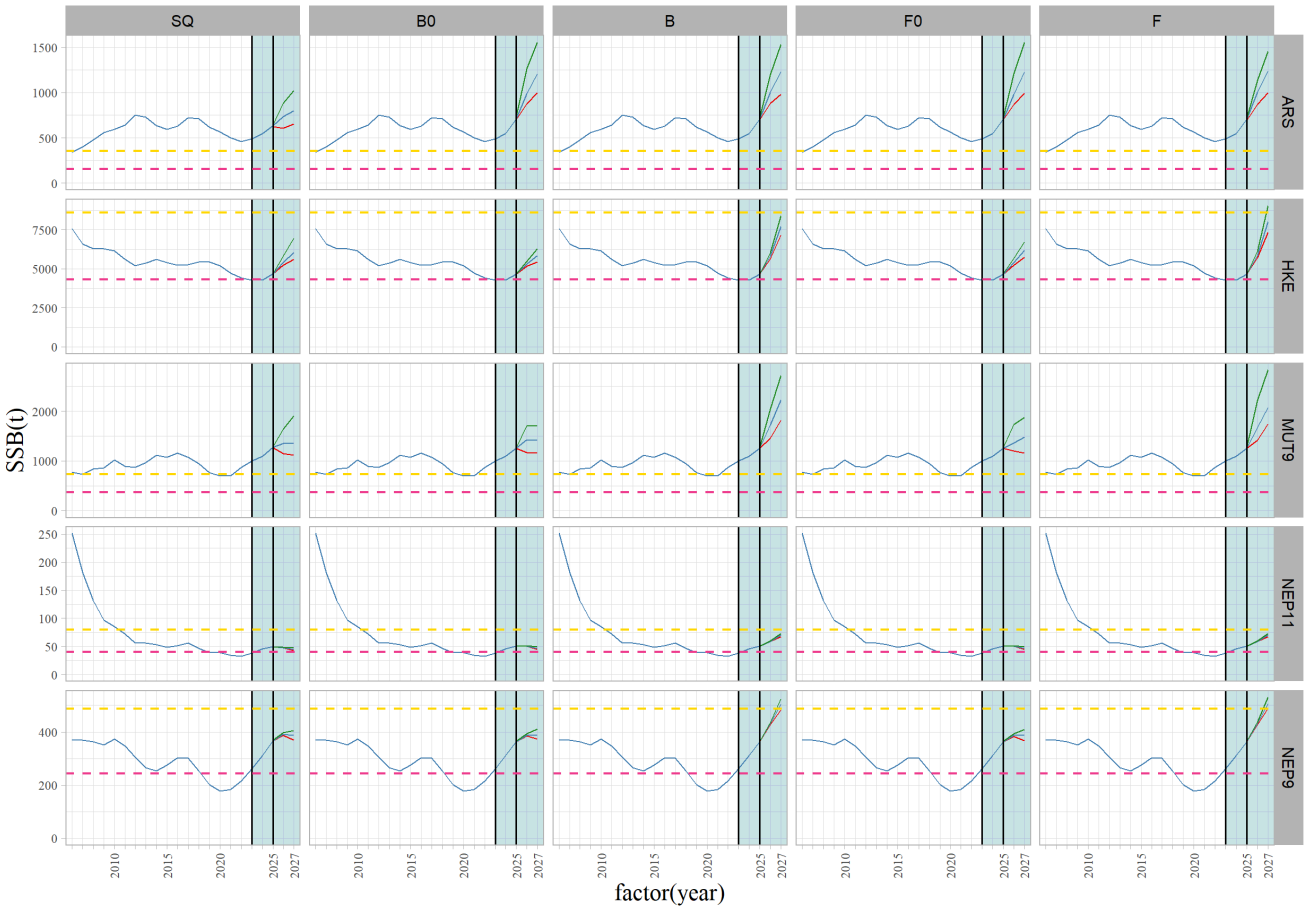
Derived Effort by scenario



effort reduction (in fishing days) per fishing technique by scenario in 2026 respect to 2025

Scenarios	Effort reduction 2026-2025		
	DTS	HOK	PGP
SQ	28%	-1%	-15%
B0	28%	-1%	-15%
B	-54%	-1%	-15%
F0	28%	-26%	-36%
F	-54%	-26%	-36%

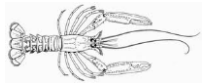
SSB response across scenarios



Hake: safe in all scenarios; **B** and **F fastest recovery**

Giant red shrimp: already within safe biomass levels

Norway lobster in 9: improves only with **strong trawl reductions (scenarios B and F)**



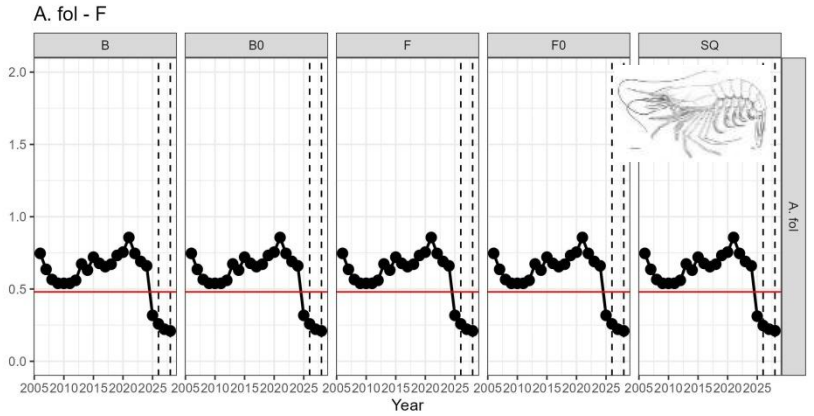
Norway lobster in 11: recovers in scenarios **B and F**, declines in **SQ, B0** and **F0**

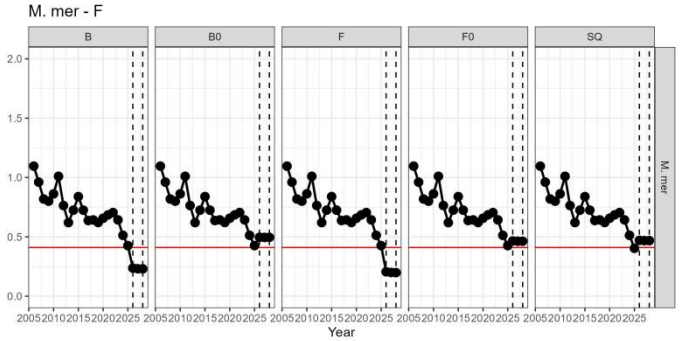
Catch limits and utilization trade-offs across scenarios

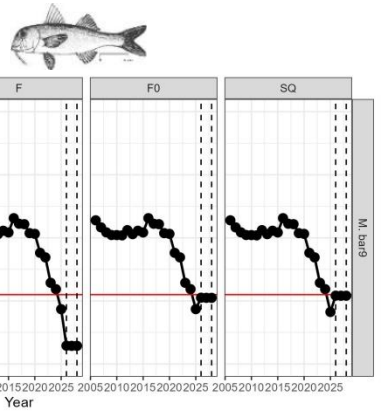
- Constant red shrimps catch limits → F falls below Fmsy (need adaptive updates)

- Blue and red shrimp catches underestimated by the model → **analytical assessment needed**

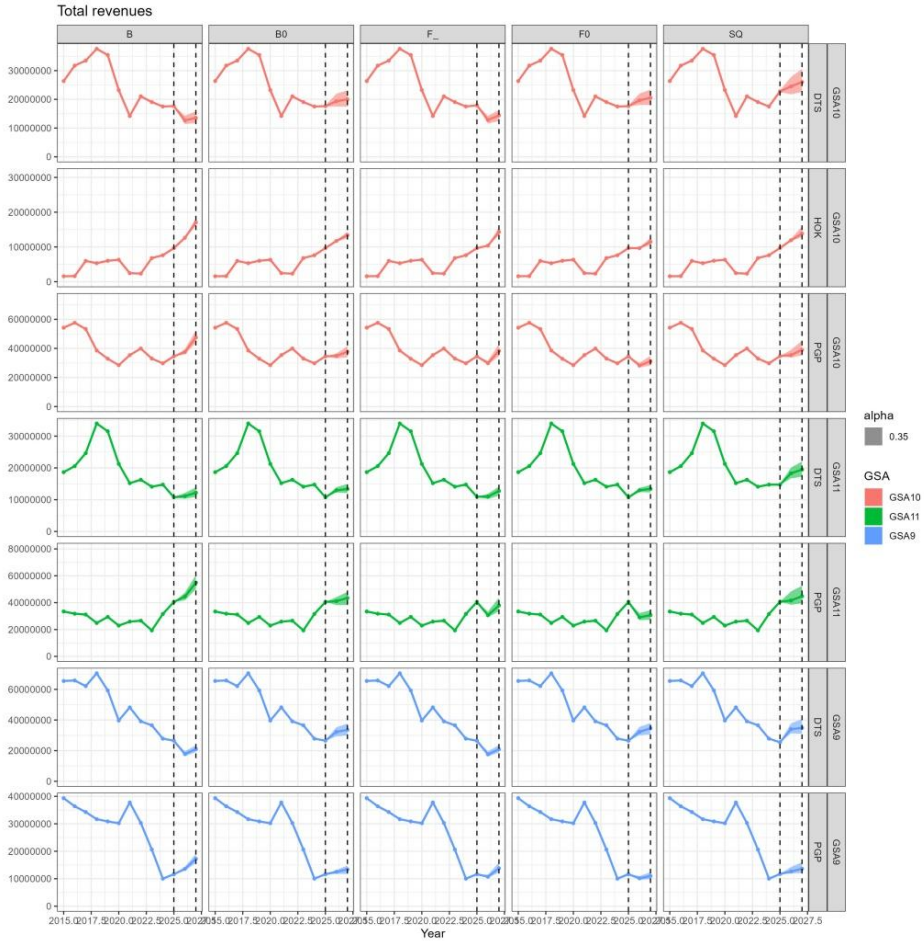
- Scenarios B and F lead to **stronger underutilization of red mullet, deep-water rose shrimp** and **hake**







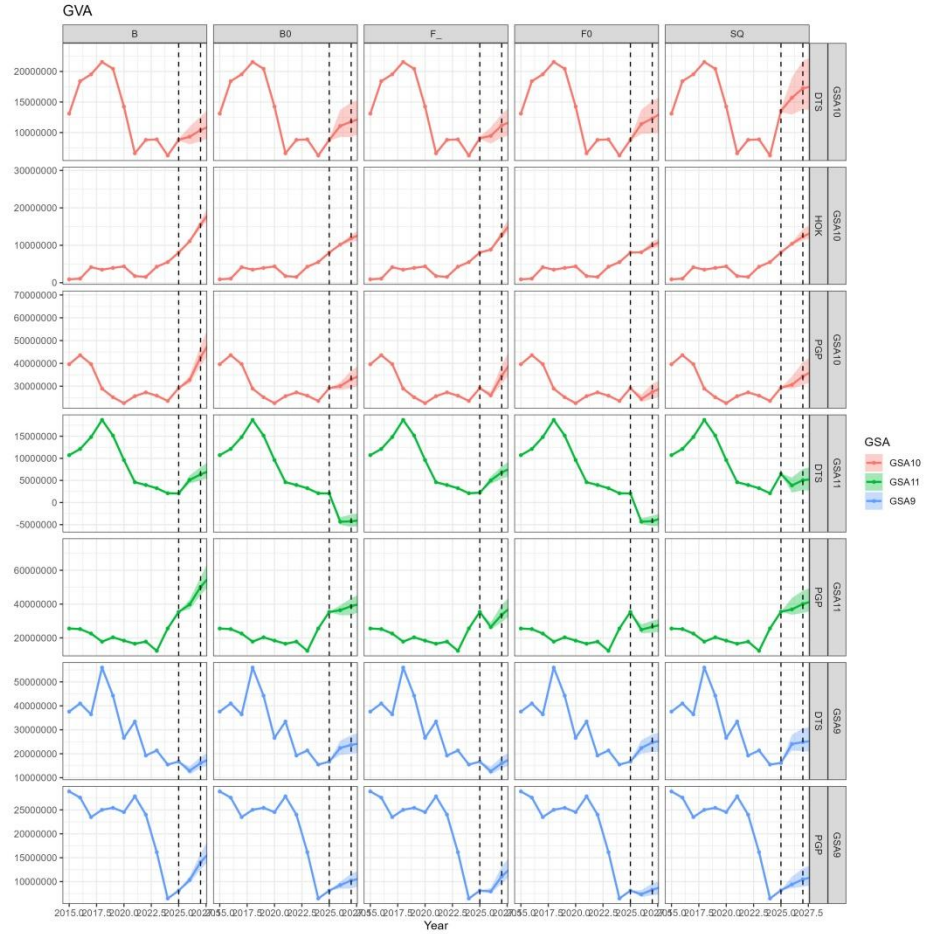
Impact on the revenues



Across all GSAs, trawlers (DTS) revenues are projected to decline—especially in the short term—under scenarios B and F due to the reduction in fishing days

Polyvalent (PGP) and hooks (HOK) are expected to benefit from this trawler-specific measure.

Gross value added



Projections of Gross Value Added (GVA) show that, for trawlers in GSAs 9 and 10, the status quo (SQ) scenario yields the highest values, followed by B0 and F0.

In GSA 11, however, scenarios B and F perform better.

For polyvalent (PGP) and hooks (HOK) across all sub-areas, scenario B—which imposes the largest reduction in trawler effort and a temporary improvement in selectivity—delivers the best outcomes

Number of fleet segments in green in 2026 respect to 2020

Scenarios	MS	Fishing technique	Estimated Number of fleet segments in green (IMPROVED GROSS PROFIT) in 2026/2020	Estimated Number of fleet segments in green (POSITIVE GROSS PROFIT) in 2026	Total of fleet segments considered in the model
SQ	Italy	DTS	1	4	4
		HOK	1	1	1
		PGP	0	1	1
B0	Italy	DTS	1	2	4
		HOK	1	1	1
		PGP	0	1	1
B	Italy	DTS	1	4	4
		HOK	1	1	1
		PGP	0	1	1
F0	Italy	DTS	1	2	4
		HOK	1	1	1
		PGP	0	1	1
F	Italy	DTS	1	4	4
		HOK	1	1	1
		PGP	0	1	1

Only the trawler fleet segment VL 06-12 m shows a higher Gross Profit (GP) in 2026 and 2030 respect to 2020 in the explored scenarios.

Hooks fleet segment results in green in all scenarios.

Moreover, all trawlers fleet segments show positive GP in 2026 and 2030 for scenarios SQ, B and F, while 2 out of 4 in scenario B0 and 3 out of 4 in scenario F0.

Longline and Polyvalent fleet segments have positive GP both in 2026 and in 2030.

Limitations

- Fuel subsidies not included → economic indicators likely underestimated
- No analytical assessment for **blue and red shrimp, red mullet in GSA 10, deep-water rose shrimp**
- Future step: test **adaptive catch limits linked to stock status**

STECF evaluation (PLEN 25-03)

https://stecf.jrc.ec.europa.eu/documents/d/stecf/plen_25-03

STECF concluded that:

- The current management measures (simulated in the Status quo scenario) are not sufficient to bring all stocks to Fmsy.
- Additional management measures are needed to achieve biological objectives, in particular, for most vulnerable stocks. However, these may lead to short-term negative economic impacts for some trawling segments.
- Results from different models are not directly comparable and should be interpreted cautiously, as a lack of time prevented any discussion on the interpretation of the results during the EWG.

STECF evaluation (PLEN 25-03)

Concerning the synthesis of results, STECF concludes that:

- A full synoptic overview was not possible due to late availability of model outputs and time constraints.
- The EWG delivered synthesis tables with short-term (2026) and mid-term (2030) economic indicators, but these reflect economic, not socio-economic, impacts.
- Broader social effects were not assessed. Future analyses could consider integrating social indicators (National Fisheries Profiles, social data calls, ASOR) where relevant.

Conclusions

- **A more efficient and timely process** is needed for future West Med MAP evaluations.
- **Clear requests for key stock assessment outputs** (e.g. stock objects and partial Fs) should be provided in advance (*STECF EWG on stock assessment methods in Western Med scheduled in May*)
- **Relevant datasets (AER, economic by GSA, FDI, VMS, logbook)** should be available well ahead of EWGs.
- **Simulation scenarios should be defined early and clearly**, with early engagement of modellers when needed.
- **DG MARE should consider ad-hoc contracts** to ensure models are ready before EWGs.
- **Better planning, prioritisation and timely submission of ToRs by DG MARE** are essential for robust advice.

Relevant information

https://stecf.jrc.ec.europa.eu/documents/d/stecf/stecf_25-11

Thanks for your attention

Questions?

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