SSF vs LSF: Management strategy evaluation under future socio-economic scenarios

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SSF and LSF

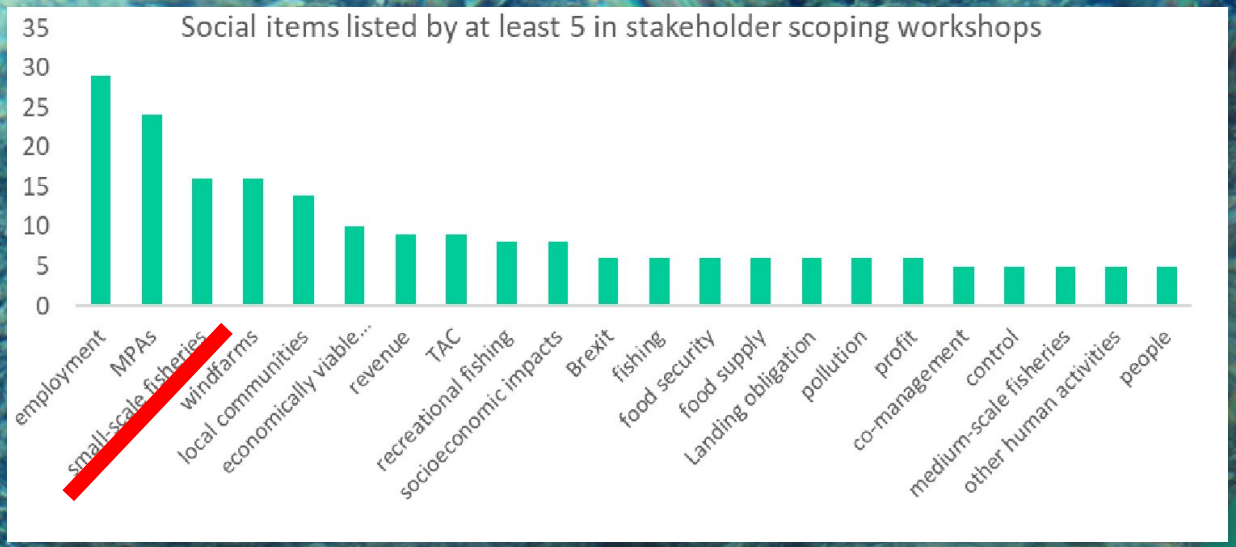
Small-scale fisheries play a crucial role in the EU - they represent a significant amount of the EU fishing fleet and its fishing effort.

Small-scale fisheries are especially important in the Mediterranean, where over half of the sector is concentrated and where it has been playing a dominant role in the livelihoods of coastal communities for centuries.

Typically, these are family-based businesses, where owners are directly involved in the fishing activity. Together with other maritime activities, small-scale fisheries play an important role in local economies.

SSF play a crucial role in the EU

D2.1. Report on the key social and economic aspects of regional fisheries



Case specific definition of SSF

SSF definition

European Fisheries and Maritime Fund defines SSF as "fishing carried out by fishing vessels of an overall length of less than **12 m** and not using towed fishing gear".

The resolution of the available economic data does not allow to split the segments into < 12 m and > 12 m and to extract the main gear used.

Case Study	Model	Small scale
North Sea	FLBEIA	< 24 m
Western Waters	FLBEIA Bay of Biscay	< 24 m
	FLBEIA Celtic Sea	< 24 m
Mediterranean	FLBEIA Eastern Mediterranean Sea	Longlines (LLS) and nets (NET)
	BEMTOOL Central Mediterranean Sea	<12 m

Comparison : SSF vs LSF

Simulation under several scenarios:

WM_RCP8.5_SSP5
Fish price: + 1.57%
Fuel price + 2.59%

NE_RCP8.5_SSP3
Fish price: + 1.67%
Fuel price + 2.89%

GS_RCP4.5_SSP1
Fish price: + 1.33%
Fuel price + 2.59%

LS_RCP4.5_SSP2
Fish price: + 1.64%
Fuel price + 2.61%

Socio political scenarios

World Markets (RCP8.5, SSP5)
- Fish obtained from the cheapest sources
- Decommissioning subsidies reduced
- Few legal and technical restrictions
- Only a few high-tech boats
- Sequentially depleted fish stocks
- More competition for resources globally
- Low taxes, strong private sector
- Europe outcompeted by Asia/China
- Use of cheap immigrant labour

National Enterprise (RCP8.5, SSP3)
- Maintaining national supply important
- Frequent 'cod wars'
- Decline in fish imports (import tariffs)
- Sport fisheries 'squeezed out'
- Higher fish prices and taxes
- Little new technology
- Food security more important than MPAs
- Individual Transferrable Quotas (ITQs)
- Increased disparity – rich and poor countries

fisheries

Global Sustainability (RCP4.5, SSP1)
- Fish from sustainable sources worldwide
- Equitable and ethical are important
- EU/international marine strategy
- Lower meat & fish consumption per capita
- Ecolabel certification schemes
- EIA required for new fisheries
- Traceability and quality standards
- Fisheries displaced by windfarms & MPAs
- Sustainable, low impact fishing gears

Local Stewardship (RCP6.0, SSP2)
- 'Bottom up' local/regional governance
- Self sufficiency viewed as important
- Large number of small/traditional vessels
- Improved opportunities for 'sport fisheries'
- Mosaic of different management measures
- Not worried about downstream impacts
- Equity and ownership are important
- Traceability standards important
- Individual Transferrable Quotas (ITQs)

+

Management scenarios

Status Quo

FMSY

Pretty Good Yield

Case specific

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NORTH SEA _ Comparison

Number of vessels
Higher SSF (except Belgium)

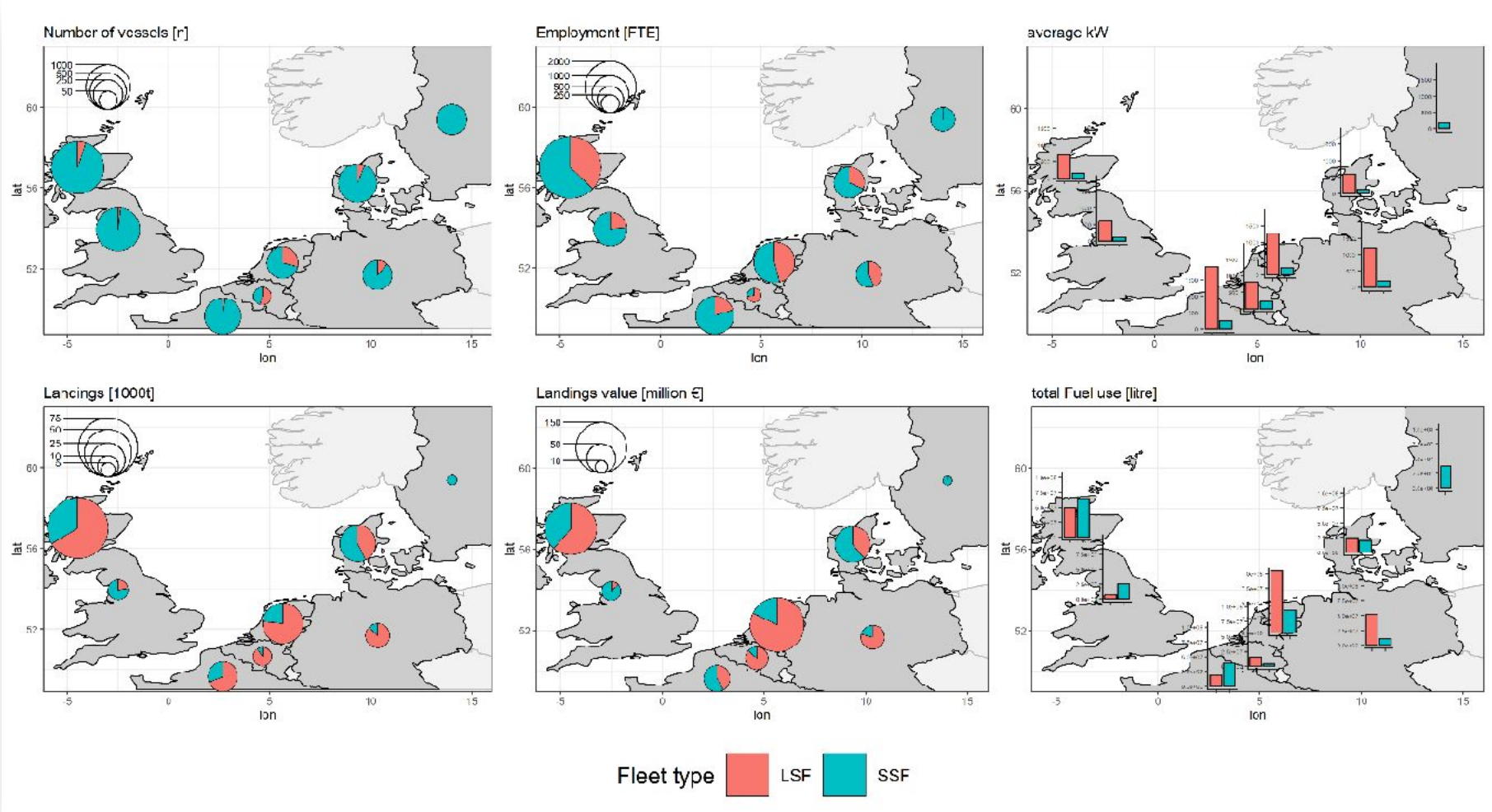
Number of Jobs
Higher SSF (except Belgium)

GVA

- Higher for LSF in Belgium, Netherlands, Germany and Scotland.
- Higher for SSF for England, Denmark and France.

CO_2 per fishing days
LSFs presented larger values than SSF.

Food security
LSFs brings more meals “to the table”.



Comparison

NORTH SEA _ Simulation

Management scenarios: Status Quo/Case Study/Pretty Good Yield

Employment

PGY_min has the maximum values.
Local Stewardship performed best scenario.
In Employment is higher for SSF than LSF.

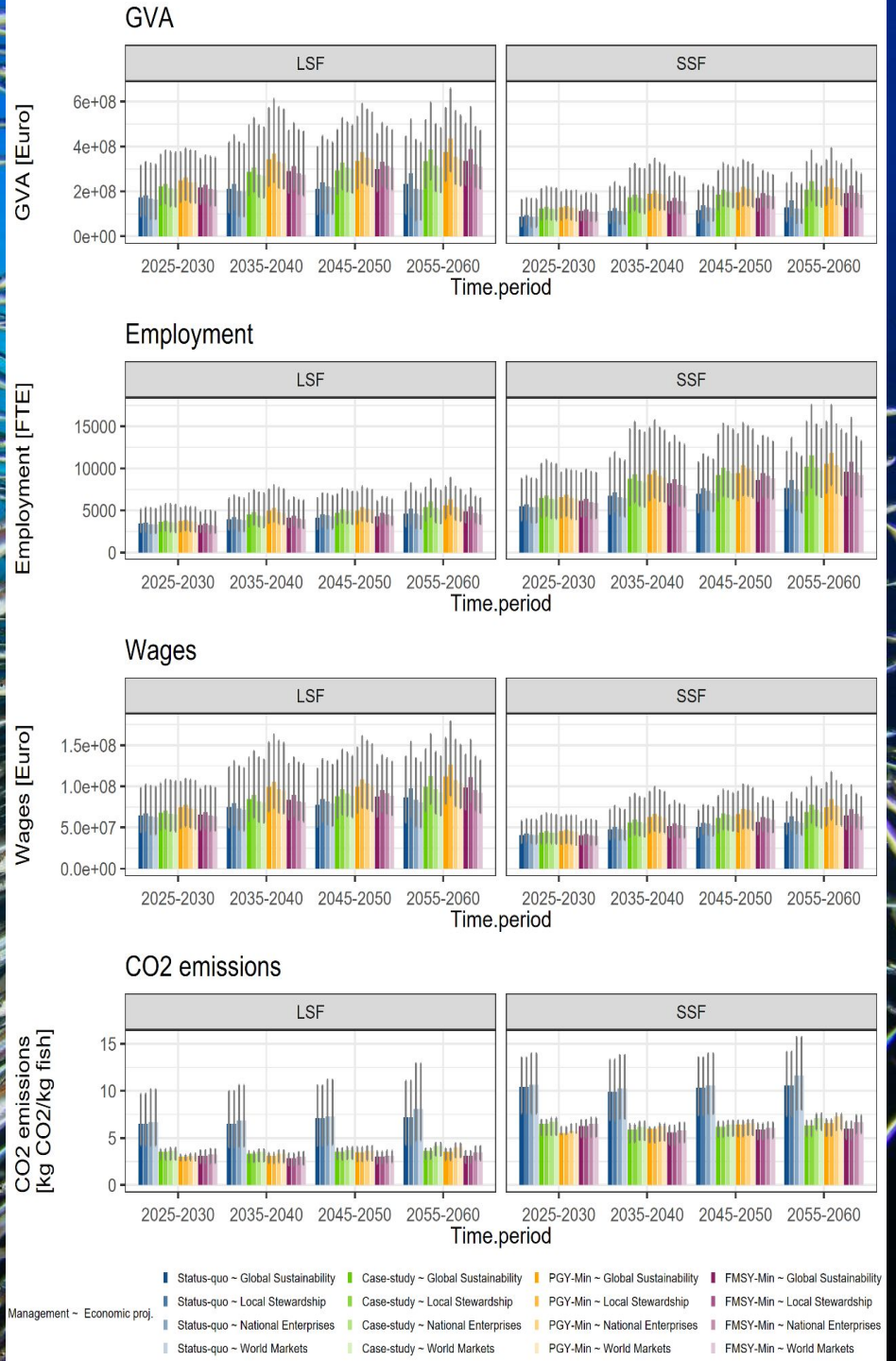
GVA

LS_RCP4.5._SSP performed best scenarios.
GVA of LSF > GVA of SSF

CO_2 (by kg of fish)

The three landing obligation scenarios had lower values than the status quo.
This indicator presented lower values for LSF.

Simulation



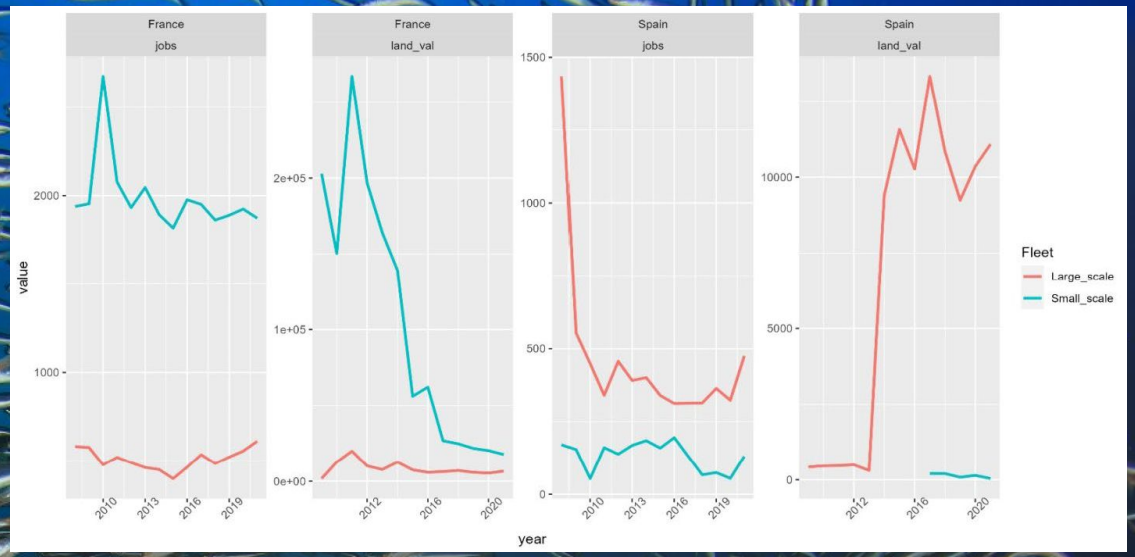
WW Bay of Biscay_ Comparison

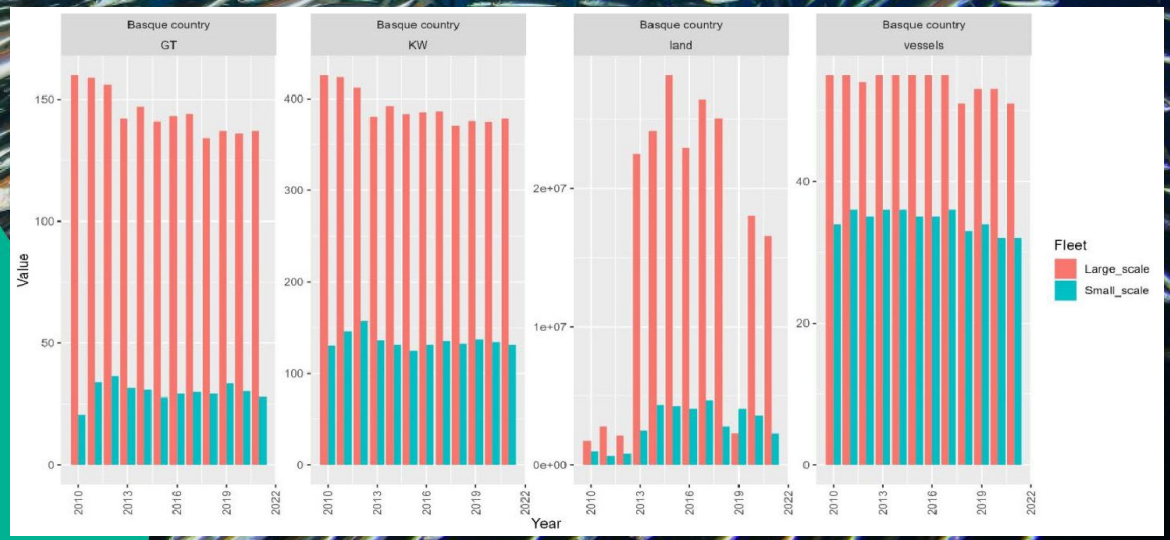
Number of vessels
Spain more LSF vessels and French more SSF vessels.

Number of Jobs:
Spain higher LSF and French higher SSF.

CO_2 per fishing days
Spain higher value for LSF and French higher for SSF.

Food security
In Spain more meals from LSF and French more meals from SSF.





Comparison

WW Bay of Biscay _ Simulation

Management scenarios: Status Quo/FMSY/Pretty Good Yield

GVA

Socio-economic scenarios had a greater impact on the GVA of SSF than on LSF. In the long term, FMSY yields the best outcomes for LSF, while both FMSY and Pretty Good Yield perform well for SSF.

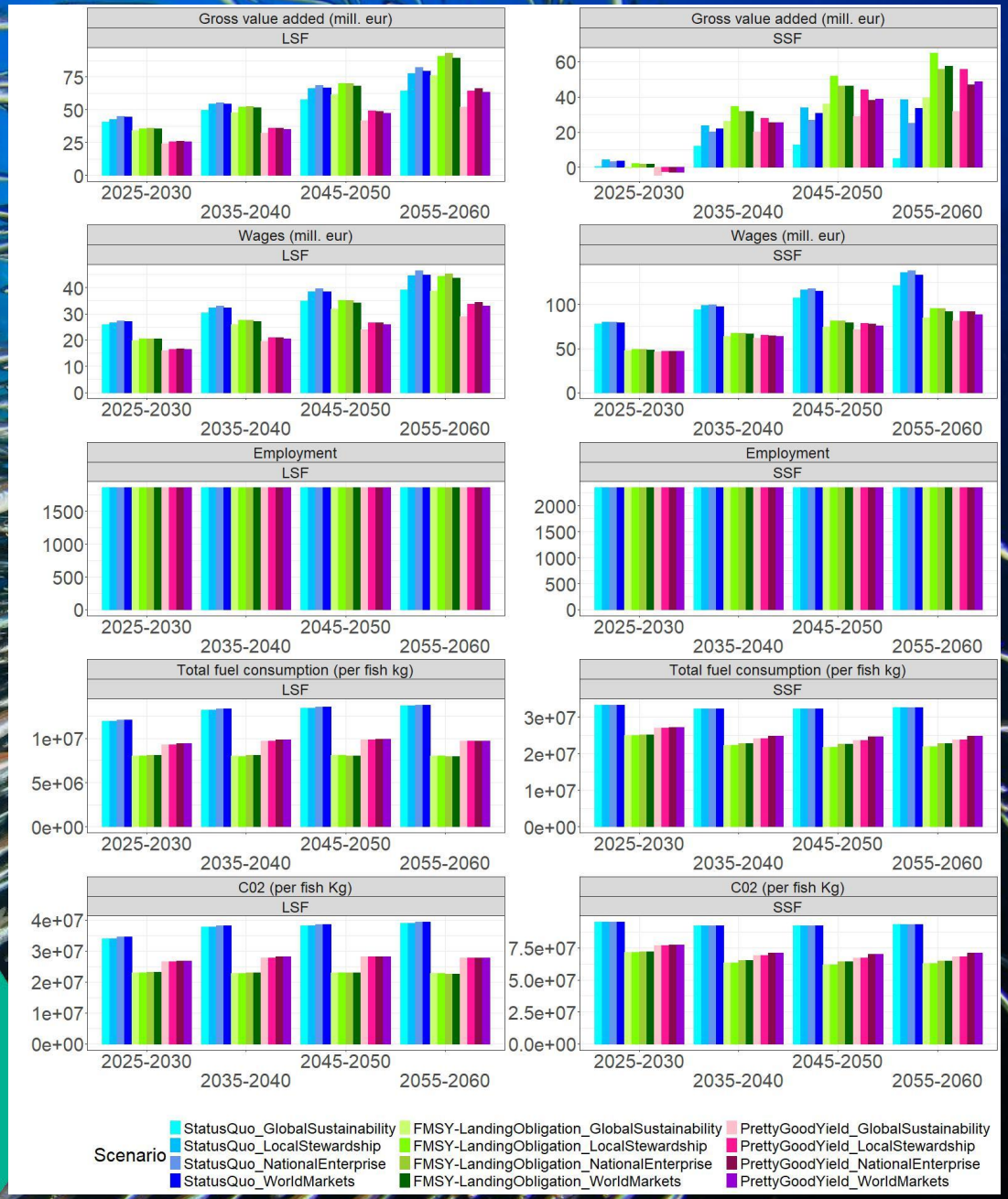
Wages

Significantly higher in the Status Quo scenario for SSF, whereas in case of LSF, in the last projected period FMSY achieved the same levels as Status Quo.

CO_2 (per fish kg)

Status Quo scenario resulted in the highest CO_2 emissions for both, SSF and LSF. The impact of the socio-economic scenarios were almost negligible on CO_2 emissions.

Simulation



WW Celtic Sea_ Comparison

Number of vessels

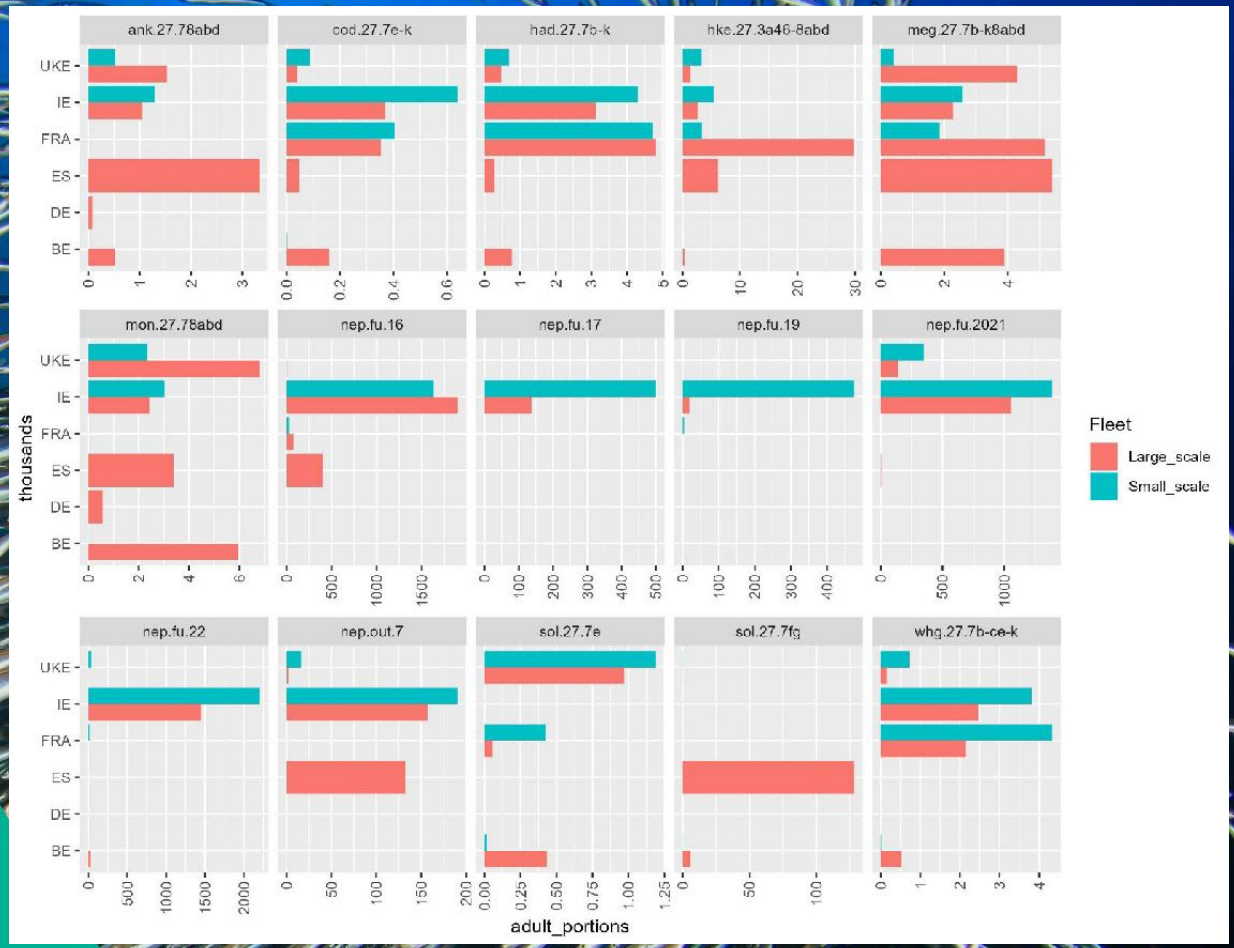
The Belgium, German and Spanish fleet is mainly LSF; while French, Irish and English are mainly SSF.

GVA

- SSF higher: French, Ireland and England.
- LSF higher: Belgium, Germany and Spain.

Food security

Depends on the country and species.



Comparison

WW Celtic Sea_ Simulation

Management scenarios: Status Quo/FMSY_min/FMSY_range

GVA

Lowest values for LSF and SSF in the Status Quo scenario.

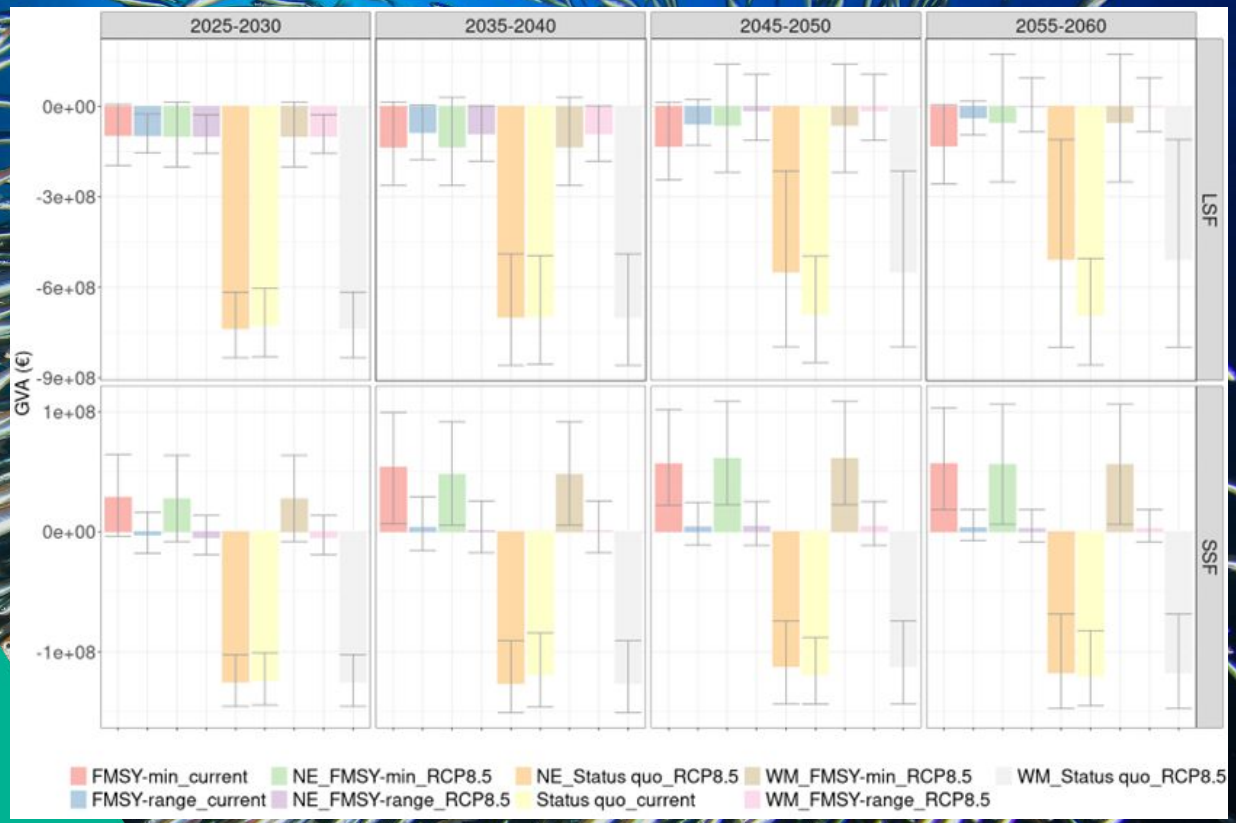
The highest GVA for SSF was in FMSY_min under RCP8.5. For LSF in FMSY_range under RCP8.5.

Employment

It was only affected by management scenarios (highest employment in Status Quo).

CO_2 (per fish kg)

Highest emission in Status Quo for both, LSF and SSF.



Simulation

ADRIATIC AND IONIAN SEA_Comparison

Number of vessels

Croatia and Italian fleets mainly SSF
Slovenian fleet: LSF

Employment

Is quite balanced and, for Italy, the SSF is higher than in the LSF.

GVA

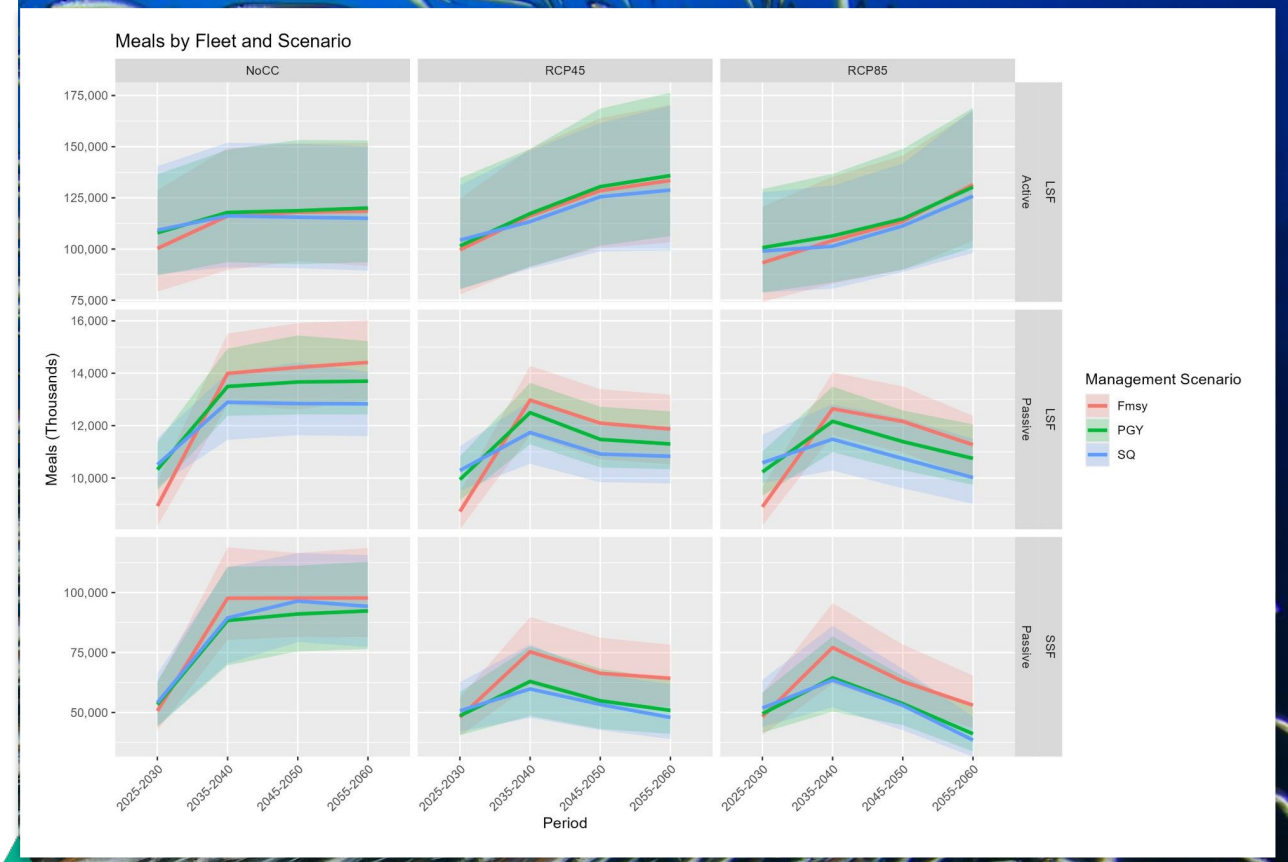
The small-scale fleet has a minor influence in terms of GVA and total revenue.

CO_2 per fishing days

LSF has higher CO_2 emission per fishing day.

Food security

LSFs brings more meals “to the table”.



Comparison

ADRIATIC AND IONIAN SEA_Simulation

Management scenarios: Status Quo/FMSY/PGY

GVA

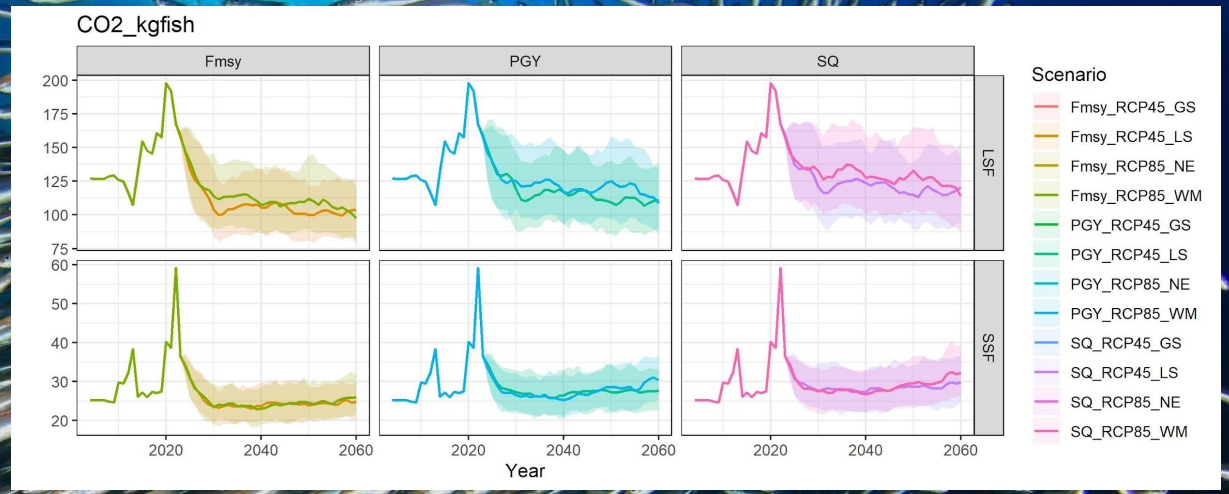
LSF: the PGY scenarios yielded higher GVA than FMSY
SSF: the highest GVA values were observed under FMSY
GVA outcomes were quite similar, with slightly higher results under the RCP45_LS scenario in the long term.

Wages

Local Stewardship" (LS) under FMSY scenario would be the most beneficial for both LSF and SSF in the long term.

CO_2 per kg of fish

The status quo scenarios resulted in the highest carbon emissions, followed by the PGY and FMSY scenarios.
SSF consistently showed lower fuel consumption, and a smaller carbon footprint compared to LSF.



Simulation

EASTERN IONIAN SEA_Comparison

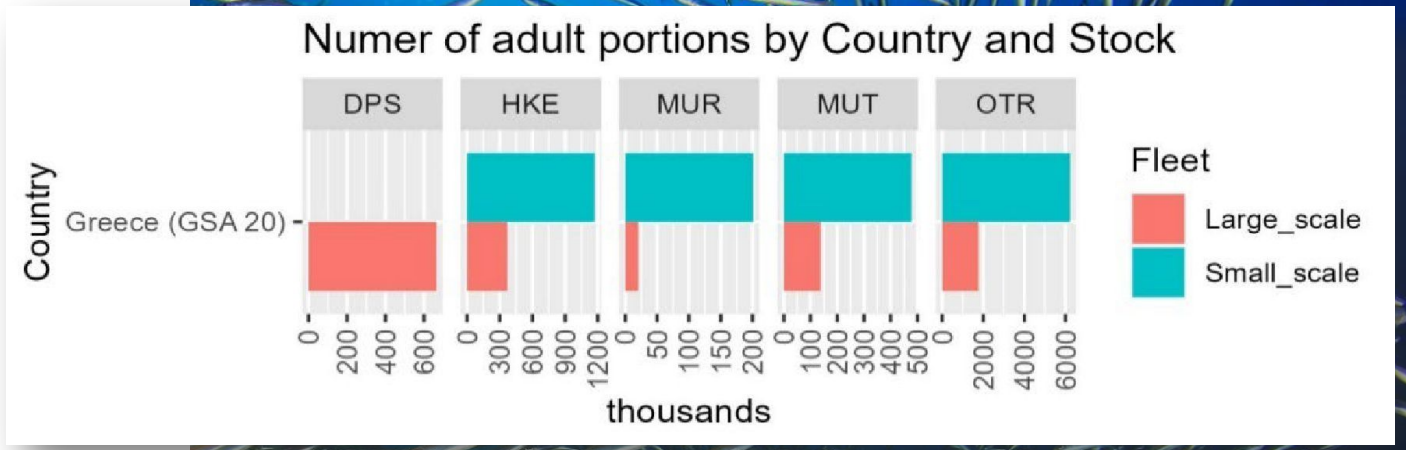
Number of vessels
Fleet is mainly SSF.

Employment
SSF is the main source of employment.

GVA
The SSF has a minor influence in terms of GVA and total revenue.

Average CO_2 per fishing day
LSF has higher CO_2 emission per fishing day.

Food security
SSF fleet produces majority of portions from all main stocks.



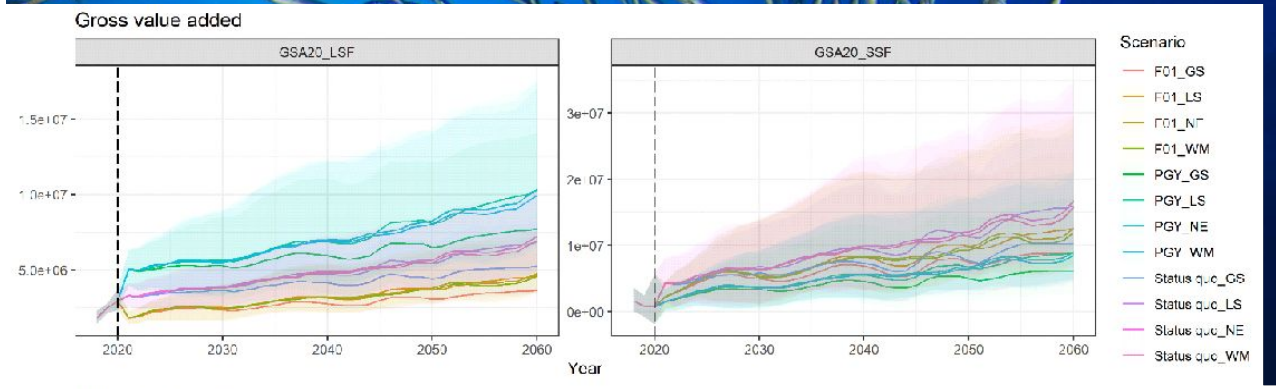
Comparison

EASTERN IONIAN_Simulation

Management scenarios: Status Quo/PGY/F01

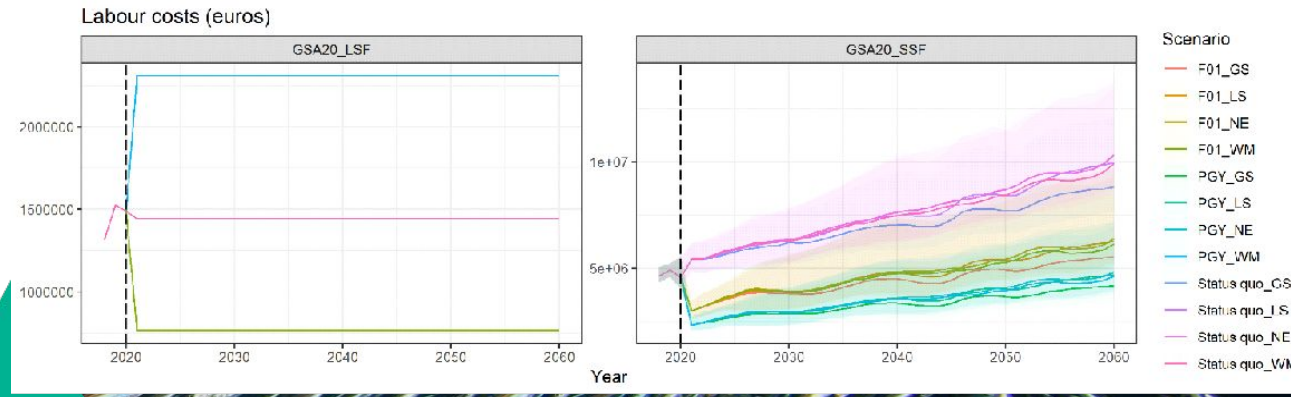
GVA

Continuously increased . For SSF highest value under F01; for LSF in PGY scenarios.



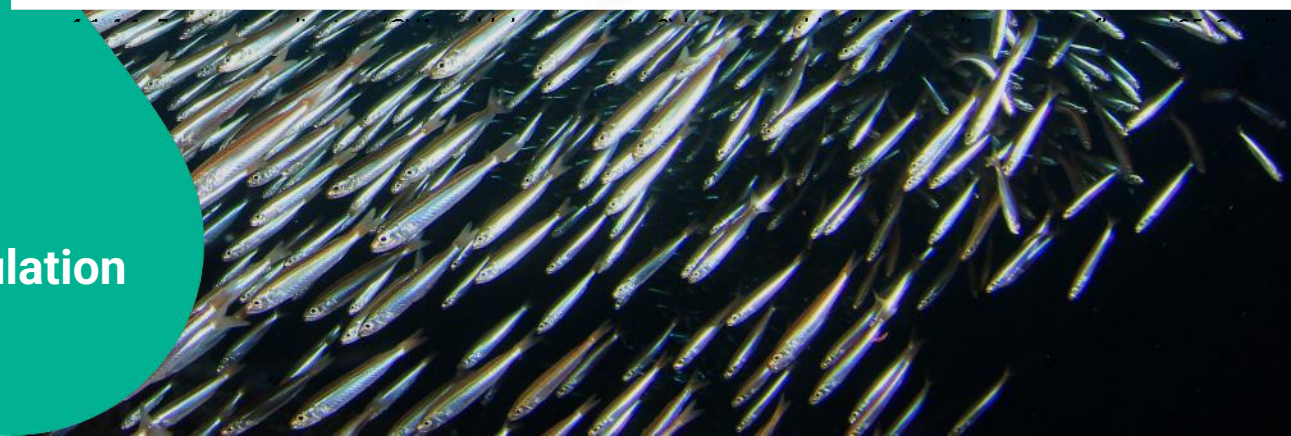
Wages

SSF present highest wages under Status Quo, in the case of LSF under PGY.



Average CO_2 per kg of fish

This indicator is lower for SSF than for LSF. The lowest value for both scales is under F01 scenario.



Simulation

Comparison

- Heterogeneous definition of SSF.
- SSF is more represented in Mediterranean than in Western Waters and North Sea.
- Although SSF has generally a landing value lower than the LSF, the number of employees is quite balanced and, in some cases, SSF has more employees than LSF.

Simulations

- GVA and wages increased throughout the projected period for both SSF and LSF across nearly all case studies and scenarios.
- Mediterranean case studies: both CO_2 indicators (emissions per fishing day and per kilogram of fish) showed lower values for SSF compared to LSF.
- Atlantic case studies: CO_2 emissions per fishing day were lower for SSF than for LSF, whereas emissions per kilogram of fish higher higher for SSF.
- For the Atlantic case studies, there is not a clear decreasing trend in CO_2 indicators in any of the scenarios. In contrast, the Mediterranean case studies showed a downward trend in CO_2 indicator.

Conclusions

Thanks for your attention

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