SEAwise Southwestern waters

SWWAC Workshop April 2024th 2025

SEAwise has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000318

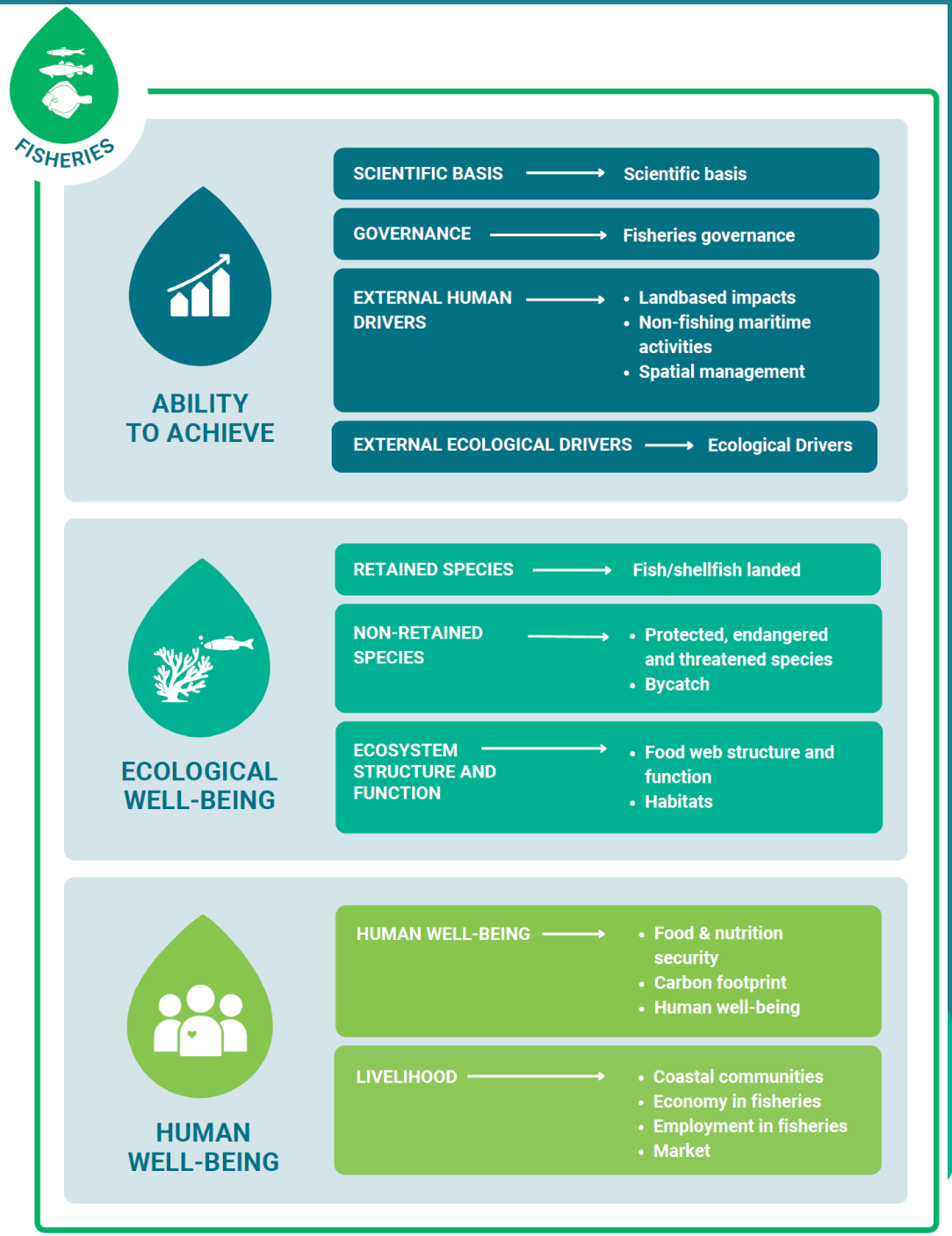
SEAwise works from October 2021 until September 2025 to pave the way for the effective implementation of Ecosystem Based Fisheries Management in Europe

We work with our stakeholder network to establish clear priorities, a common knowledge base and characteristics of ready-for uptake advice addressing our 4 aims

1. Build a network of stakeholders
2. Assemble a new knowledge base
3. Collate, develop and integrate predictive models
4. Provide ready-for-uptake advice

What should we consider in Ecosystem Based Fisheries Management?

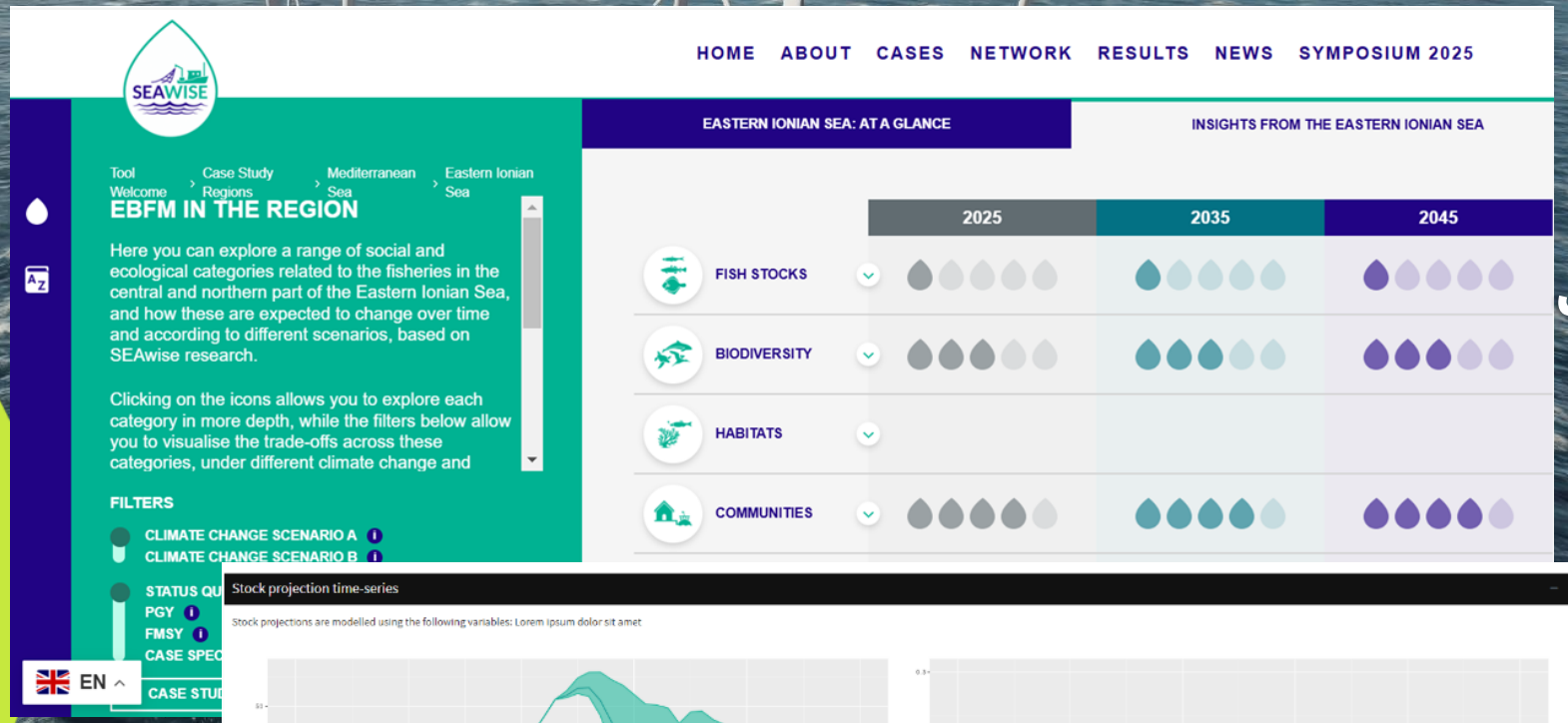
- There are numerous drivers acting on the sea and our ability to achieve our goals for it
- In SEAwise, we focus on climate change, fisheries and spatial management
- The ecological system contains the species we land and the species and habitats that we impact
- The social system contains the people, communities and economies that are impacted by fisheries
- …but this all very quickly gets very complex. So how can we make it simpler?

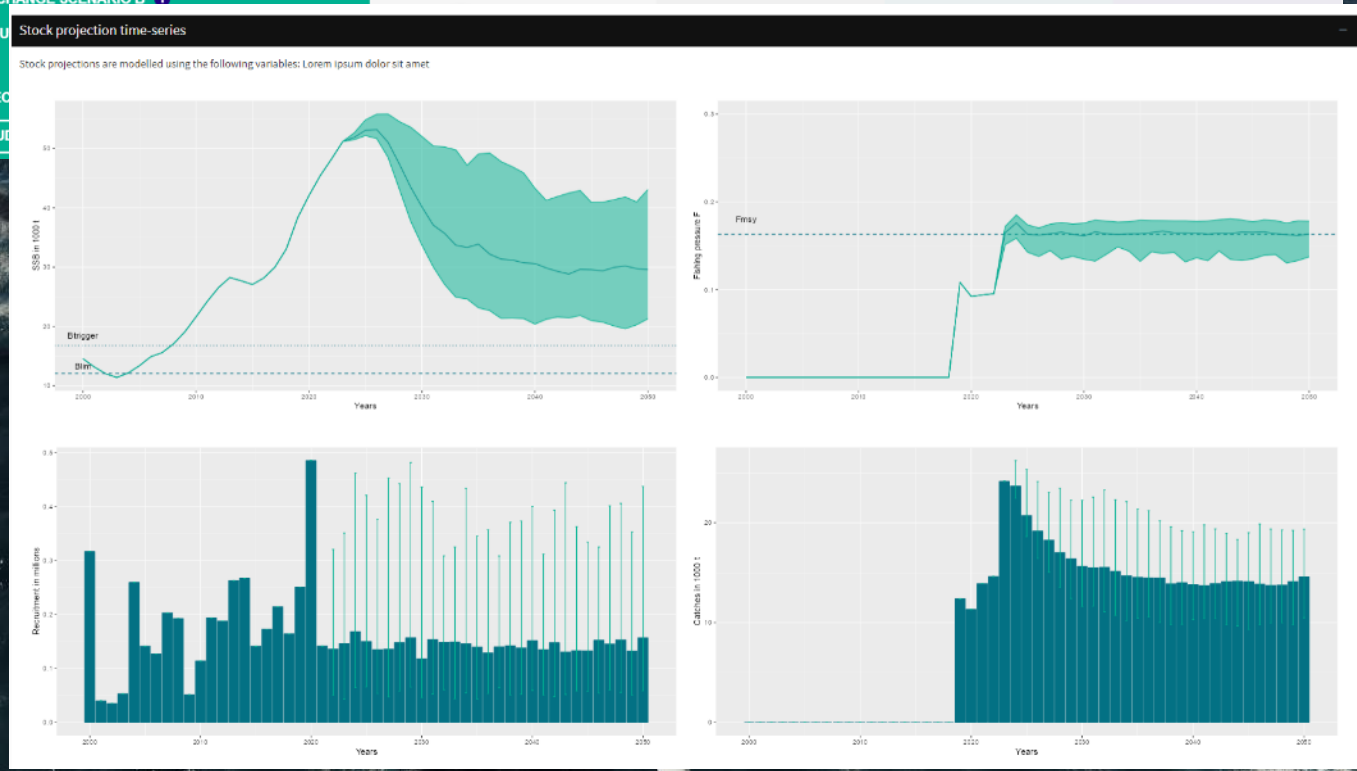


Split issues in two: the EBFM Website Tool and Tool box

Complexity within objectives

Complexity across objectives





AGENDA

Wednesday	*23 April 2025*	
10.00 - 10:10	**Opening welcome**	Anna Rindorf, DTU
10.10 - 10:30	**SEAwise Case Study**	Session led by Dorleta Garcia, AZTI
10.30 - 10:50	**Discussion**	
10.50 - 11:00	**EBFM Toolbox Demo**	Session led by Neil Maginnis, ICES
11.00 - 11:20	**Trial of Toolbox**	
11:20 - 11:35	**Feedback**	
11.35 - 11:50	**Coffee break**	
11.50 - 12:00	**EBFM Tool Demo**	Session led by Lia ní Aodha, Mindfully Wired
12.00 - 12:20	**Trial of Tool**	
12:20 - 12:35	**Feedback**	
12:35 - 13:00	**Gaps, future work and closing comments**	

SWWAC –SEAwise Timeline

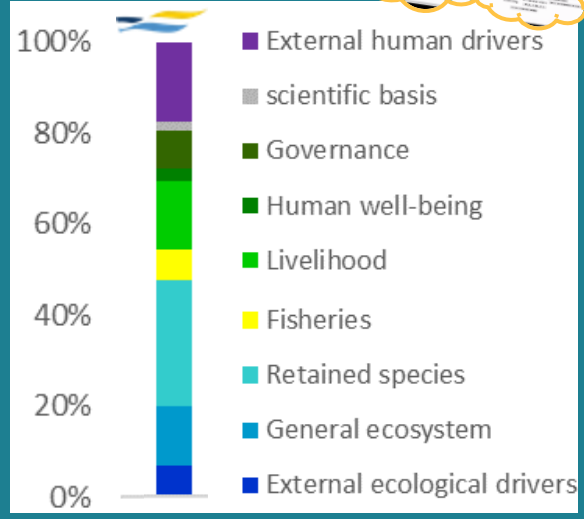
Autumn 2021	3 Feb 2022	14 Mar 2022	15 June 2023

SEAwise introduction

Scoping workshop
Priority setting

Update Knowledge & methods

Co-design workshop
Tool design



24 October 2024	23 April 2025	Summer 2025

Update Knowledge & methods

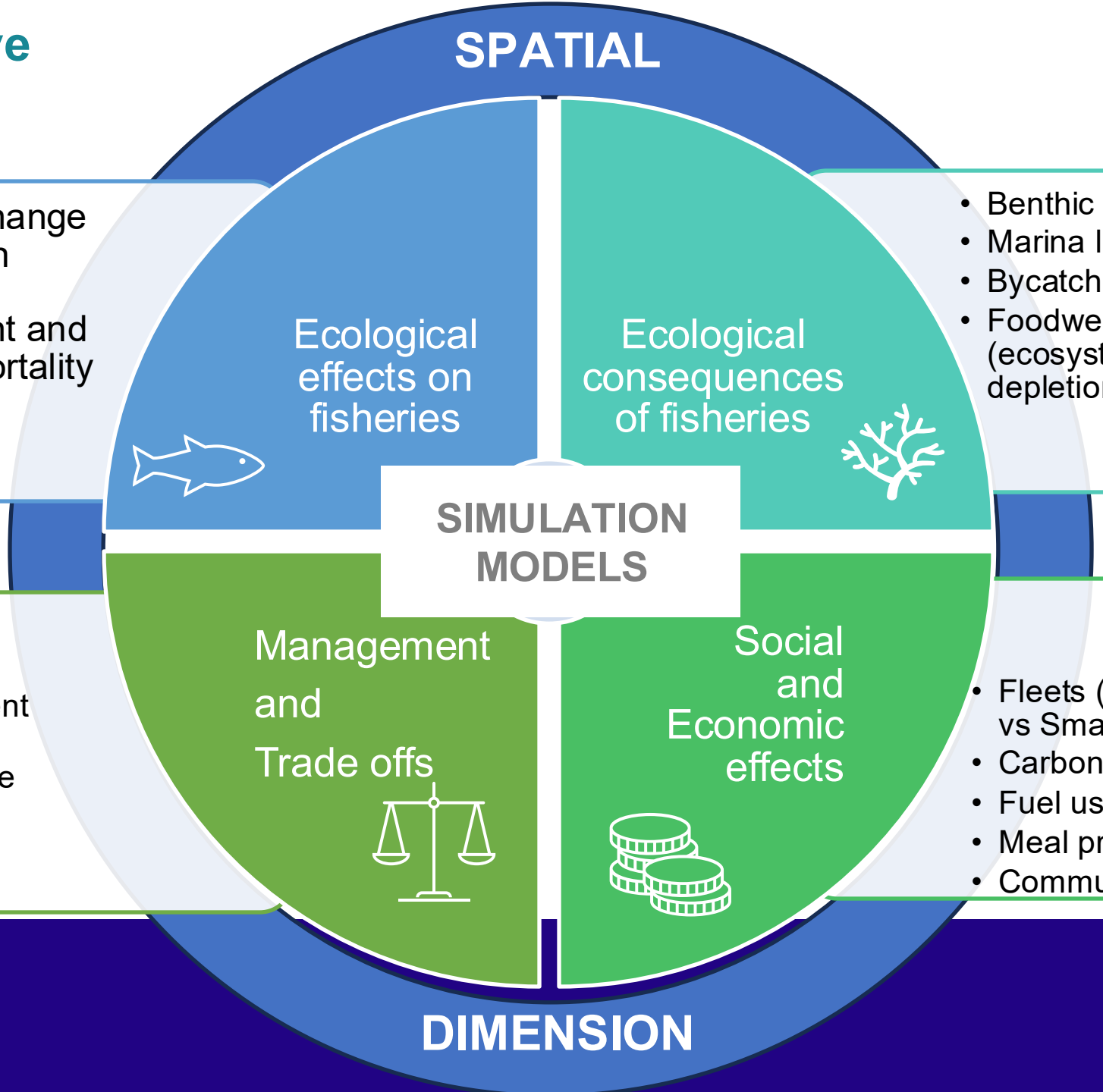
Review workshop
Tool testing

Synthesis workshop
Advice demo

REGISTRATION NOW OPEN!

SYMPOSIUM 2025
OPERATIONALISING EUROPEAN ECOSYSTEM BASED FISHERIES MANAGEMENT
June 30 - July 3, Brussels

What we have done…



- Climate change impacts on growth, recruitment and natural mortality

- Benthic states
- Marina litter
- Bycatch of PETS
- Foodwebs (ecosystem depletion)

- Management measures
- Governance
- Trade-offs indicators

- Fleets (Large scale vs Small scale)
- Carbon emissions
- Fuel use and cost
- Meal provision
- Communities

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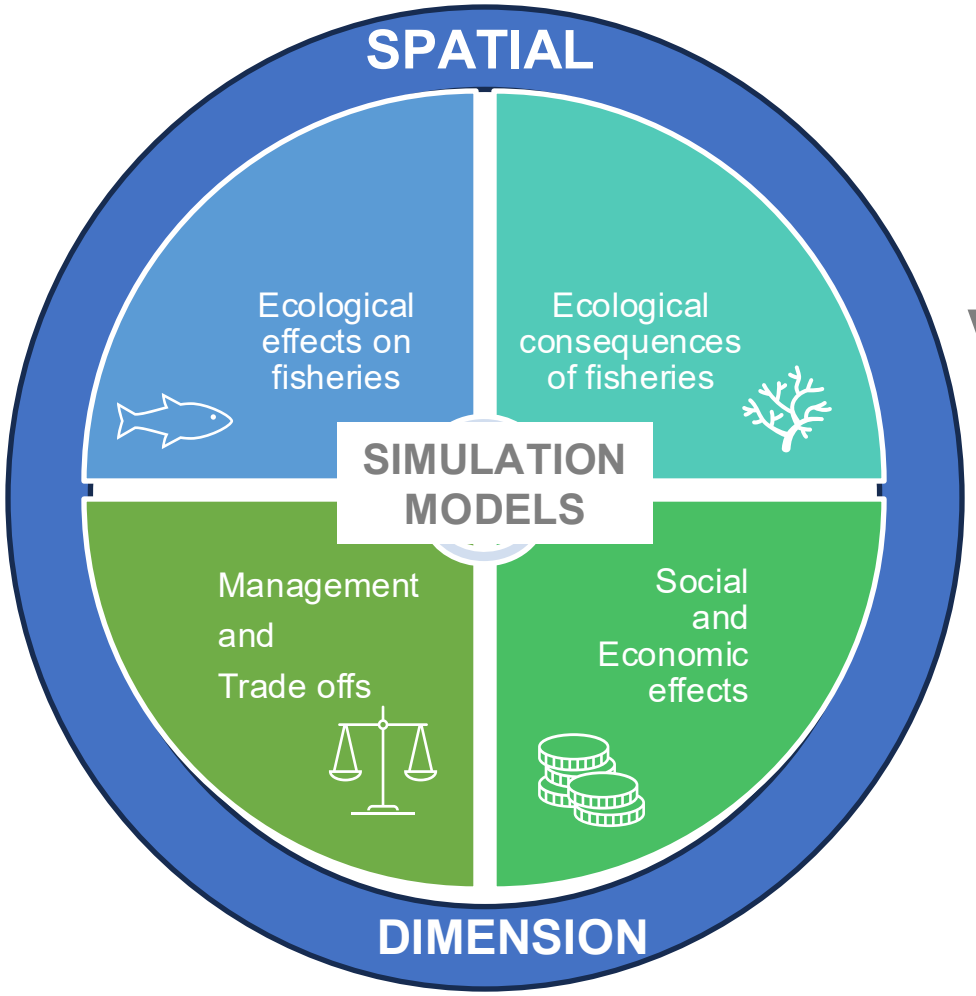

VISUALIZATION

EBFB Tool

ACROSS

OBJECTIVES

EBFM Toolbox

WITHIN

OBJECTIVES

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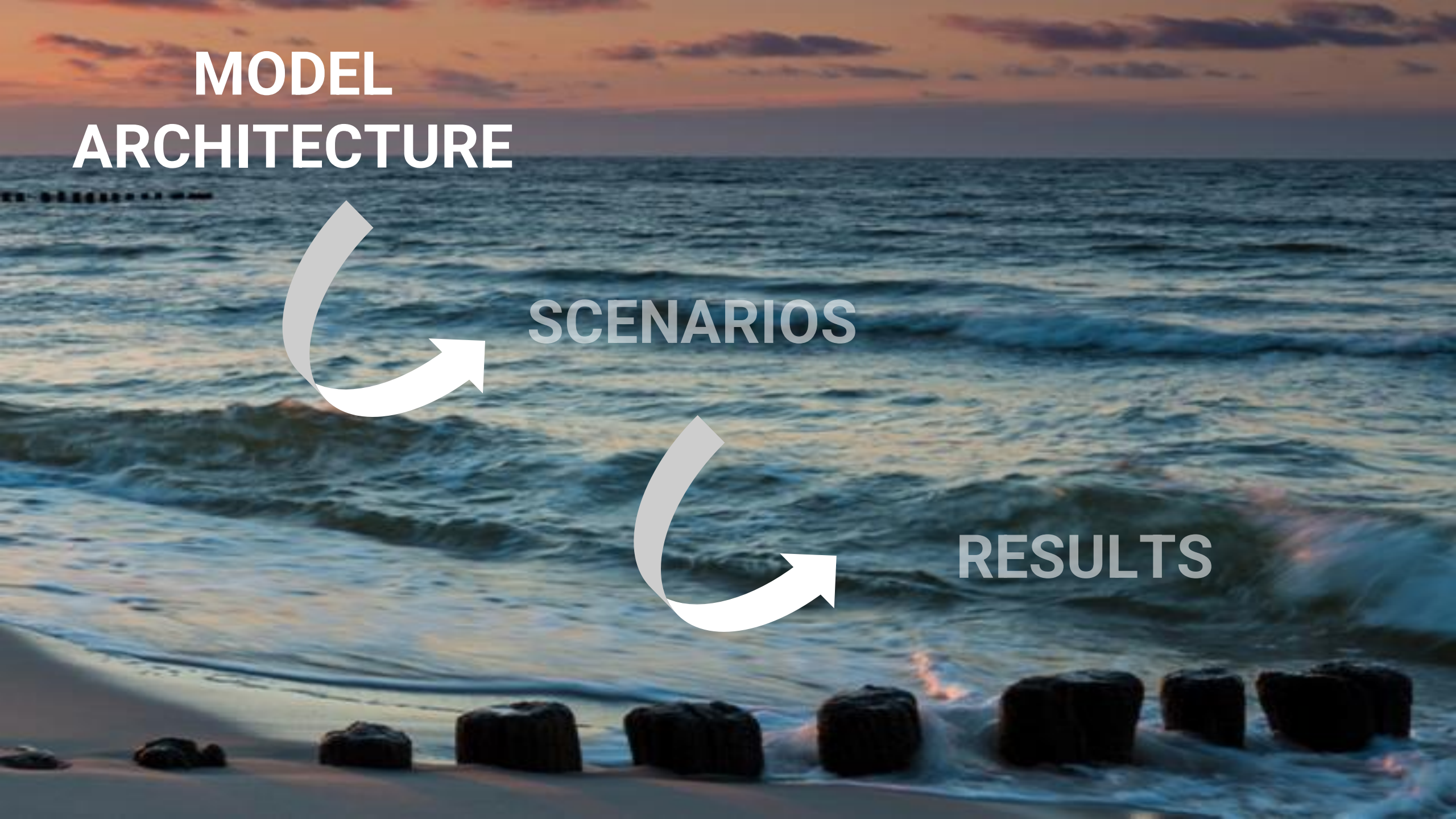

MODEL ARCHITECTURE
SCENARIOS
RESULTS

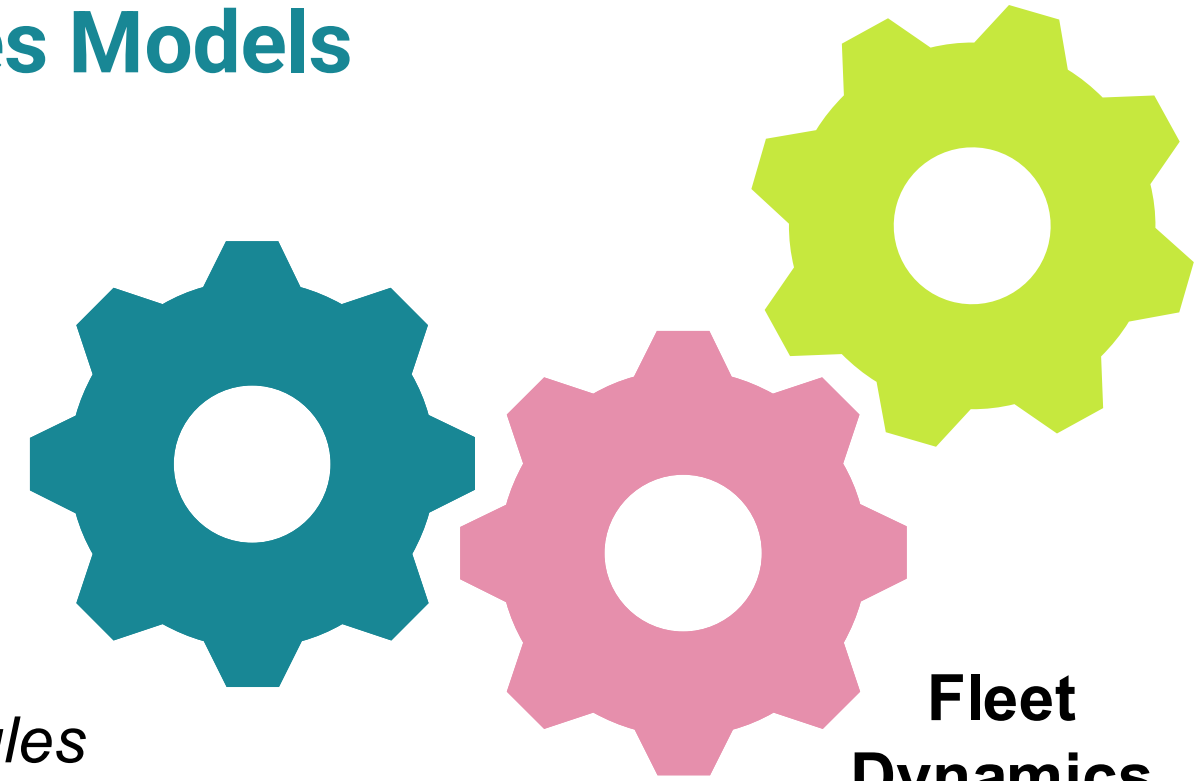
Mixed Fisheries models

- Fully coupled to ICES mixed-fisheries considerations model

- Bay of Biscay Pelagic & Demersal fisheries

- Spatial model
- Bay of Biscay demersal fisheries

Mixed Fisheries Models



Fish Population Dynamics

Recruitment
Growth
…

Management Strategies

Harvest Control Rules
Spatio-Temporal closures
Gear changes
…

Fleet Dynamics

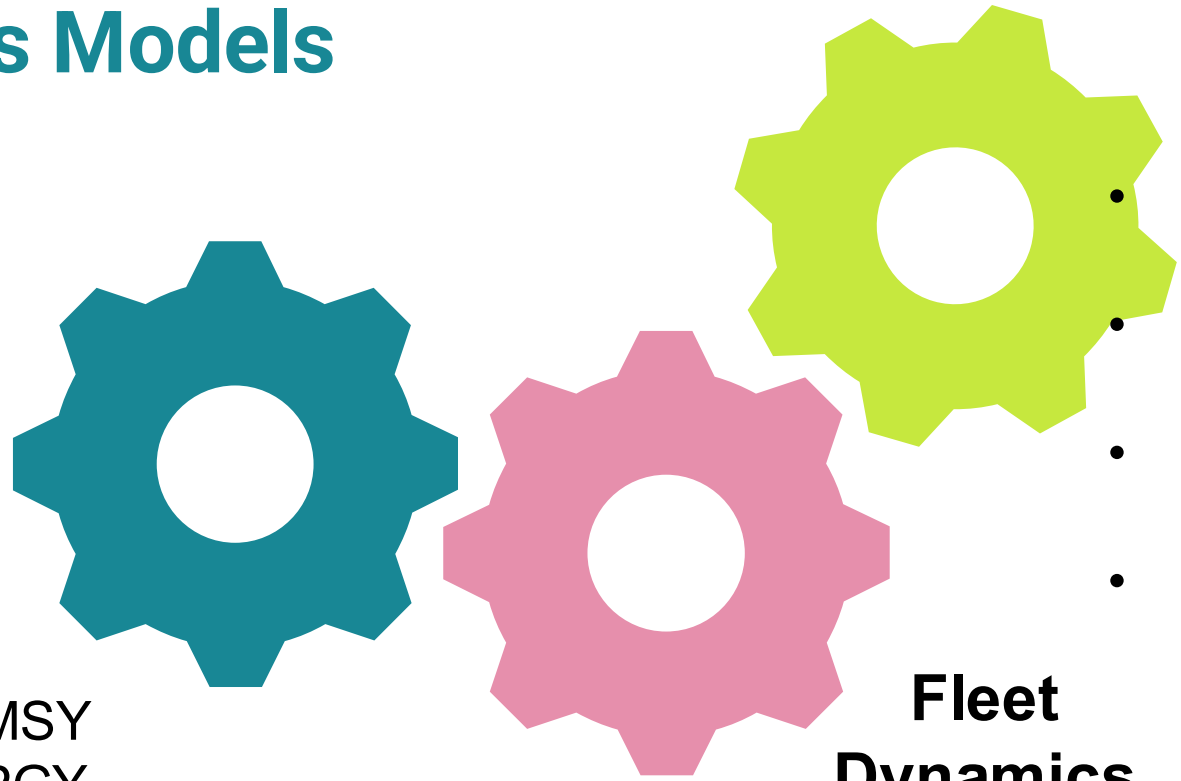
Prices
Effort allocation
…

FLBEIA by AZTI

ISIS-Fish

SEAWISE

Mixed Fisheries Models



Management Strategies

- Status Quo
- Landing obligation + MSY
- Landing obligation + PGY
- MSY
- One month closure to protect Dolphins
- Spatial Closures to proctect Benthic Habitats
- 50% reduction in Trawl effort

Fleet Dynamics

Prices

Fish Population Dynamics

- *Climate mediated recruitment*: Anchovy & Hake
- *Climate mediated growth:* Anchovy
- *Densodependence in growth:* Anchovy & Hake
- *Regimen shifts in productivity:* Sardine

FLBEIA by AZTI

ISIS-Fish

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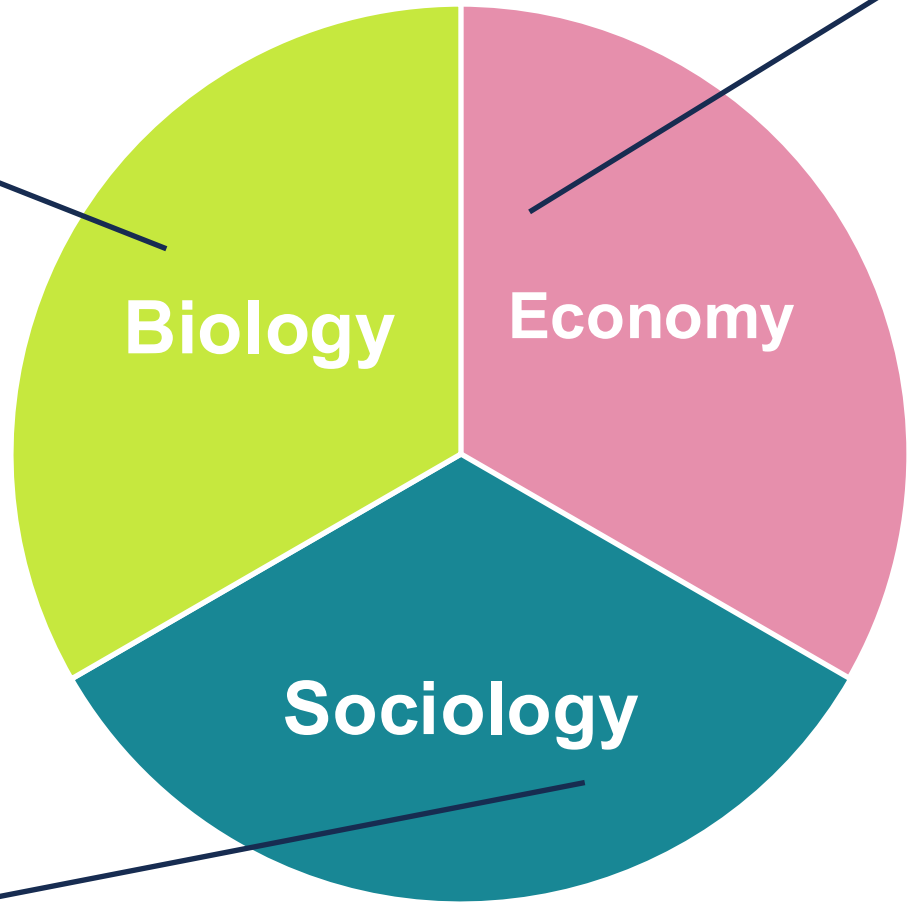
Performance Indicators

Recruitment
SSB - Biomass
P(SSB < Blim)
F/Fmsy
Average age/length
R/SSB

Bycatch
Biomass of forage fish
Indicators by trophic guild



Landings
Discards
Revenue
Gross profit

Gross value added
Effort by Gear

Co2 emissions
Ratio of catches to primary production

Catches per km2
Marine litter
Relative benthic status

Employment
Wages
Landings by harbour

Small versus large scale

FLBEIA by AZTI

ISIS-Fish

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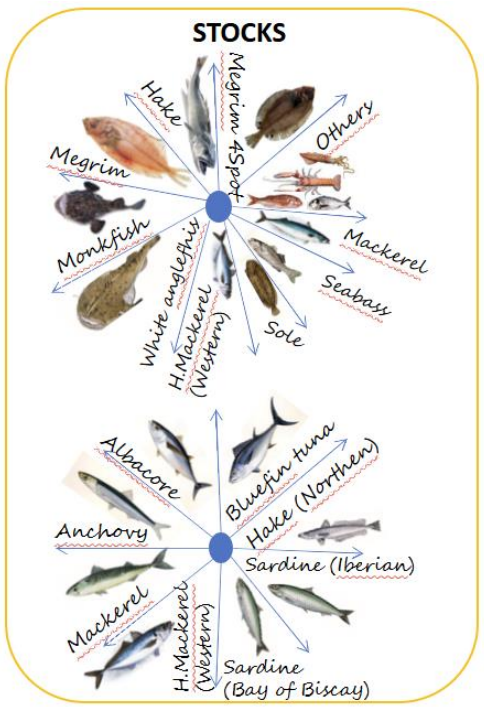
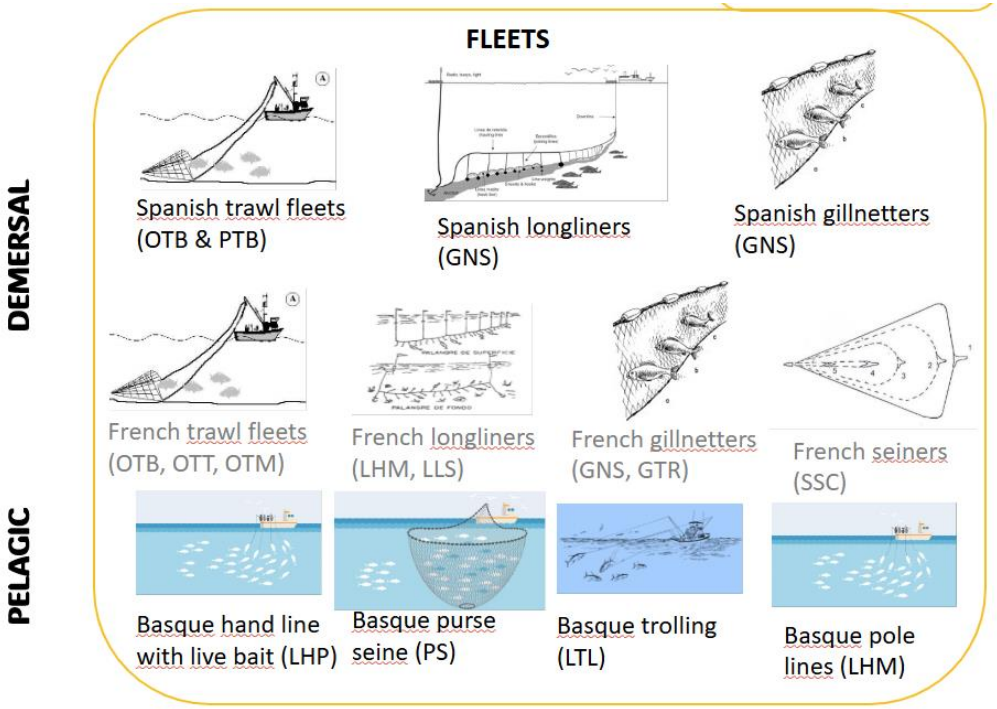
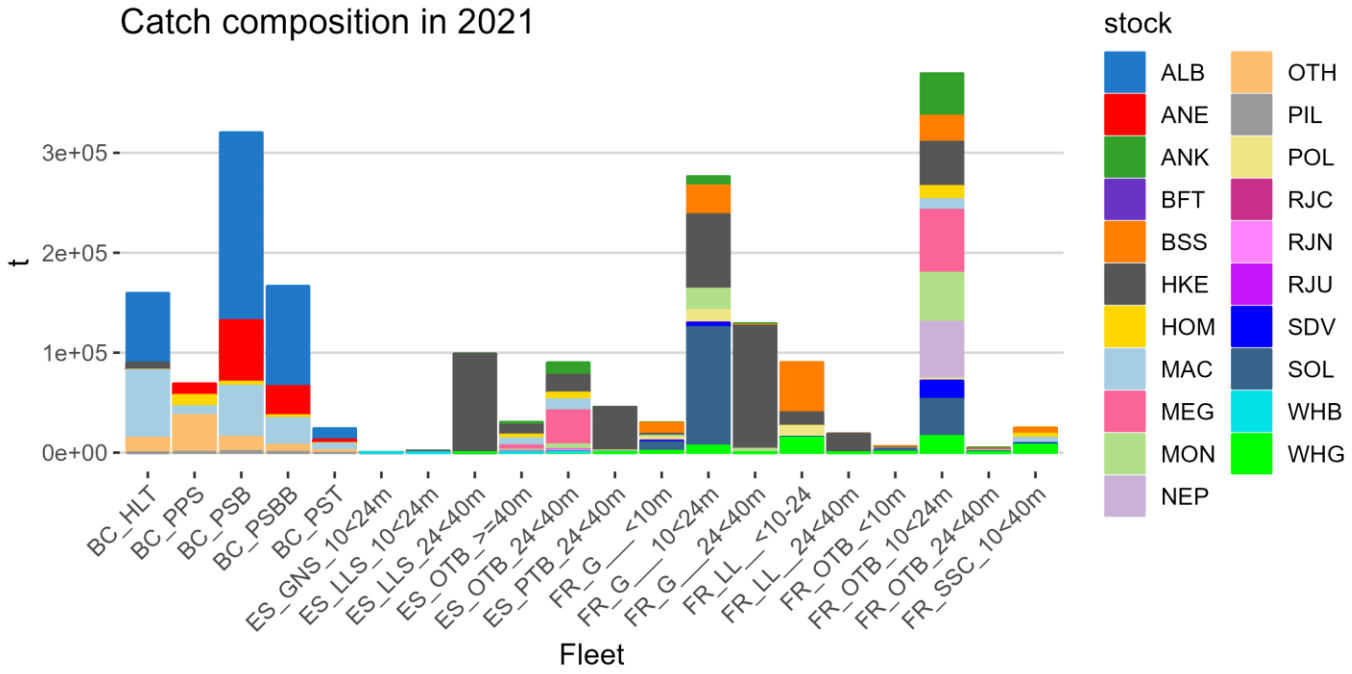
FLBEIA by AZTI

- No trophic interactions
- No Spatial Dynamics
- Demersal & Pelagic stocks included







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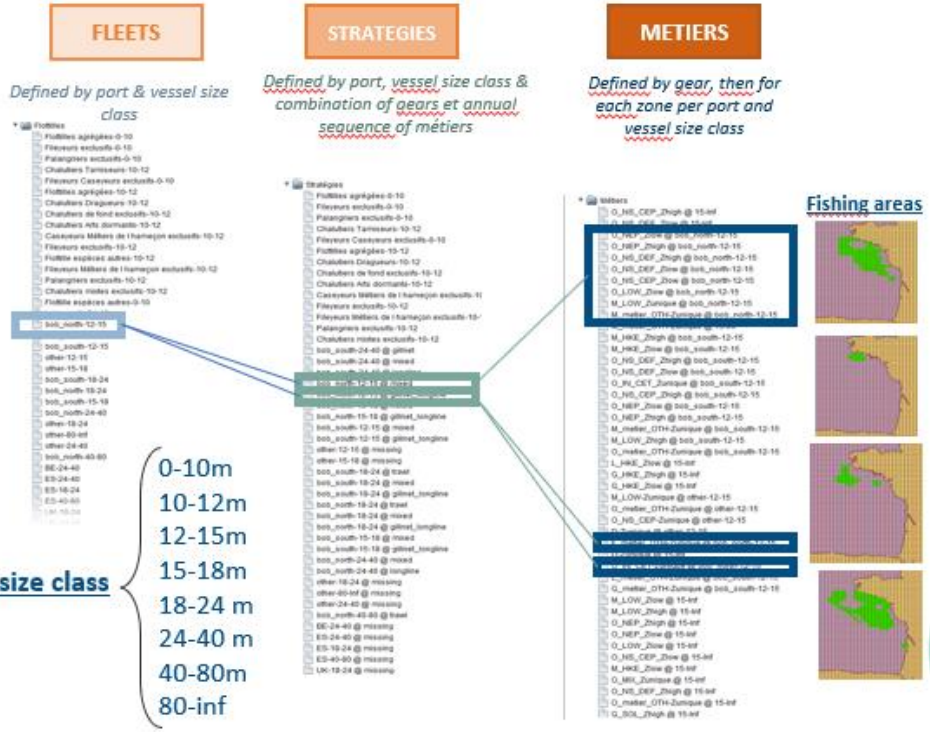
ISIS-fish MODEL CHARACTERISTICS

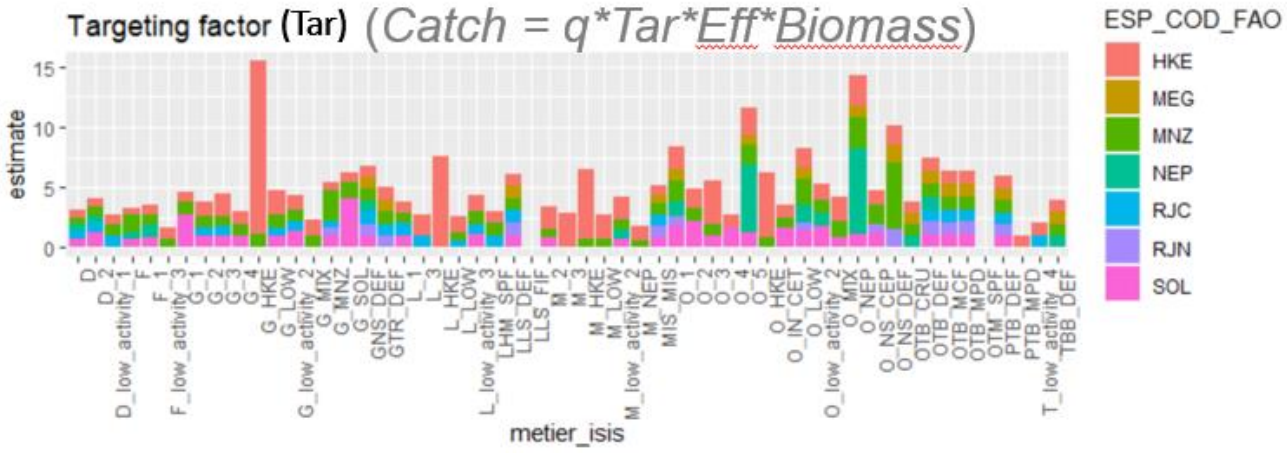
macco project

Fisheries module

41 fleets – 400 métiers

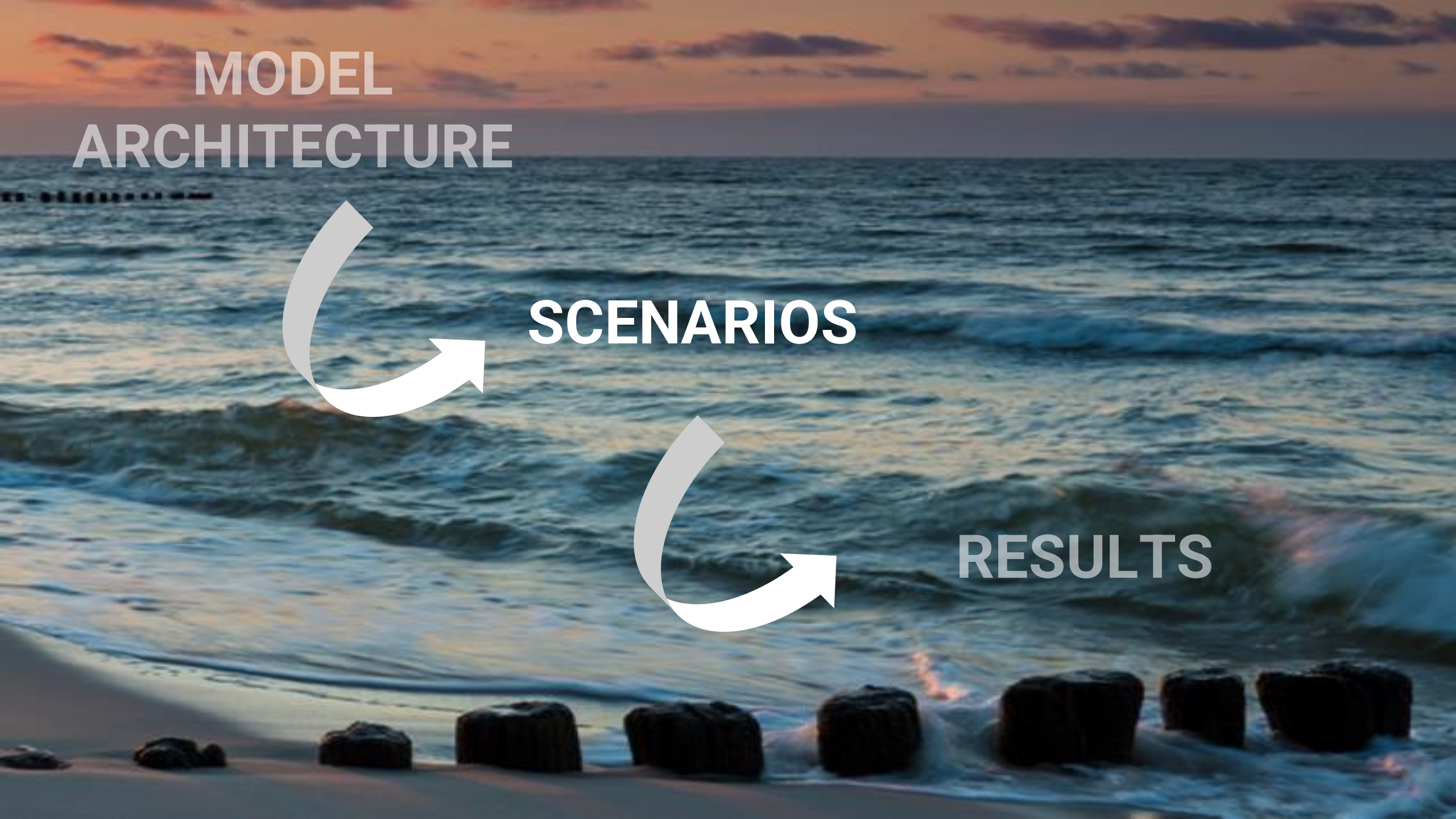
7 demersal fish stocks





Bay of Biscay Mixed fisheries and spatial management considerations

- ✓ Technical interactions
- ✓ No trophic interactions
- ✓ Effort reallocation within strategies, across zones


MODEL ARCHITECTURE
SCENARIOS
RESULTS

Scenarios

Main management scenarios

MSY

PGY (pretty good yield)

Status quo effort

MSY – No landing obligation

Climate change scenarios

RCP 4.5

(moderate emissions with peak around 2040 and then decline)

RCP 8.5

(high emissions and a significant increase in global temperatures)

Region specific scenarios

Temporal closure to protect dolphins

Spatial closures to protect benthic habitat

50% reduction in the effort of trawlers

FLBEIA by AZTI

ISIS-Fish

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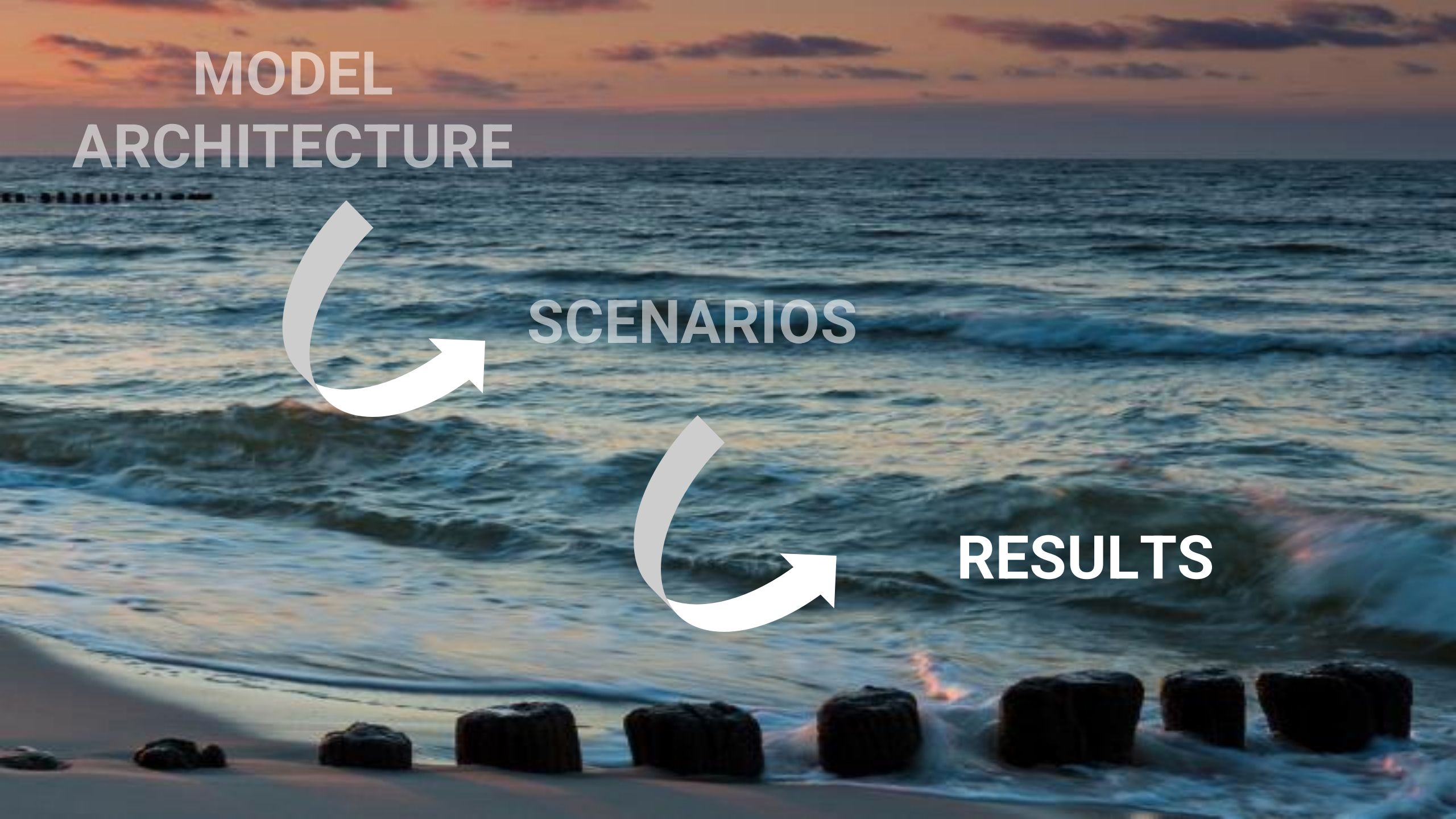
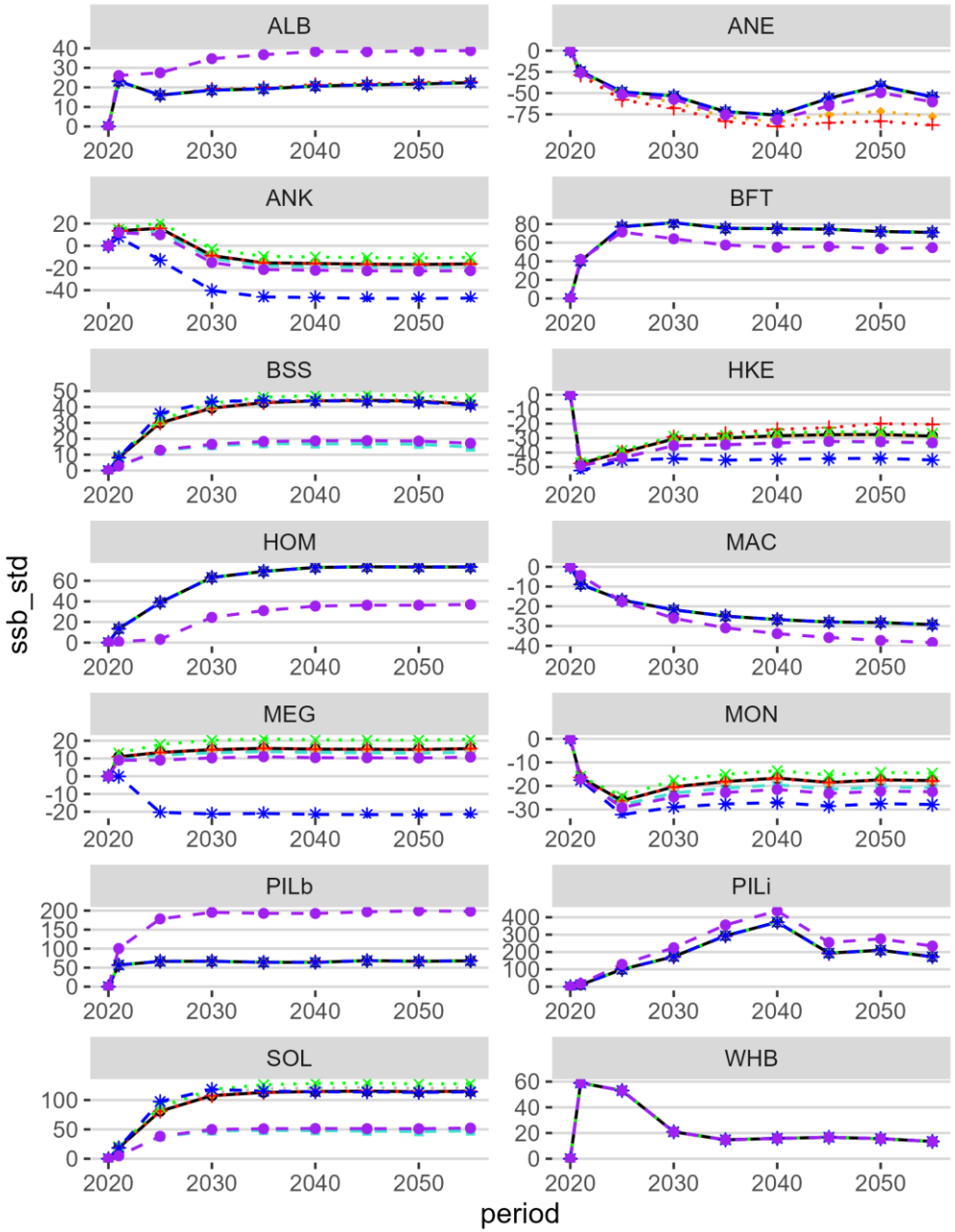
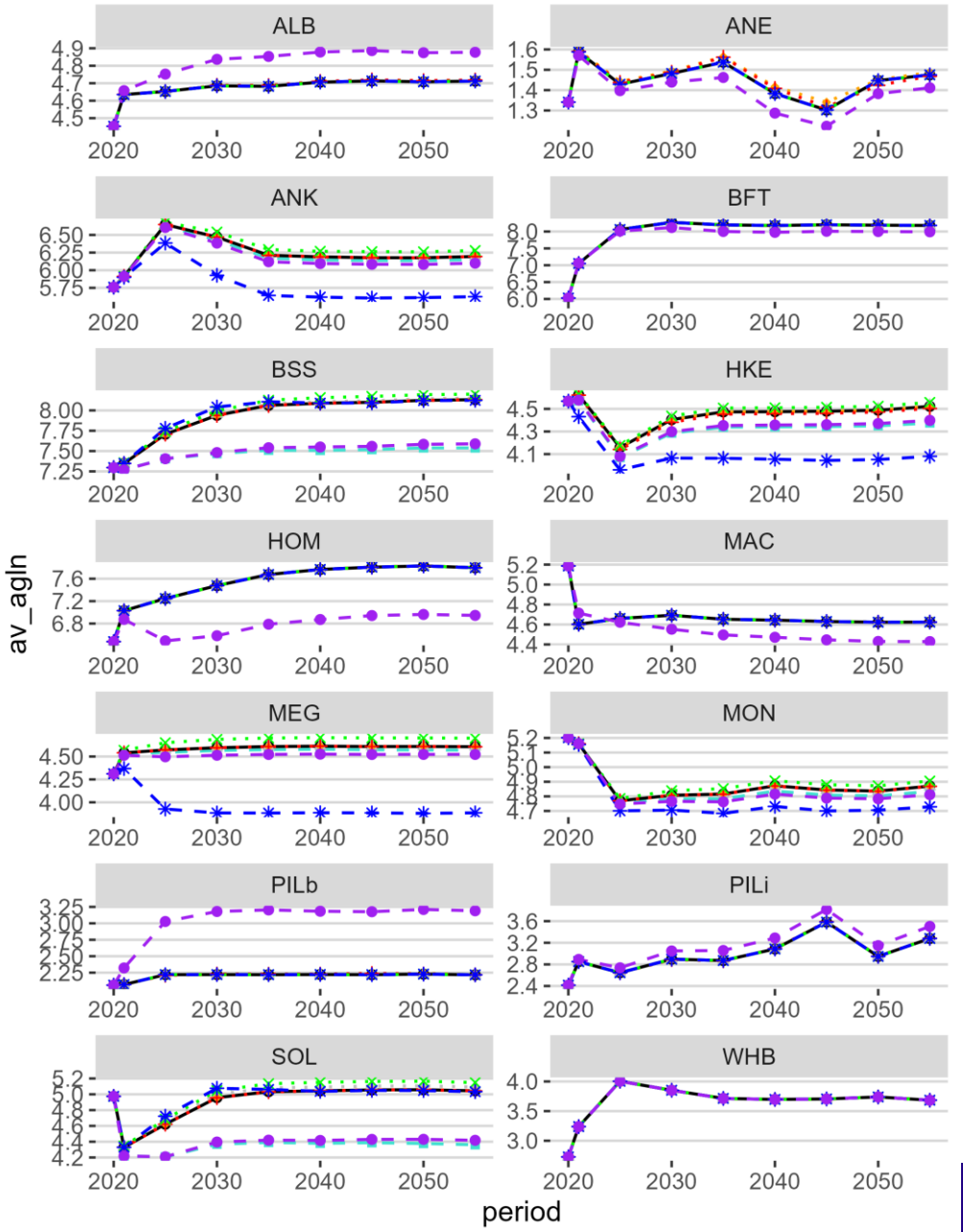
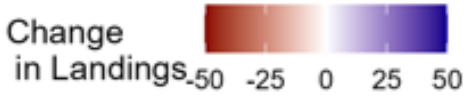

MODEL ARCHITECTURE
SCENARIOS
RESULTS

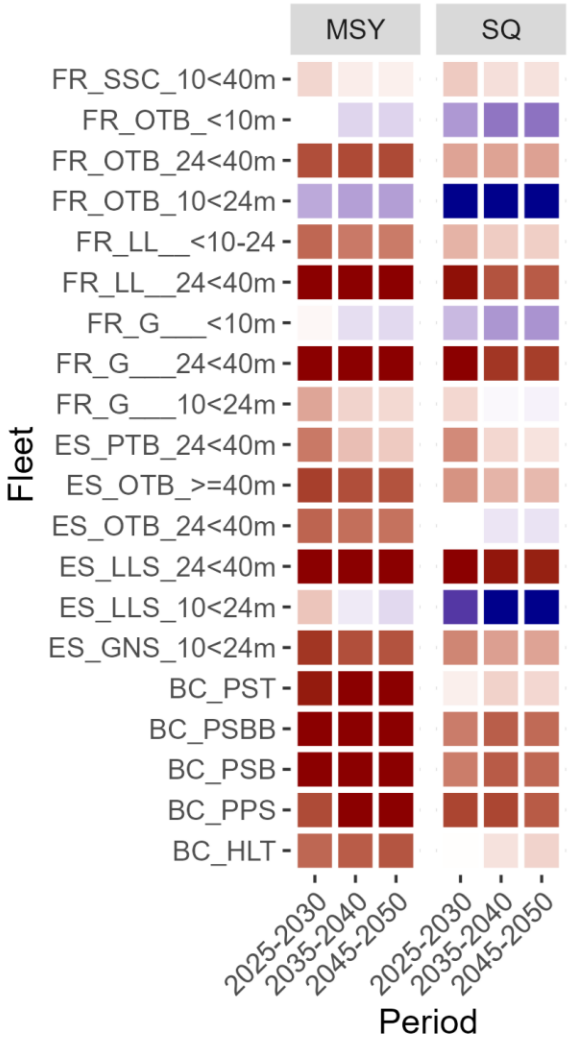
Spawning stock biomass & Average age

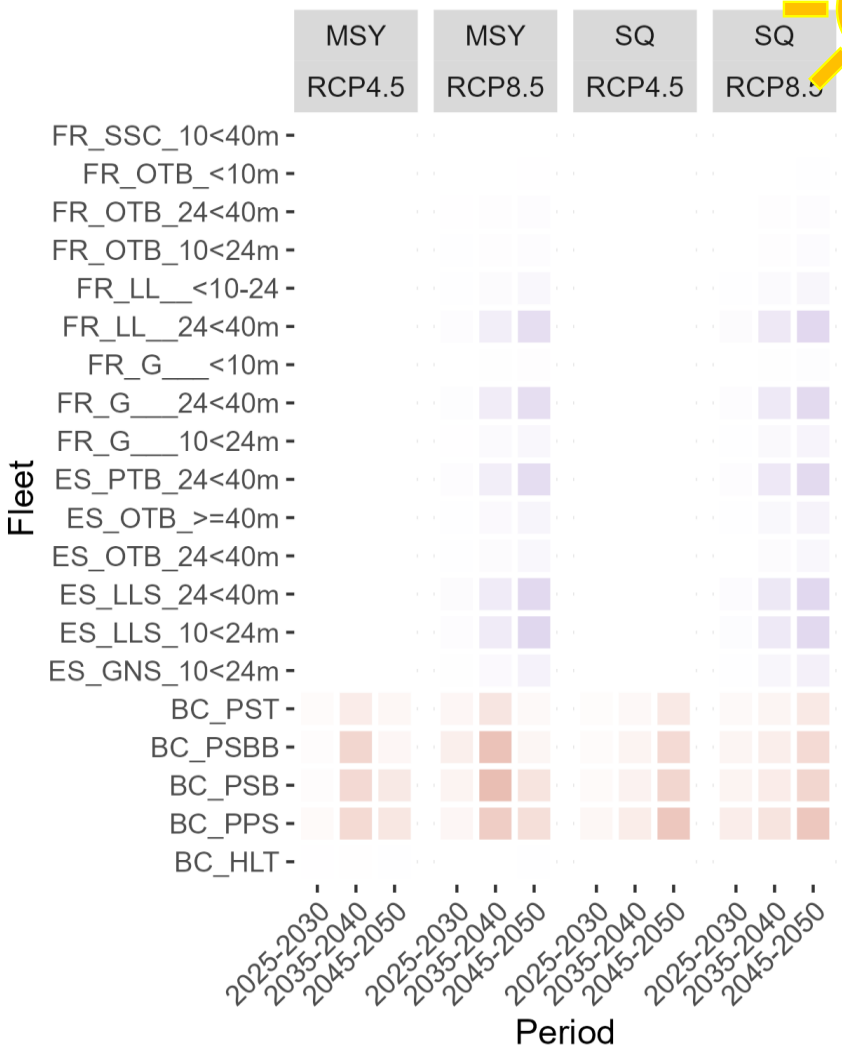




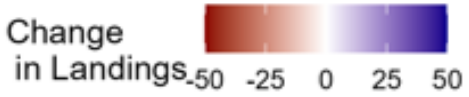
Landings


Change
in Landings
-50
-25
0
25
50


MSY
SQ
FR_SSC_10<40m
FR_OTB_<10m
FR_OTB_24<40m
FR_OTB_10<24m
FR_LL__<10-24
FR_LL__24<40m
FR_G___<10m
FR_G___24<40m
FR_G___10<24m
ES_PTB_24<40m
ES_OTB_>=40m
ES_OTB_24<40m
ES_LLS_24<40m
ES_LLS_10<24m
ES_GNS_10<24m
BC_PST
BC_PSBB
BC_PSB
BC_PPS
BC_HLT
Fleet
2025-2030
2035-2040
2045-2050
Period


MSY
RCP4.5
MSY
RCP8.5
SQ
RCP4.5
SQ
RCP8.5
FR_SSC_10<40m
FR_OTB_<10m
FR_OTB_24<40m
FR_OTB_10<24m
FR_LL__<10-24
FR_LL__24<40m
FR_G___<10m
FR_G___24<40m
FR_G___10<24m
ES_PTB_24<40m
ES_OTB_>=40m
ES_OTB_24<40m
ES_LLS_24<40m
ES_LLS_10<24m
ES_GNS_10<24m
BC_PST
BC_PSBB
BC_PSB
BC_PPS
BC_HLT
Fleet
2025-2030
2035-2040
2045-2050
Period

Landings


Change
in Landings
-50
-25
0
25
50


BenP10
none
BenP20
none
BenP30
none
BenP50
none
bob_south-24-40@mixed
bob_south-24-40@longline
bob_south-24-40@gillnet
bob_south-18-24@mixed
bob_south-18-24@gillnet_longline
bob_south-18-24@BottomTrawl
bob_south-15-18@mixed
bob_south-15-18@gillnet_longline
bob_south-12-15@mixed
bob_south-12-15@gillnet_longline
bob_north-24-40@mixed
bob_north-24-40@longline
bob_north-18-24@mixed
bob_north-18-24@gillnet_longline
bob_north-18-24@BottomTrawl
bob_north-15-18@mixed
bob_north-15-18@gillnet_longline
bob_north-12-15@mixed
bob_north-12-15@gillnet_longline
bob-10-12@sieve
bob-10-12@pot_hook
bob-10-12@passive
bob-10-12@mixed
bob-10-12@line
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bob-10-12@gillnet
bob-10-12@dredge
bob-10-12@aggregated
bob-10-12@BottomTrawl
bob-0-10@longline
bob-0-10@gillnet_pot
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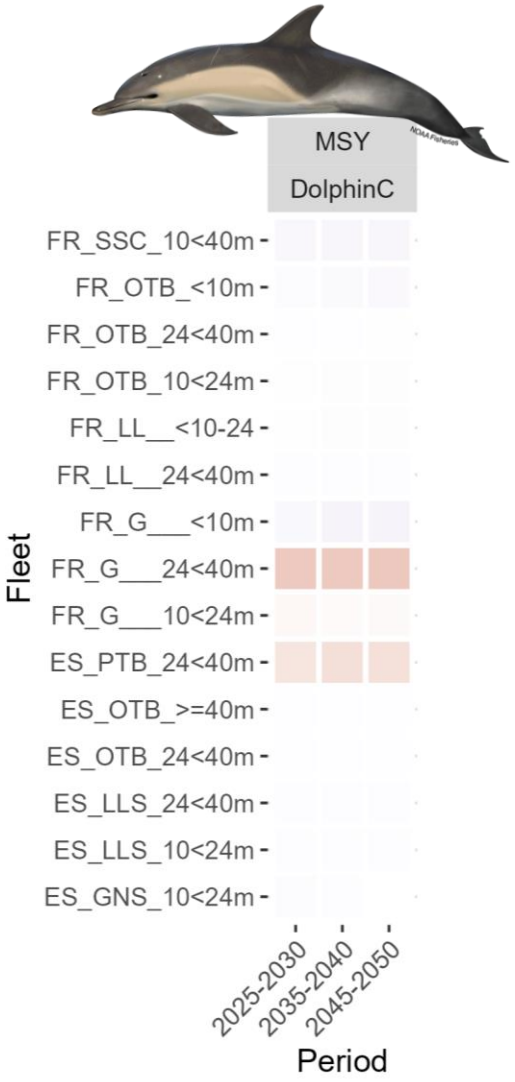
Fleet
2025-2030
2035-2040
2045-2050
Period


MSY
DolphinC
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FR_OTB_10<24m
FR_LL__<10-24
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FR_G___<10m
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ES_OTB_>=40m
ES_OTB_24<40m
ES_LLS_24<40m
ES_LLS_10<24m
ES_GNS_10<24m
Fleet
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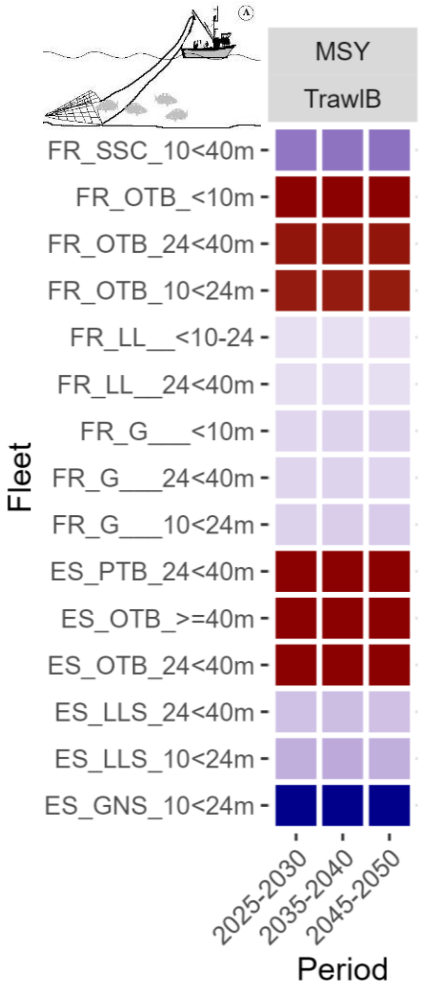
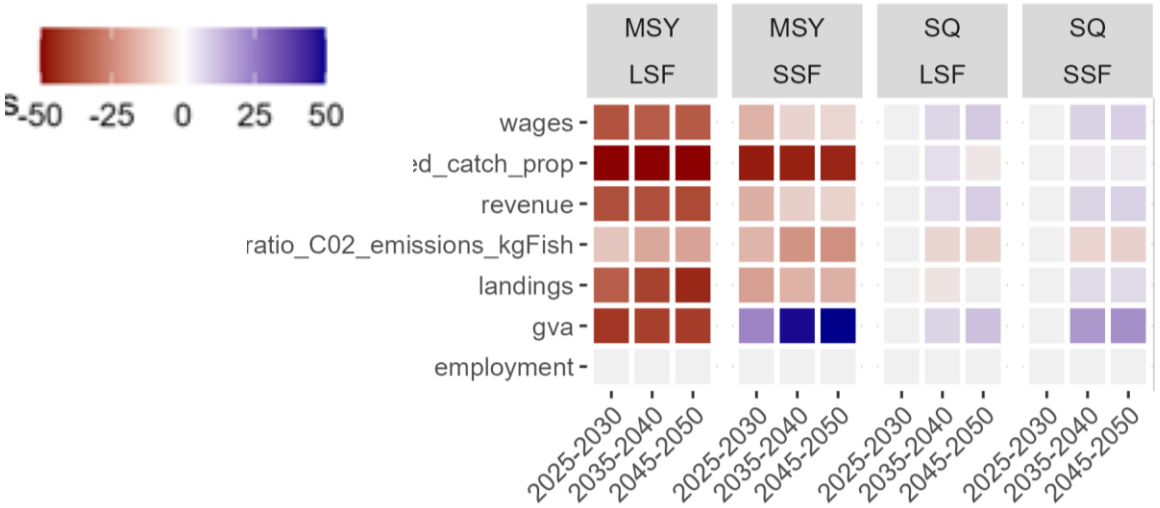
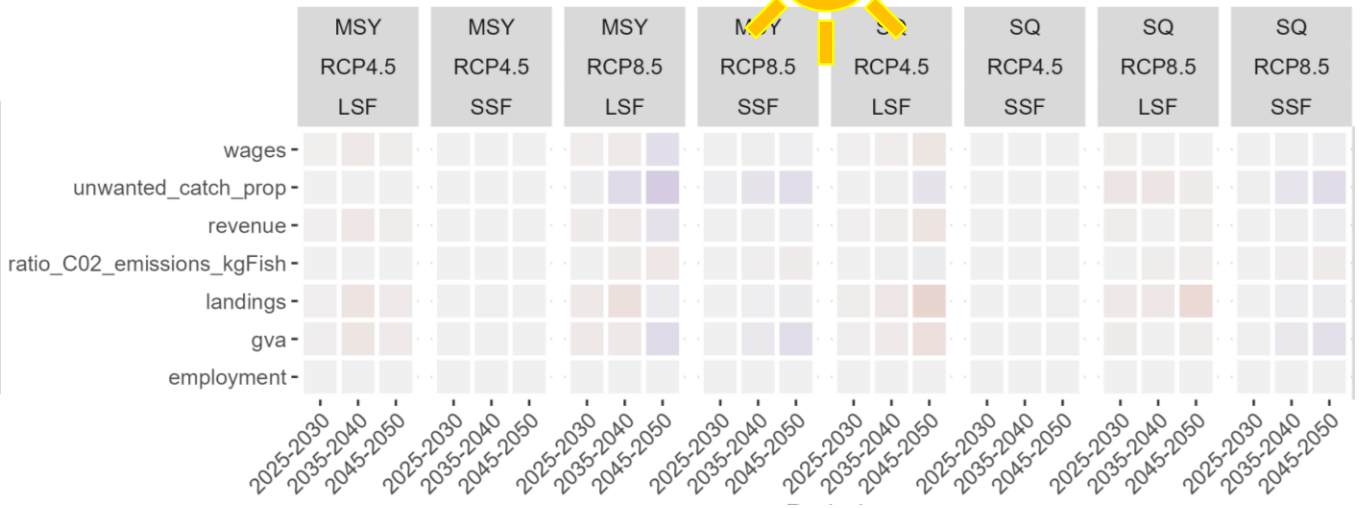
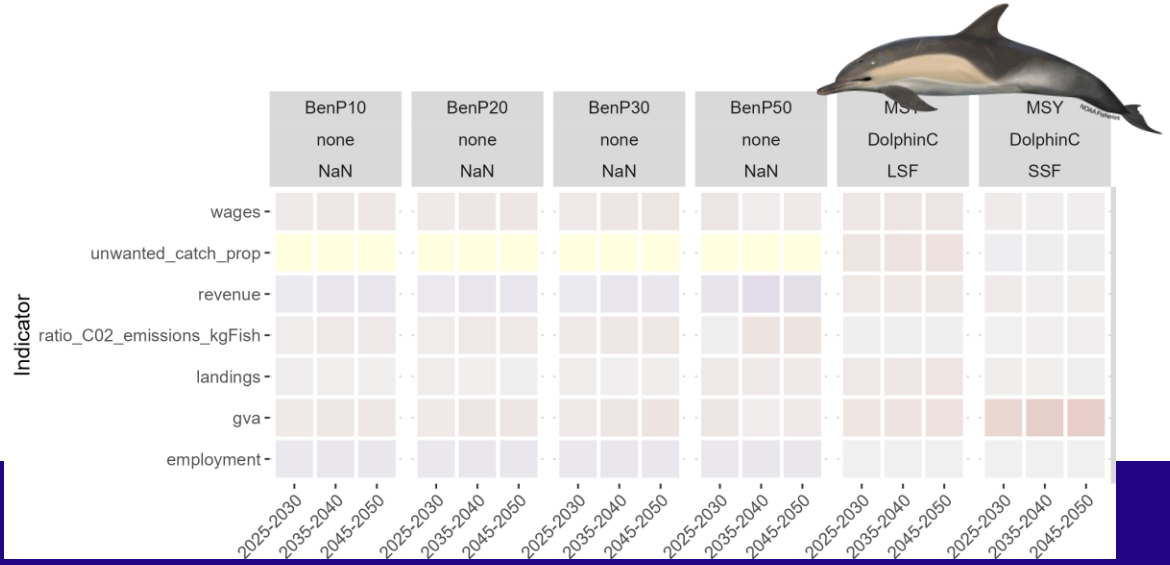
2035-2040
2045-2050
Period

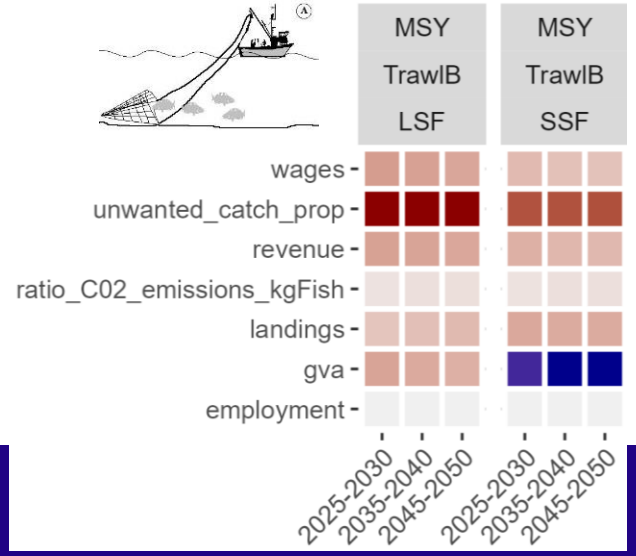

MSY
TrawlB
FR_SSC_10<40m
FR_OTB_<10m
FR_OTB_24<40m
FR_OTB_10<24m
FR_LL__<10-24
FR_LL__24<40m
FR_G___<10m
FR_G___24<40m
FR_G___10<24m
ES_PTB_24<40m
ES_OTB_>=40m
ES_OTB_24<40m
ES_LLS_24<40m
ES_LLS_10<24m
ES_GNS_10<24m
Fleet
2025-2030
2035-2040
2045-2050
Period

CFP SocioEconomic Indicators









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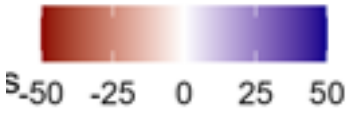
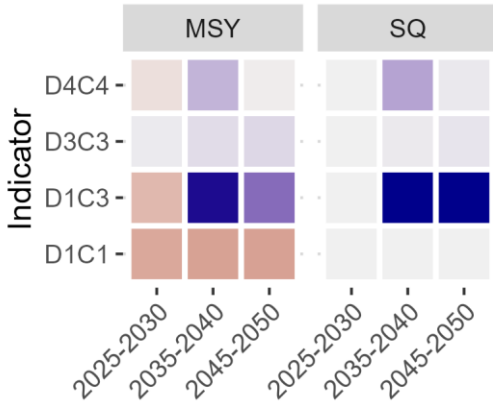
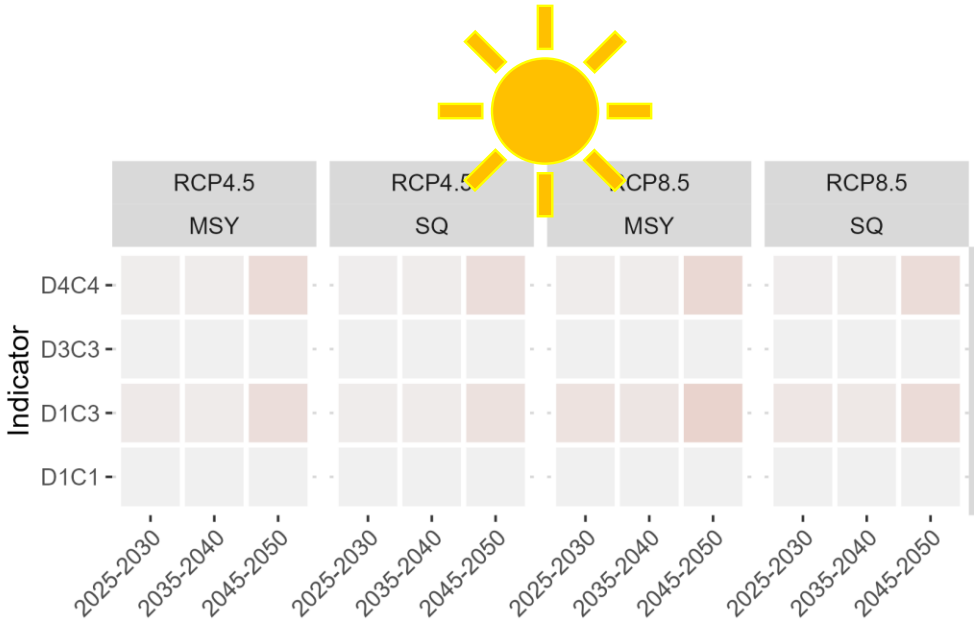
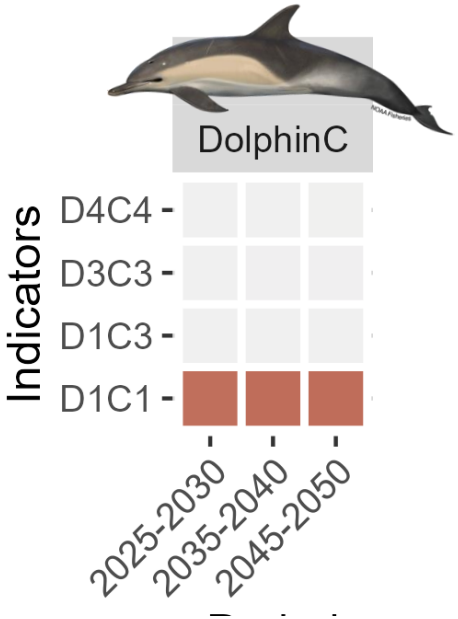
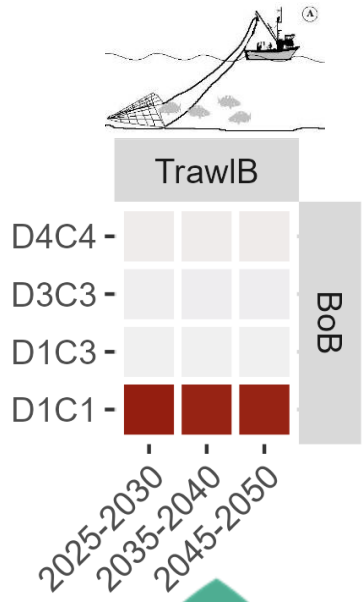
MSFD Indicators












Model
Review

What can we change: Stock Dynamics

Productivity is determined by recruitment growth and natural mortality

The productivity of which stock would you like to modify?

For all this we need the new values!

The productivity of which stock would you like to change in the Biological component?

What can we change: Fleet Dynamics

- Prices
- Fixed costs
- Fuel costs
- Other variable costs
- Quota share by fleet

For all this we need the new values!

What would you like to change in the Fleet component?

What can we change: Management

- Shape of the harvest control rules or reference points
- Selectivity
- Length of the spatio-temporal closure to protect Dolphins
- % Reduction in trawlers

The performance of what management strategies would you like to test?

Project itself

Progress

Next step?

What end-product should scientists present to fisheries managers and fishing industry to move to EBFM?

What end-product should scientists present to fisheries managers and fishing industry to move to EBFM?

Should we combine modelling approaches more, integrate them more?

How to include socio-economics in EBFM advice?

How to make EBFM happen?

Thanks for listening

Jochen Depestele et al.

SEAWISE

https://seawiseproject.org/seawise-results/

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MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
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Foras na Mara Marine Institute
cepesca
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ILVO
University of Strathclyde Glasgow
L'INSTITUT agro Rennes-Angers
Pôle halieutique, mer, littoral
Ifremer

WW team

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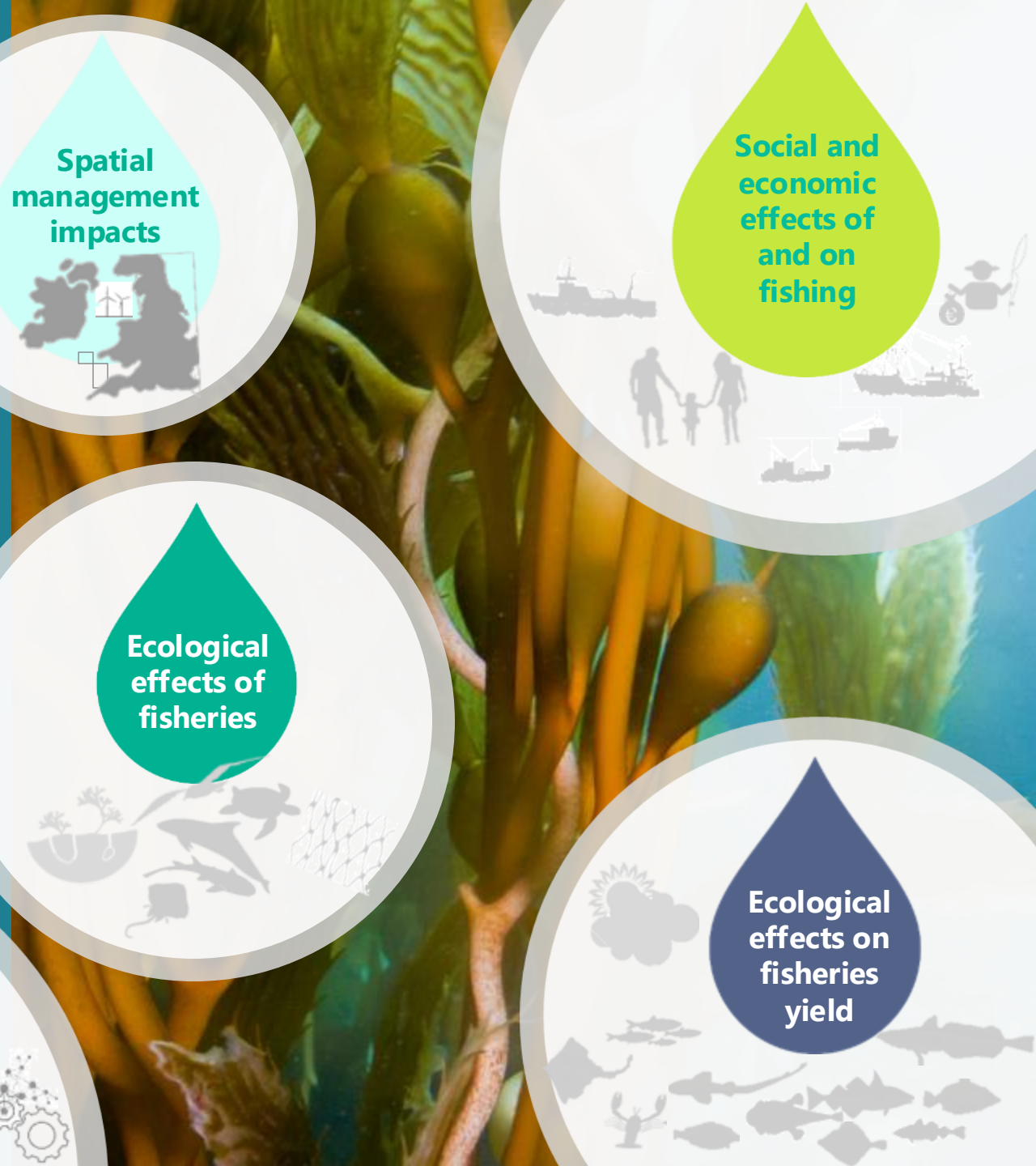
IT'S TIME TO GET SEAWISE & TEST THE TOOLS



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