The future of high seas governance

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CHANGING OCEAN RESEARCH UNIT
THE UNIVERSITY OF BRITISH COLUMBIA

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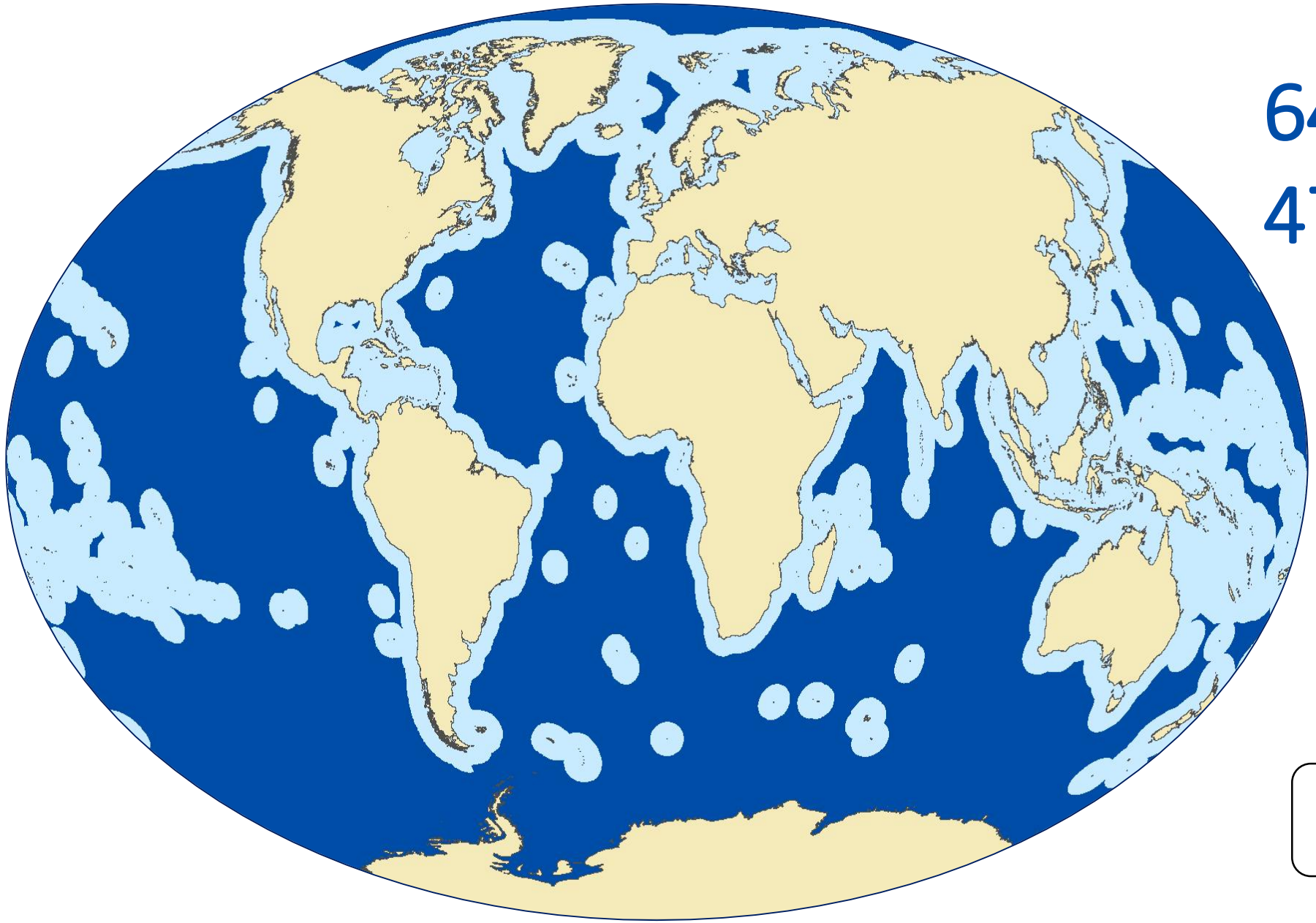


64% of the world's oceans

47% of the earth's surface

High seas
Exclusive Economic Zones

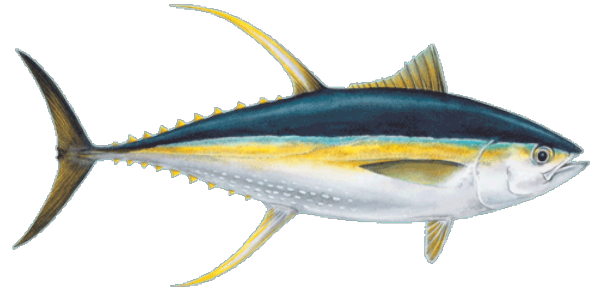
Costello & Chaudhary 2017

Fisheries on the high seas

10 million t / year caught

12% of global annual catch

15% of global annual landed value



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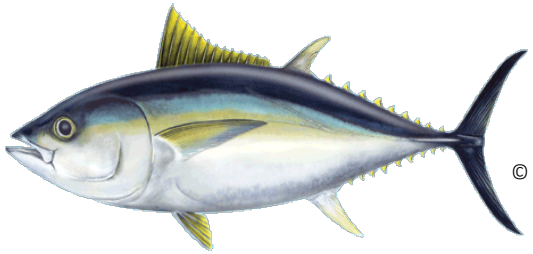

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Sumaila et al. 2015

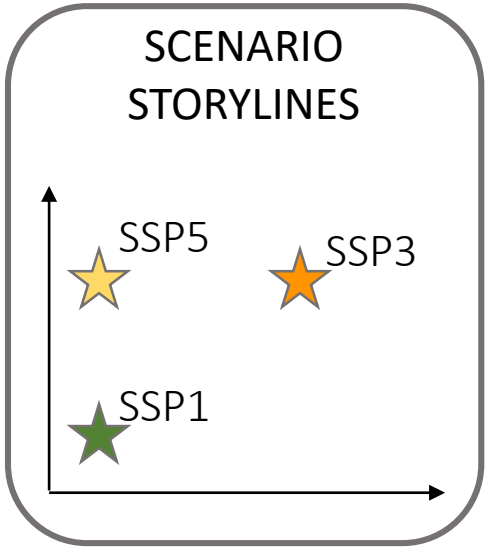
Threats to the high seas

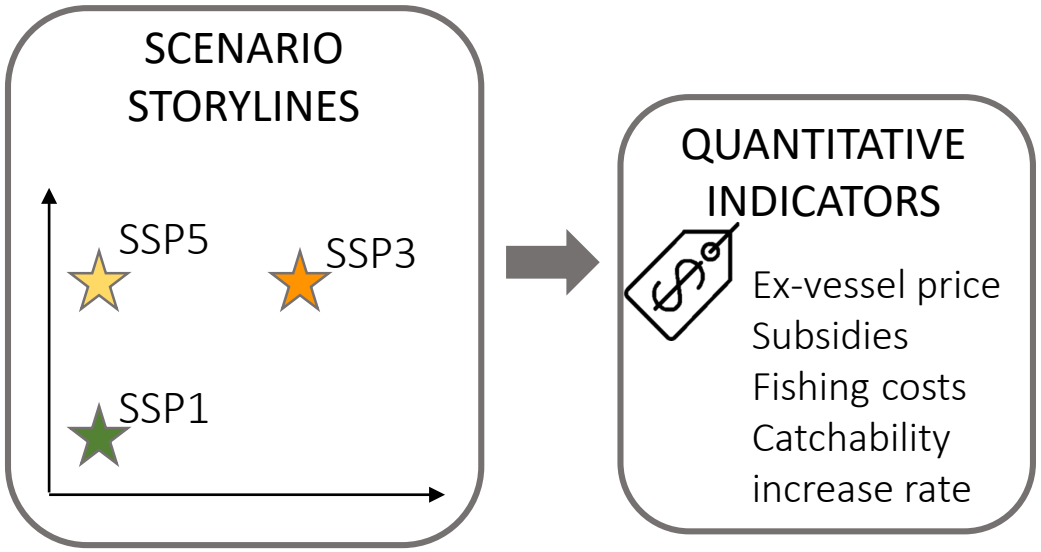
Current UN General Assembly negotiations

- Develop an internationally legally binding instrument to conserve and sustainably use marine biological diversity beyond national jurisdiction
- Four packages under discussion:
  - marine genetic resources (MGRs), including questions on benefit-sharing;
  - environmental impact assessments;
  - area-based management tools, including marine protected areas (MPAs); and
  - capacity building and marine technology transfer.

The future of the high seas

Goal: Explore impact of alternative futures on the high seas under changing climate - through scenarios and models


SCENARIO
STORYLINES
SSP5
SSP3
SSP1


SCENARIO STORYLINES
SSP5
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SSP1

QUANTITATIVE INDICATORS
Ex-vessel price
Subsidies
Fishing costs
Catchability increase rate

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Effort dynamic model

Dynamic Bioclimate Envelope Model

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SSP5

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Vicky Lam
Wednesday 19 June | Rm 1
@ 4:30 pm

SCENARIO STORYLINES

SSP5

SSP3

SSP1

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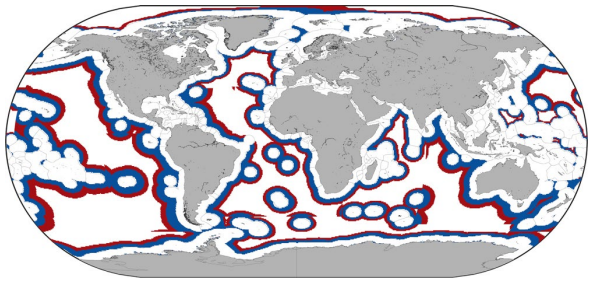
Climate change
RCP 2.6 & RCP 8.5

Warming

Acidification

Deoxygenation

Marine Protected Areas



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30%
50%

SCENARIO STORYLINES

SSP5

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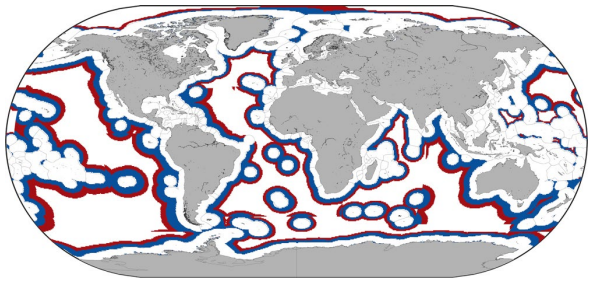

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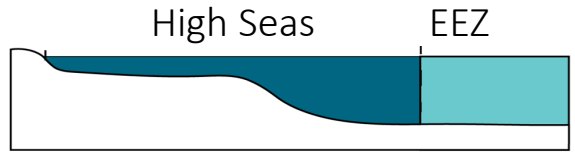
Mean Species Abundance
Catch Potential

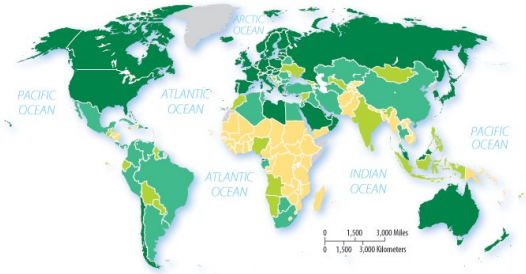
Fisheries profits

BY

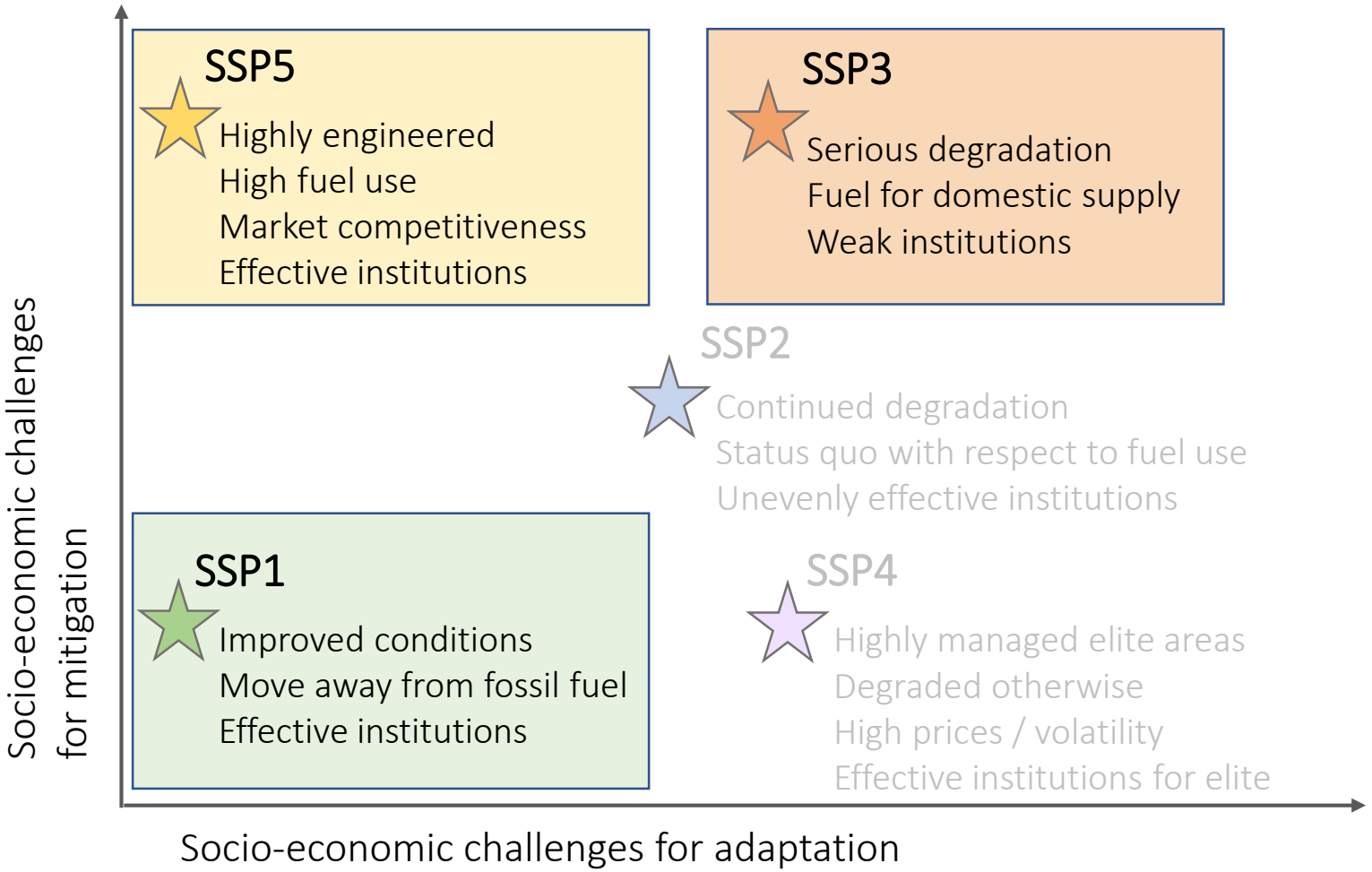


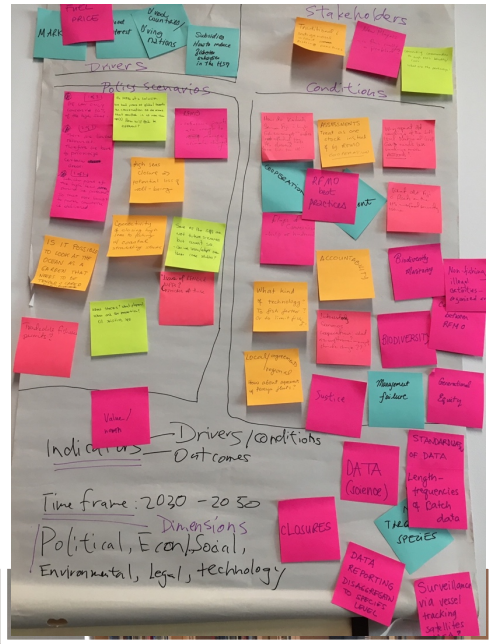
AND

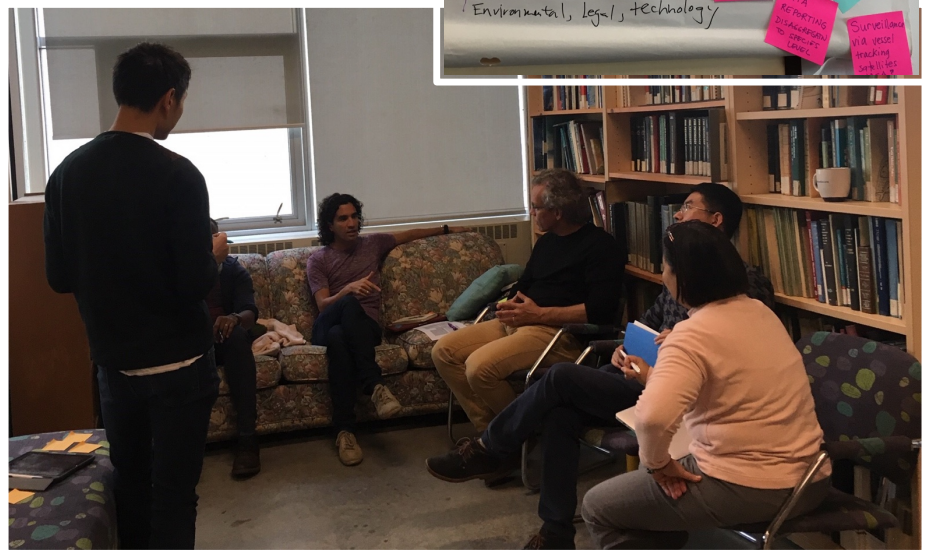
for LOW, MIDDLE & HIGH Income Countries



Step 1 | Scenario development







Step 1 | Scenario storylines

SSP 1 – Charting the 'blue course'

Eliminate harmful fishing subsidies

High fuel prices

Promotion of technology transfer

Seafood certification schemes

Effective implementation and enforcement of the Port State Measures Agreement (PSMA)

Ratification of an international legally binding instrument (ILBI) for the high seas

SSP 3 – Rough seas ahead

Exploitation of the high seas by high income nations who subsidize their fleets

Lowered fishing costs due to forced or underpaid labour on vessels and in processing plants

Opaque decision-making, and corruption leads to a strong lack of cooperation within and across the organisations, eroding their mandate and effectiveness

Limited success of international treaties and agreements

SSP 5 – The ocean superhighway

High levels of international trade, contributing to strongly globalised world

Wealth among developed and developing countries becomes more evenly distributed

Developed countries deploy remotely controlled Fish Aggregating Devices & other robotic fishing techniques

High-fossil fuel use leads to rise in water temperatures and worsening effect of acidification

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Step 2 | Quantitative metrics

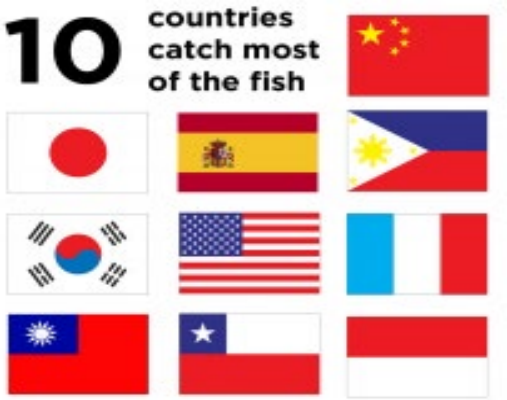
	SSP1	SSP3	SSP5
Ex vessel price	--	↓	↑
Fishing Costs	↑	↓	↓↓
Fisheries subsidies $$	↓↓	↑	↑
Catchability increase rate	--	--	↑

Key findings | Projections

- On average, high seas fisheries are not economically viable across the three ocean futures
- On the high seas : *catches* driven by MPAs and scenarios; *species abundance* driven by scenarios
- In EEZ : climate change and scenarios main drivers
- Climate change plays an increasingly important role (relative to protected areas) towards the end of the 21st century
- Under the “Blue course” scenario, low income countries are projected to have **7 times** more catch potential in their EEZ than under the “rough seas ahead” scenario.

Conclusions

- Integration of qualitative information with quantitative modelling
- Socio-economic considerations key to future high seas management
- Role of economic-based interventions



62% of high seas catches

71% of landed value

- Climate change will affect fish and fisheries in EEZ –> better management of the high seas can benefit countries strongly impacted by climate change in the future

Acknowledgments

- Participants of the Vancouver workshop: Patricia Angkiriwang, Jeff Ardron, Jessica Blythe, Natalie Ban, Patrick Christie, Andrés Cisneros-Montemayor, Quentin Hanich, Kristina Gjerde, Guillermo Ortuño Crespo, Juliano Palacios-Abrantes, Daniel Pauly, Joyce Samuelu-Ah Leong, Louise Teh and Glen Wright.
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Thank you!

Questions?

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