Holistic Approach to Ocean Governance

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Topics to cover

- Why ocean?
  - The importance of the oceans
- Why ocean governance?
  - Key concerns affecting the oceans
- Why holistic approach?
  - Innovation to address ocean concerns

What is the importance of the ocean?









Ocean resources

- Physical (e.g. ocean basins, barrier islands, delta, coastal waters, etc.);
- Habitats (e.g. mangroves, wetlands, seagrass, submerged aquatic vegetation, coral reefs, sandy beach, etc.);
- Living and non-living (e.g. fish, marine and wildlife populations, oil & gas, minerals, etc.);
- Atmospheric;
- Aesthetic;
- Cultural; and
- Human.

What challenges and concerns are affecting the oceans?

Multiple uses - growing intensity

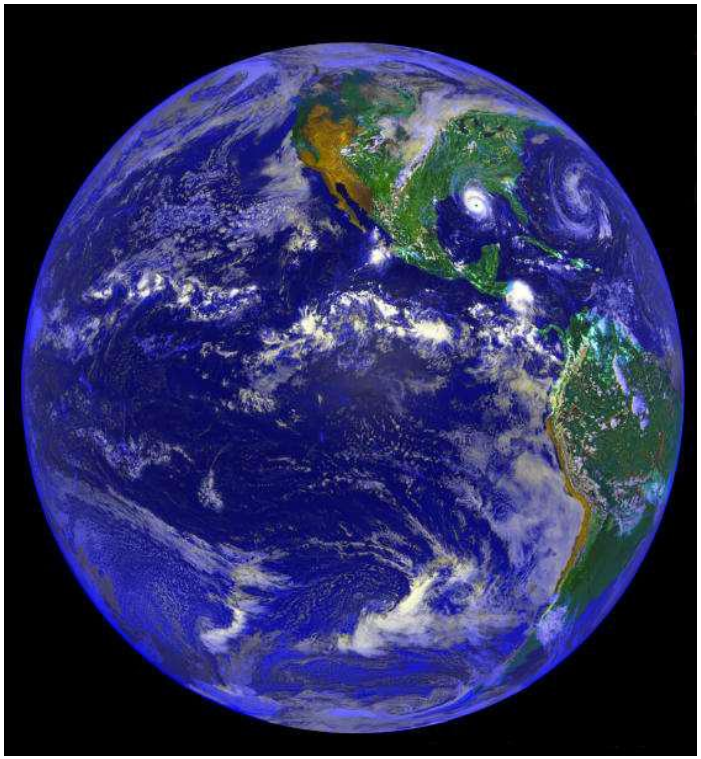
- Population growth and coastal development;
- Resource exploitation (renewable / non-renewable);
- Aquaculture and ocean ranching;
- Port and marine transportation;
- Tourism and recreation.

Ocean: resilient or vulnerable?

- Oceans are fragile ecosystems (i.e., physically less stable than land);
- As everything drains to the sea, oceans are directly impacted by human activities on land and land-based pollution;
- Oceans are vulnerable to different change processes, which disrupt the balance (e.g. ocean acidification); and
- Many of these changes are permanent or irreversible.

Difficulties/challenges in ocean governance

How valuable are the oceans?



The value of the world's ecosystem - $ 33.3 trillion (Costanza *et al*. 1997)

How much do you pay to experience nature?

Photo credits: J. Simms

How much are you willing to pay to protect the ocean?

Are you willing to pay $5 to protect the ocean?

Are you willing to pay $50 to protect the ocean?

How much would it cost to restore ecosystem?

Photo credits: DFO

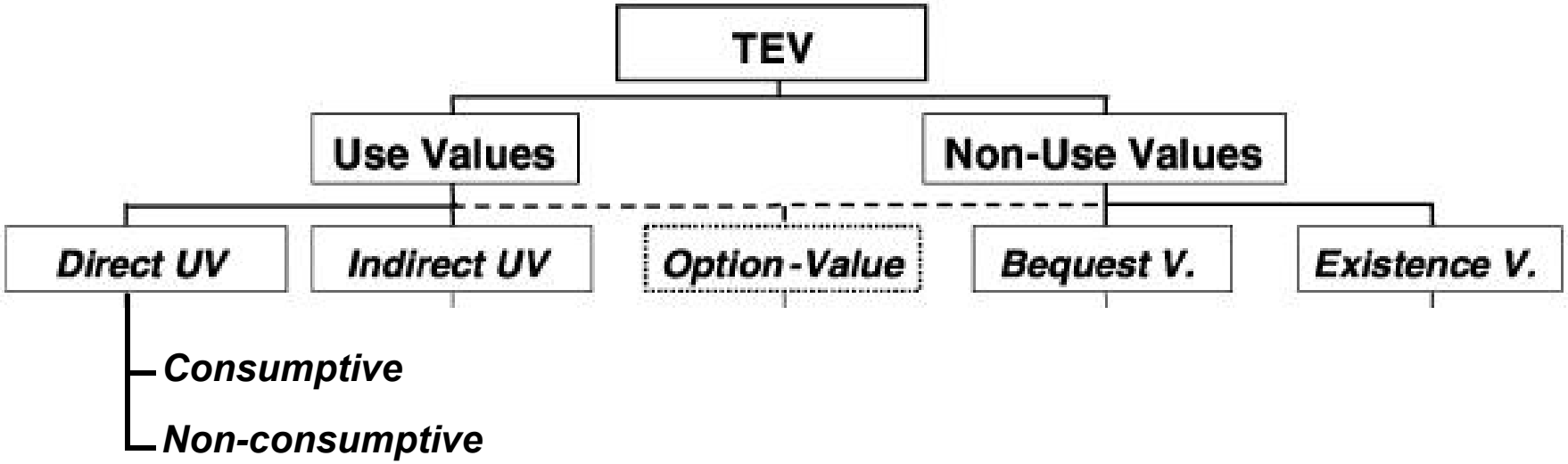
How much are you willing to accept as compensation for the loss of marine lives?

Photo credits: E. Norse

Is loss of habitats more serious than loss of big fish?

Photo credits: E. Norse

Values and valuation



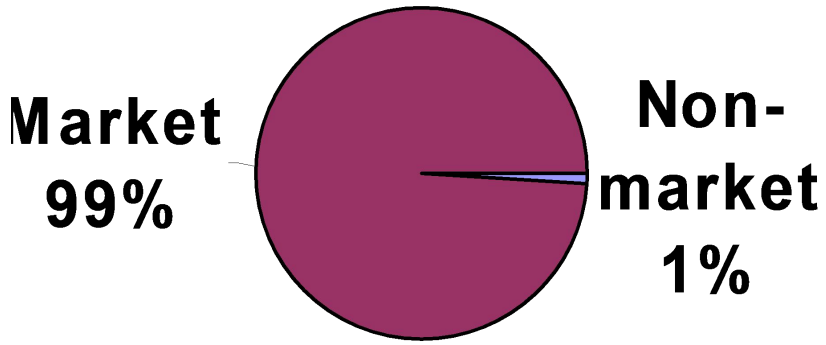
Different types of valuation methods

- Market-based techniques (e.g., changes in productivity, loss of earnings, replacement costs, etc.)
- Surrogate market techniques (e.g., hedonic pricing, travel cost methods, etc.)
- Simulated/constructed market (e.g., contingent valuation methods)

The practice of valuation

Survey of nine leading environmental & resource economics journals (1994-2003):

- # of articles published: **4705**;
- # articles containing the words ‘non market’ or ‘existence value’ or ‘bequest value’: **43**.



Sumaila (2014)

Limitations to economic valuation

- Big assumptions:
  - values given to a resource is limited by people's ability to pay for them;
  - current distribution of wealth is acceptable.
- For some people, no amount of money can compensate for damage to the environment;
- Whose values should be assessed (and based the decision on)?
- Individual preferences vs. societal preferences
- Economic efficiency vs. social equity

Technical difficulties in valuation

- Limited understanding on the full value of ecosystems (e.g., ecological services);
- Market distortions (e.g., due to subsidies);
- Static vs. dynamic (e.g., changes in preferences and attitudes through time);
- Subjectivity in selection and application of valuation techniques;
- Cost of valuation.

Ocean governance as a wicked problem

What is a wicked problem?

Rittel and Webber (1973): 'Dilemmas in a General Theory of Planning'

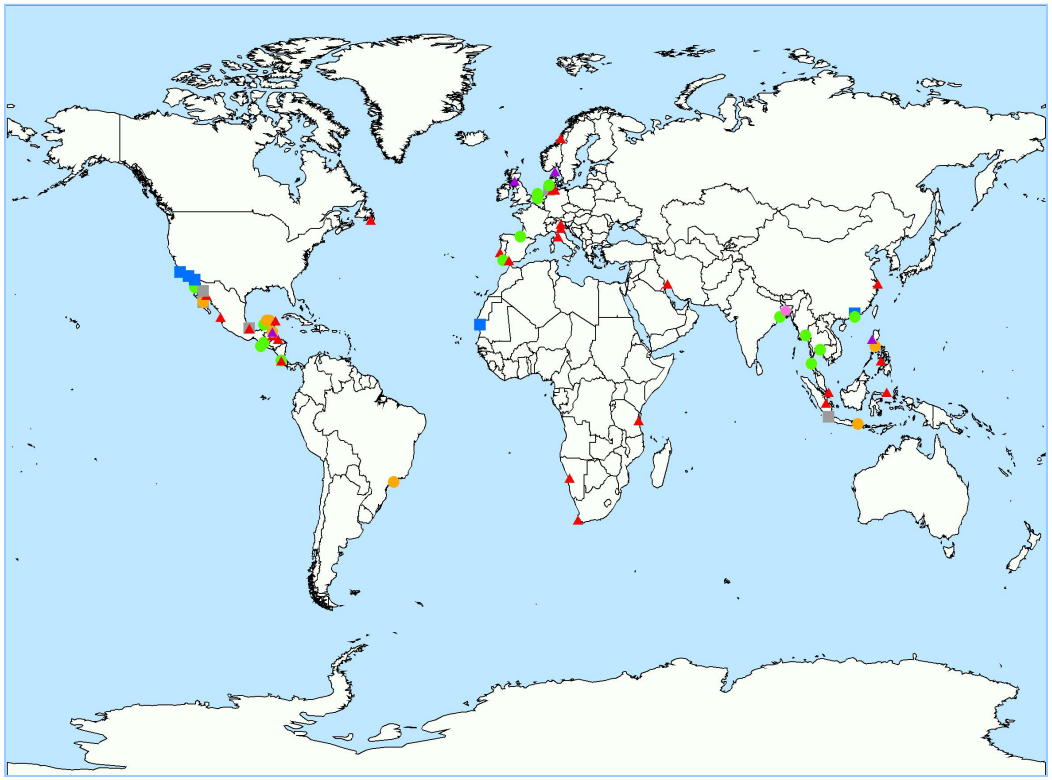
- 'Social problem' vs. 'Scientific problem'
- Difficult to define and differentiate from other problems
- No formula, no stopping rule
- No solution, only *re*solution
- All problems are unique
- Mistakes are costly

What makes ocean governance a wicked problem?

- Diversity, complexity, dynamics
- Scale issues
- Uncertainty
- Unknown
- Focusing on different types of interactions

Diverse types of coastal systems

Beach ▲	35
Estuary ●	15
Lagoon ●	9
Cliff ■	7
Fjord ▲	6
Others	6

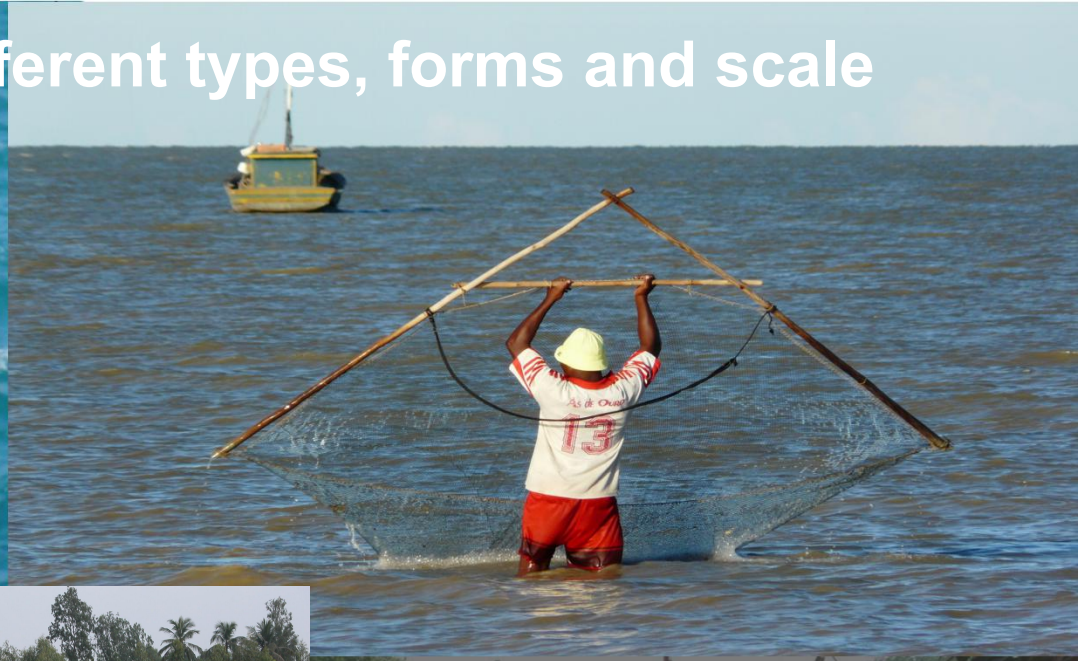


(Based on 78 models contributed to CTAM – Coastal Transect Assessment Model)

Diverse issues and concerns (based on 65 models)

Coastal Type	Issues and concerns		
Beach (35)	Domestic waste	Overfishing	Reduced biodiversity
Estuary (15)	Tourism impacts	Overfishing	Reduced biodiversity
Lagoon (9)	Tourism impacts	Domestic waste	Overfishing
Fjord (6)	Industrial pollution	Domestic waste, reduced biodiversity, water shortage, tourism impacts	

Fisheries come in different types, forms and scale



MFV Atlantic Dawn

144m length / 24m width

Vessel cost: $80 Million

Holding capacity: 14,000 tonnes (enough to feed 18 million people)

$2.2 Million worth of catch / trip

One of the world's largest fishing vessels

ATLANTIC SEA - Container/Ro-Ro Cargo Ship

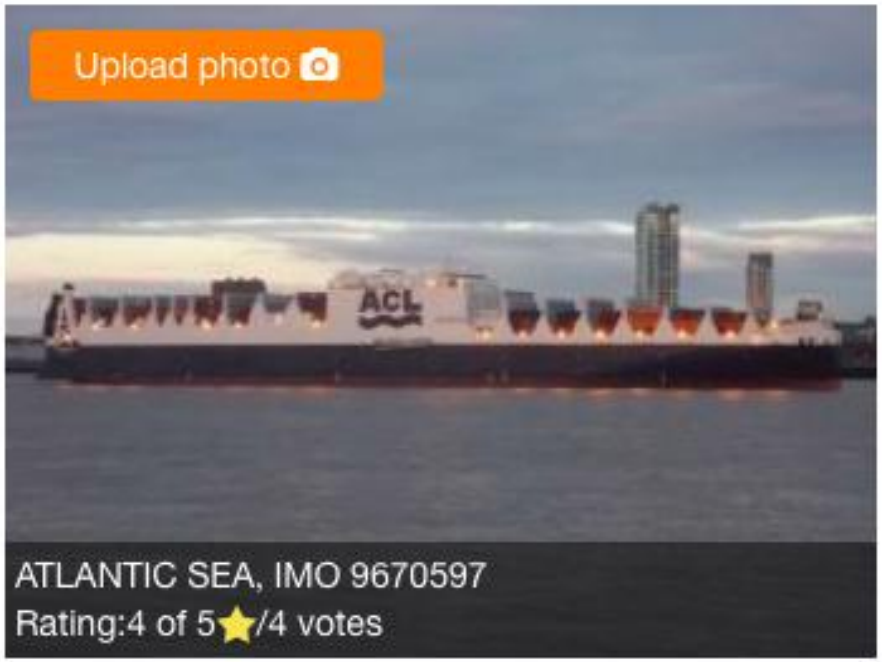
ATLANTIC SEA - IMO 9670597 - Details and current position

VESSELS » CARGO SHIPS » ATLANTIC SEA

☆ Add to My Fleet

What is the ship's current position? Where is the ship located? **ATLANTIC SEA last received position is 50.86062 N / 13.37597 W** on Nov 03, 2016 at 02:21 UTC.

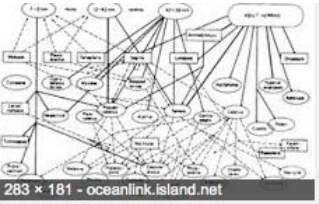
Vessel **ATLANTIC SEA** (IMO: 9670597, MMSI: 235116052) is a **container/ro-ro cargo ship** and currently sailing under the flag of **United Kingdom**. ATLANTIC SEA has 296m length overall and beam of 37m. Her gross tonnage is 81600 tons. Below you can find more technical information, photos, AIS data and last 5 port calls of **ATLANTIC SEA** detected by AIS.

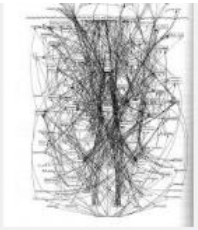


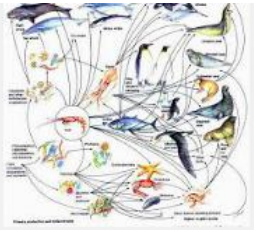
One of the world's largest cargo ships

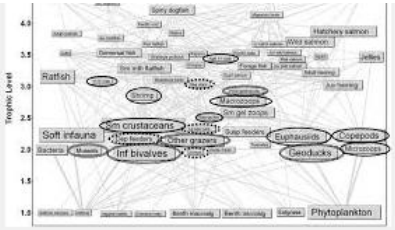
Vesselfinder.com

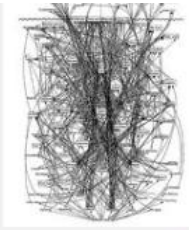
Complex marine ecosystems

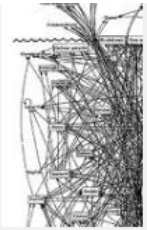


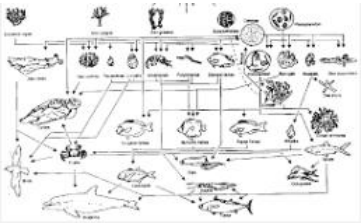


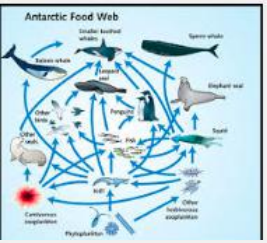


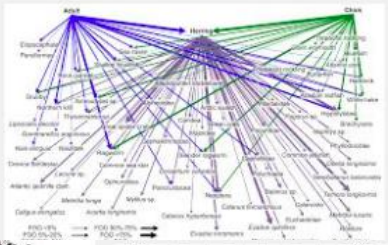


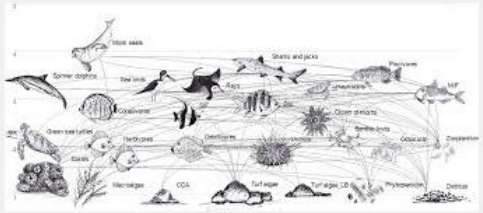


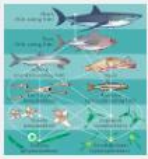


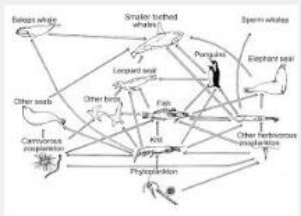


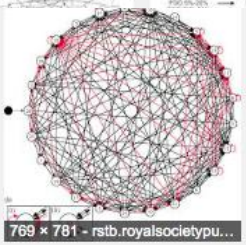


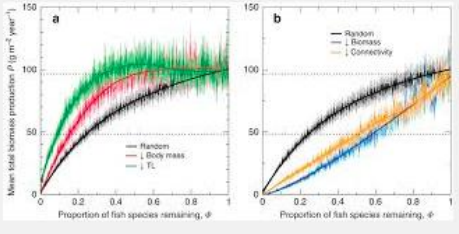


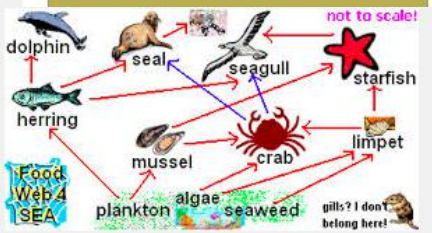


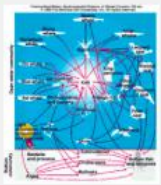


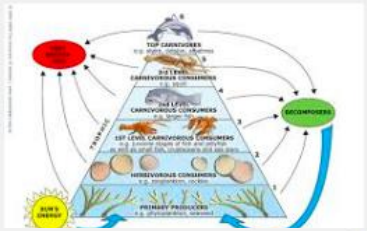


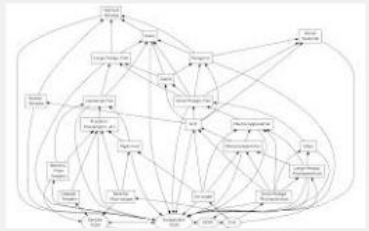


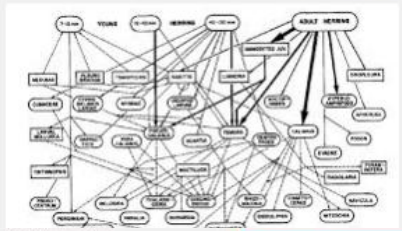


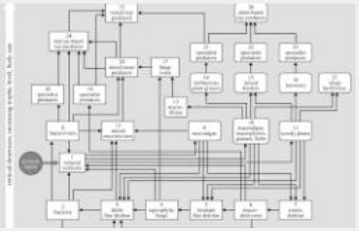


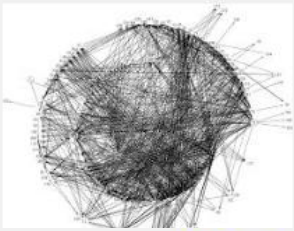


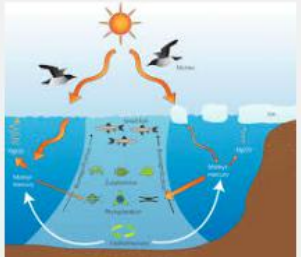


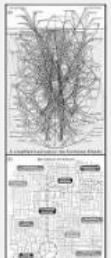


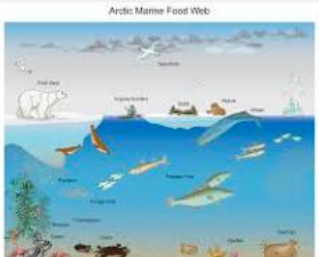


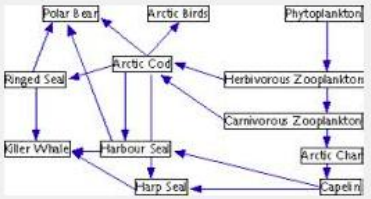


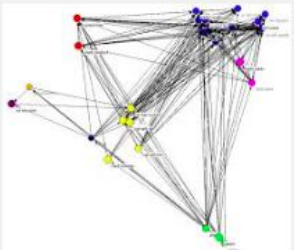




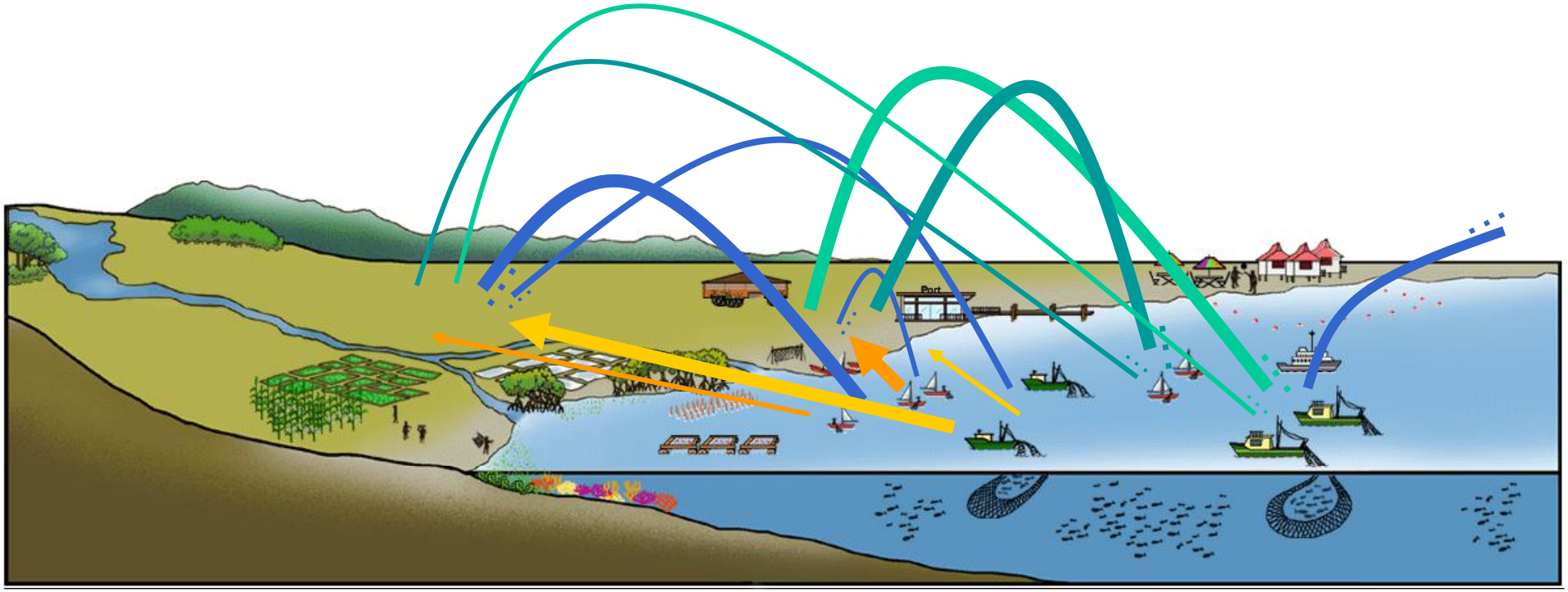








Connectivity and flows of goods and services creating complex relationships and dynamic interactions



Fish flow

Cash flow

Labor flow

What is governance?

Some basic definitions

World Bank's definition

Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.

Global Governance's definition

Governance refers to mechanisms, processes and institutions through which public and private sectors articulate their interests, exercise their rights, meet their obligations and mediate their differences in order to make decisions affecting society.

(Source: Rosenau, 1999)

Governance vs. Management

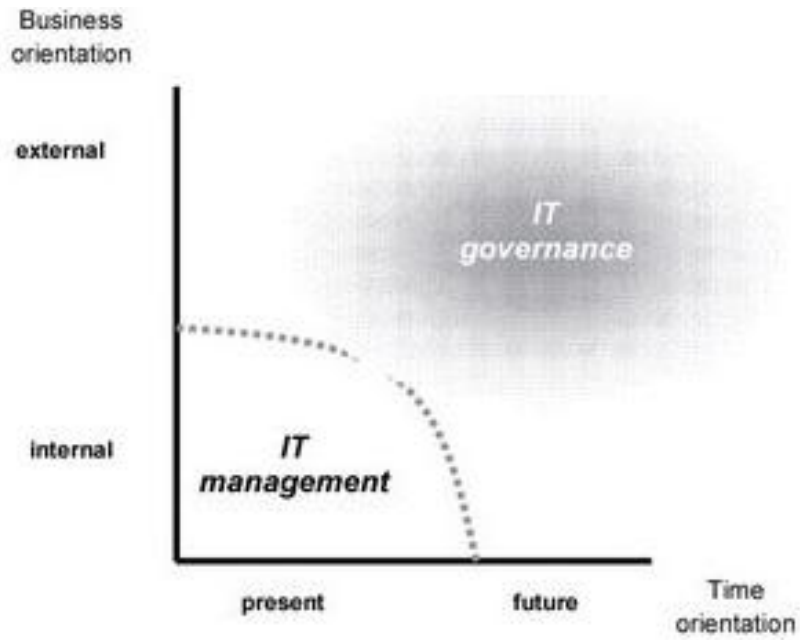
(1) Governance > management

(2) Governance > government





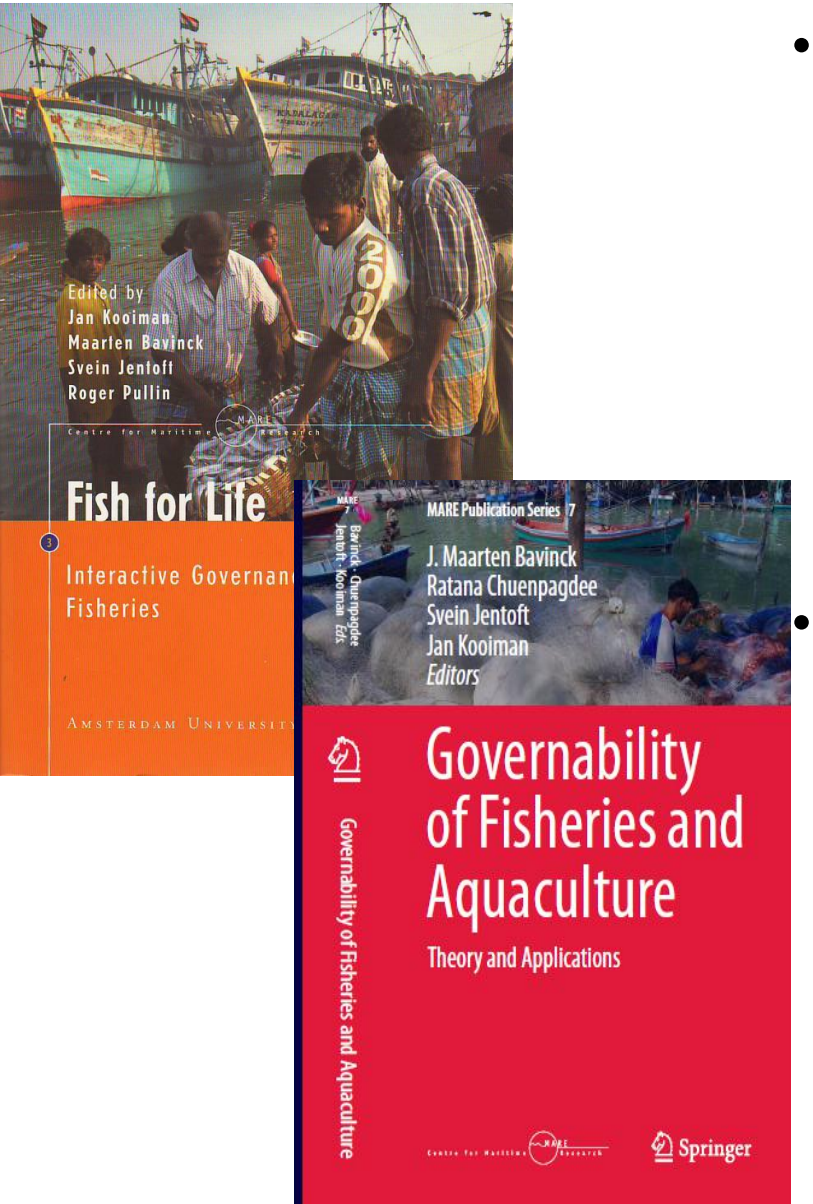
Governance vs. Management



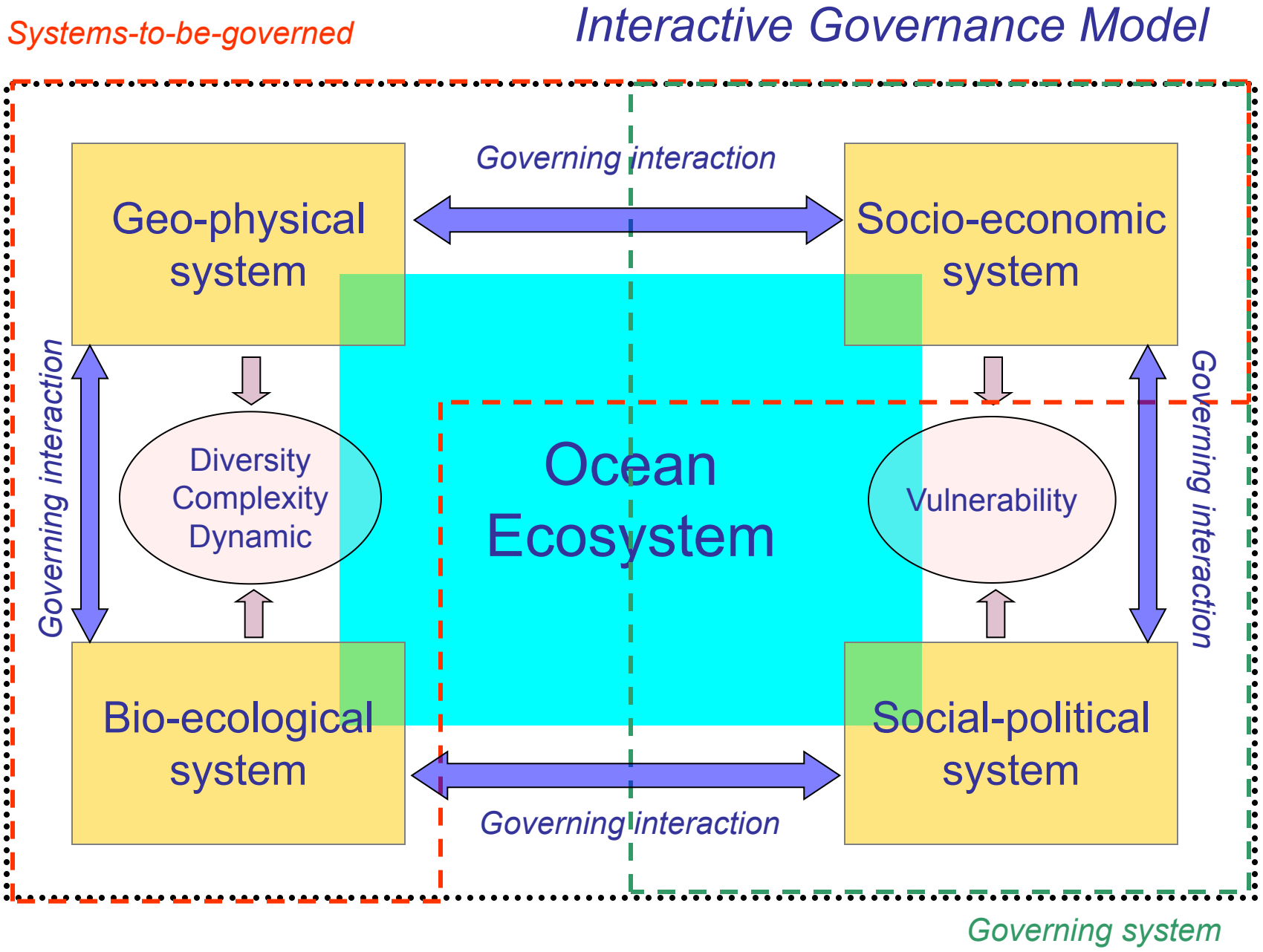
IT management is focused on the effective and efficient internal supply of IT services and products and the management of present IT operations. IT governance, in turn, is much broader and concentrates on performing and transforming IT to meet present and future demands of the business (internal focus) and business customers (external focus).

Peterson (2003)

Dealing with wicked problems using 'interactive governance'



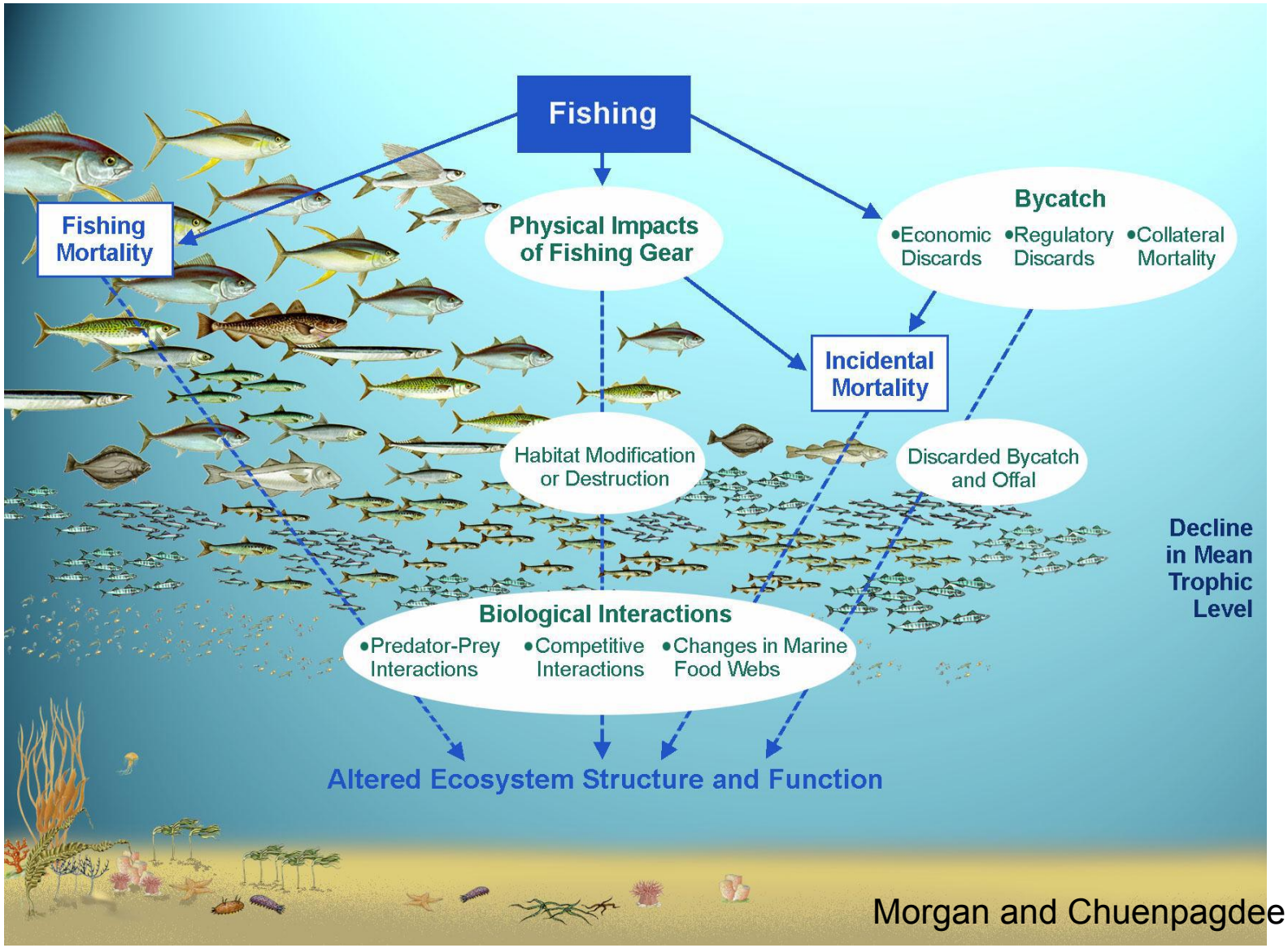
- *"The whole of public as well as private interaction taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them."* (Kooiman et al. 2005:17)
- Emphasizes interactions between these sectors in solving problems and creating opportunities (*1st order*), in the design and maintenance of institutions (*2nd order*), and in formulation and application of principles guiding those interactions (*meta-order*) (Chuenpagdee 2011).


Systems-to-be-governed
Interactive Governance Model
Governing interaction
Geo-physical system
Socio-economic system
Governing interaction
Governing interaction
Diversity
Complexity
Dynamic
Ocean Ecosystem
Vulnerability
Governing interaction
Bio-ecological system
Social-political system
Governing interaction
Governing system

Holistic approach to ocean governance

Fishing impacts on oceans:

Not fishing impact but ecosystem effects of fishing



Morgan and Chuenpagdee (2003)

International instruments promoting ecosystem approach and integrated management

IN OUR HANDS
EARTH SUMMIT '92

Agenda 21 (1992)

Ecosystem Approach and Integrated Management

- Provide for a cross-sectoral integrated policy and decision-making process, including national ICM guidelines, based in the precautionary approach, and systematic observation of the marine environment.
- Establish, or where necessary strengthen, appropriate coordinating mechanisms and legal and regulatory frameworks for integrated management
- Support the role of international cooperation and coordination on a bilateral, regional, or global basis in supporting and supplementing national efforts to promote integrated management and sustainable development of coastal and marine areas.

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT
JOHANNESBURG 2002

Johannesburg Plan of Implementation (2002)

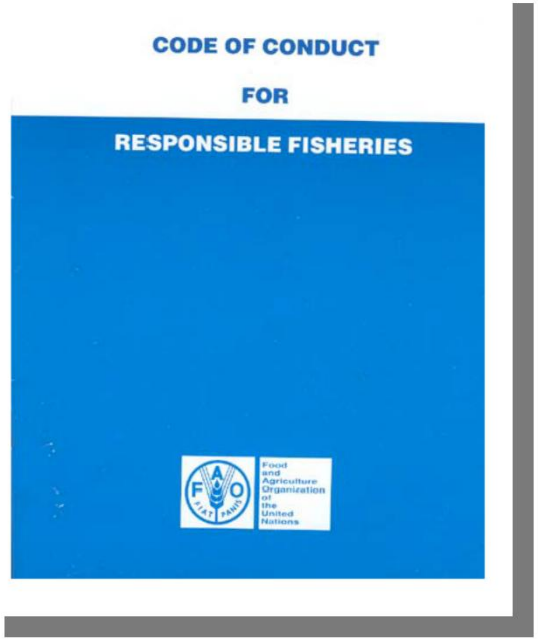
ECOSYSTEM APPROACH AND INTEGRATED MANAGEMENT

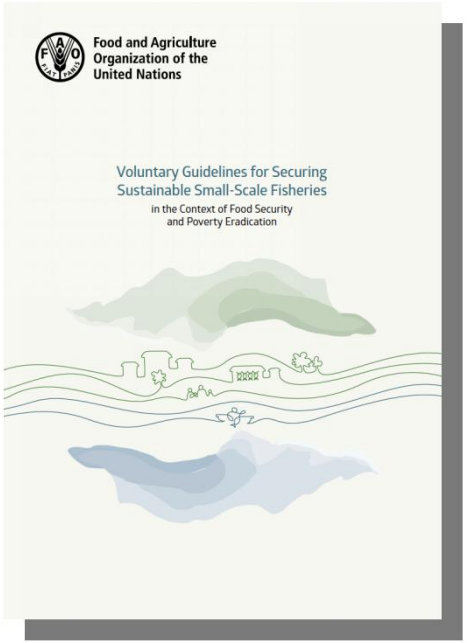
- Encourage the application of the ecosystem approach by 2010 for the sustainable development of the oceans, particularly the management of fisheries and conservation of biodiversity
- Promote integrated coastal and ocean management at the national level and encourage and assist countries in developing ocean policies and mechanisms on integrated coastal management
- Assist developing countries in coordinating policies and programmes at the regional and sub-regional levels aimed at conservation and sustainable management of fishery resources and implement integrated coastal area management plans, including through the development of infrastructure

Goal 14: Conserve and sustainably use the oceans, seas and marine resources

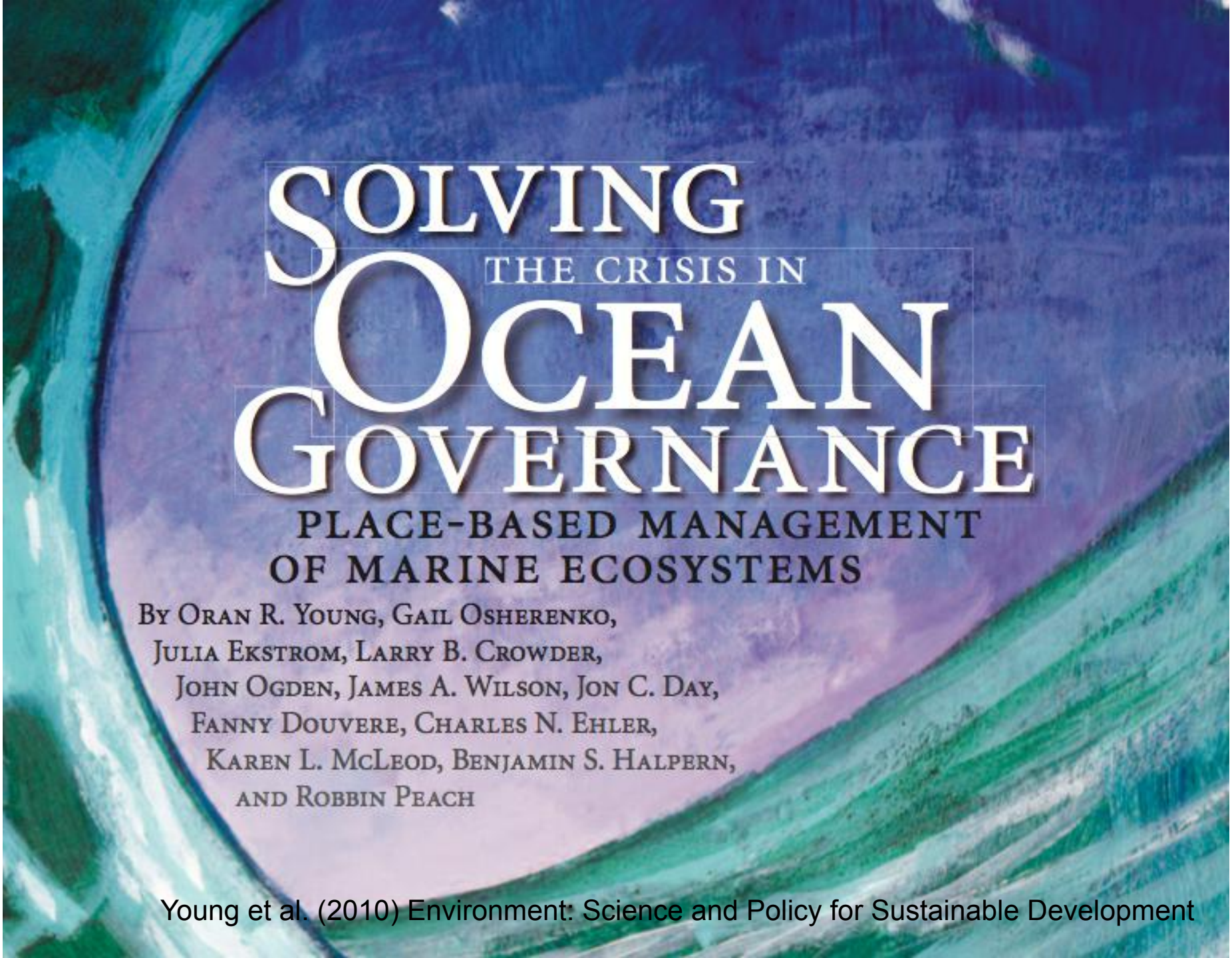
Specific instruments in fisheries

- Twenty years on from its adoption, the Code of Conduct for Responsible Fisheries remains an internationally accepted benchmark and framework for the sustainable use of aquatic resources.





New integrated tools for ocean governance



Young et al. (2010) Environment: Science and Policy for Sustainable Development

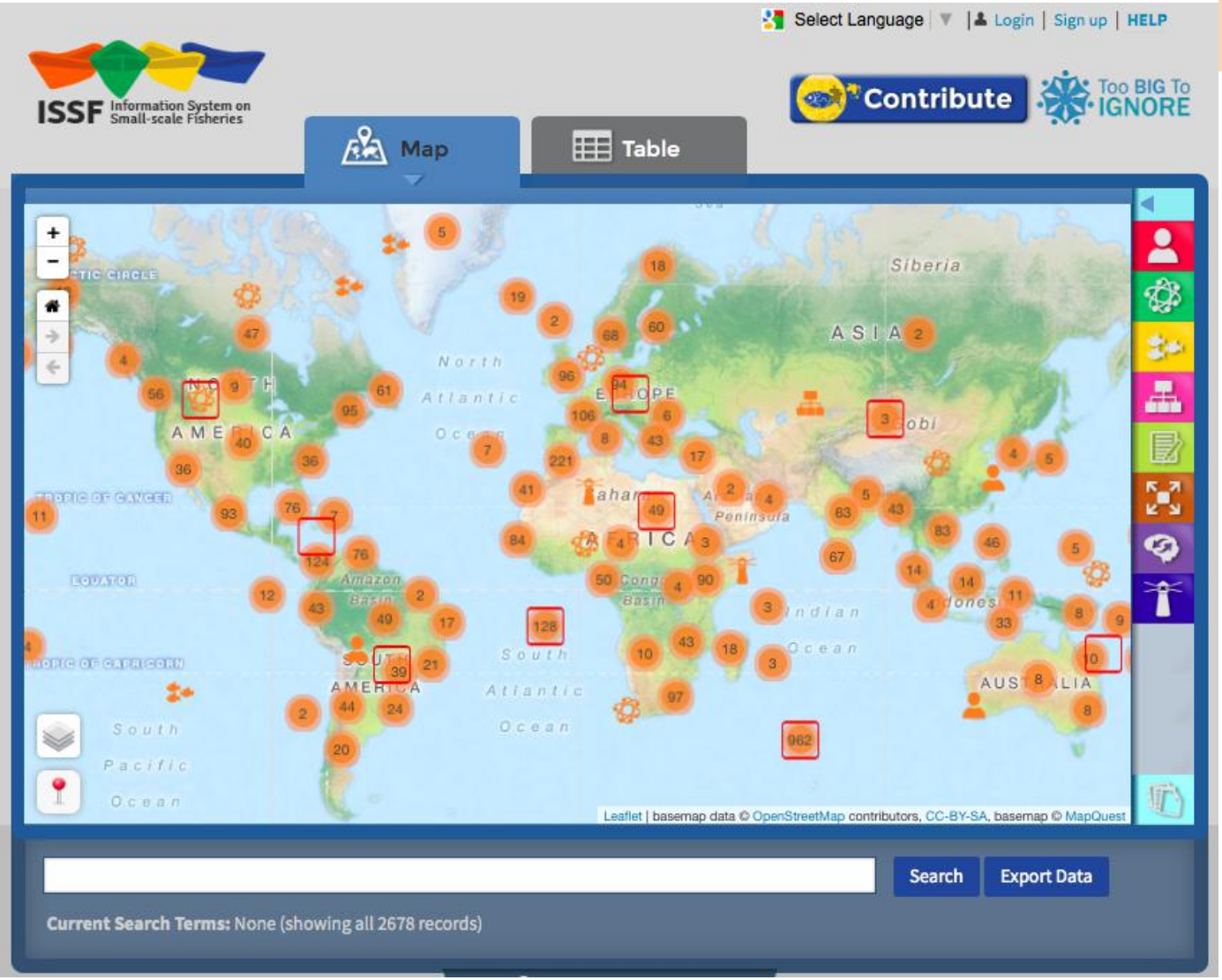
Place-based management for ocean governance

- “A strategy that calls for integrated management of the full suite of human activities occurring in spatially demarcated areas identified through a procedure that takes into account biophysical, socioeconomic, and jurisdictional considerations” (Young et al. 2010, p. 4)

Innovative ways to enhance knowledge about the oceans

Information System on Small-scale Fisheries (ISSF)

Open, web-based, interactive, crowd-sourced



Issf.toobigtoignore.net

Who's Who in SSF research

State-of-the-Art

SSF Profile

SSF Organizations

SSF Capacity needs

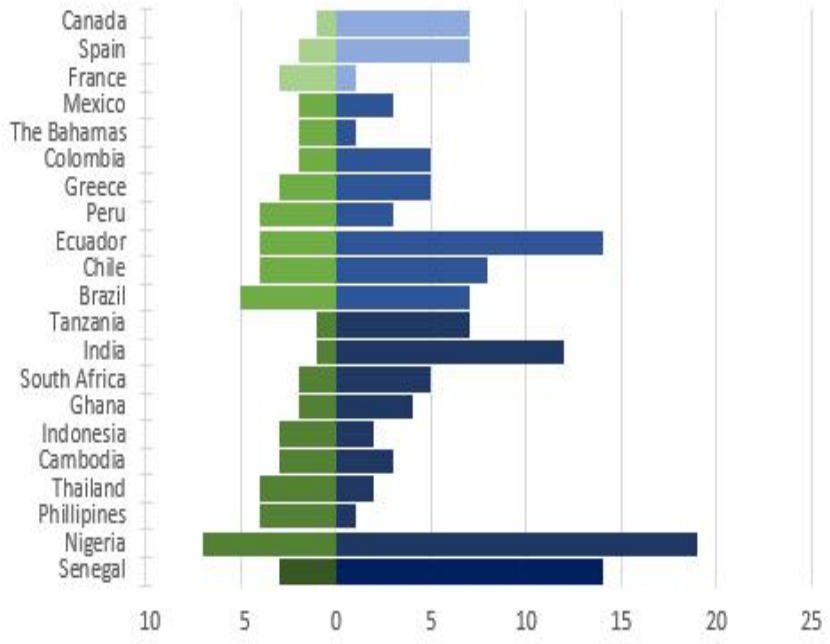
SSF Experiences

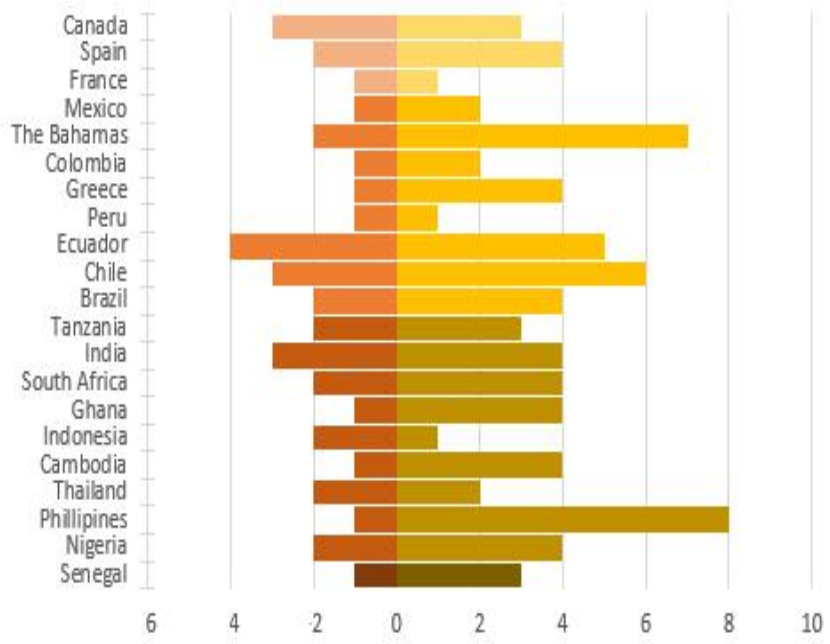
SSF Case study

SSF Guidelines

Too BIG To IGNORE
Global Partnership for Small-Scale Fisheries Research

Small-scale fisheries are complex systems (ecologically and socially)





Ecosystem type

Species

HDI

HDI

Vessel type

Gear type

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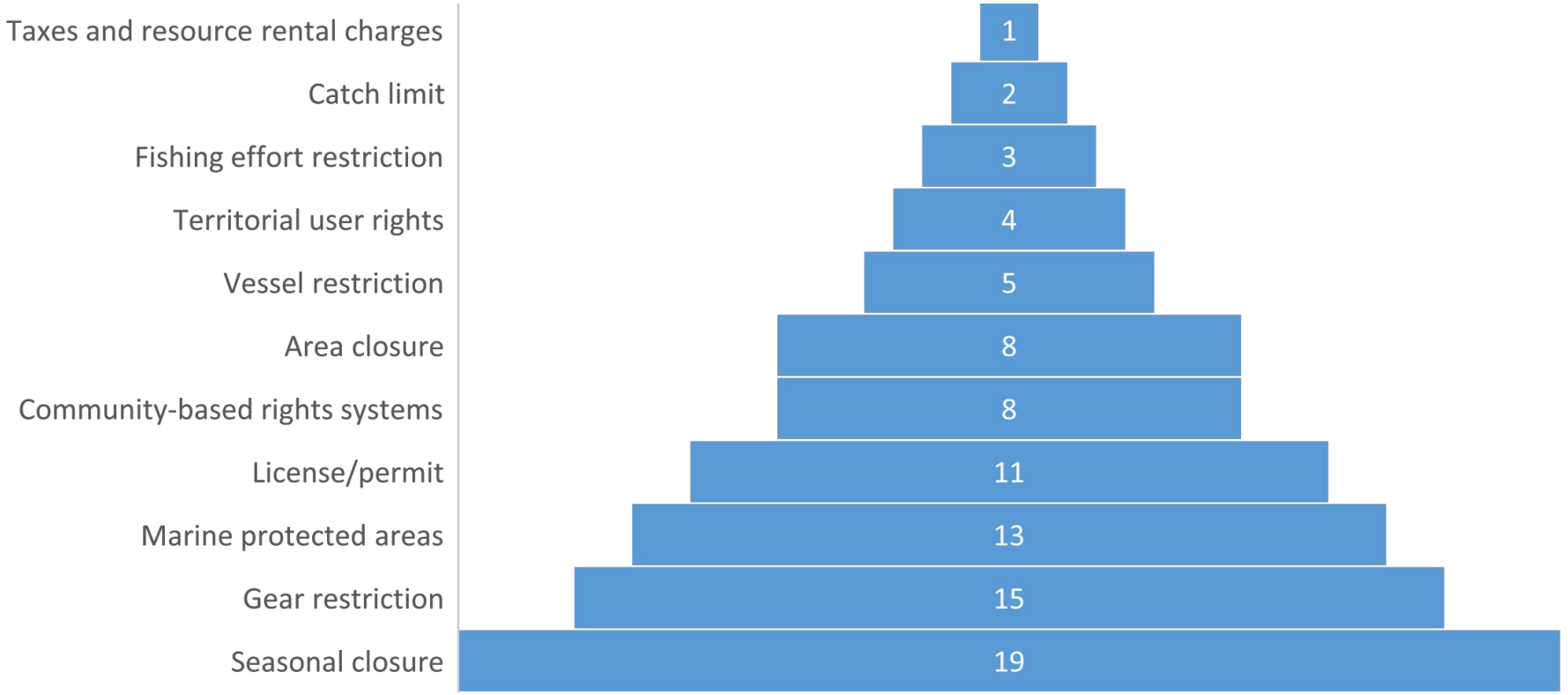
Key rules and regulations used to manage SSF in Asia-Pacific



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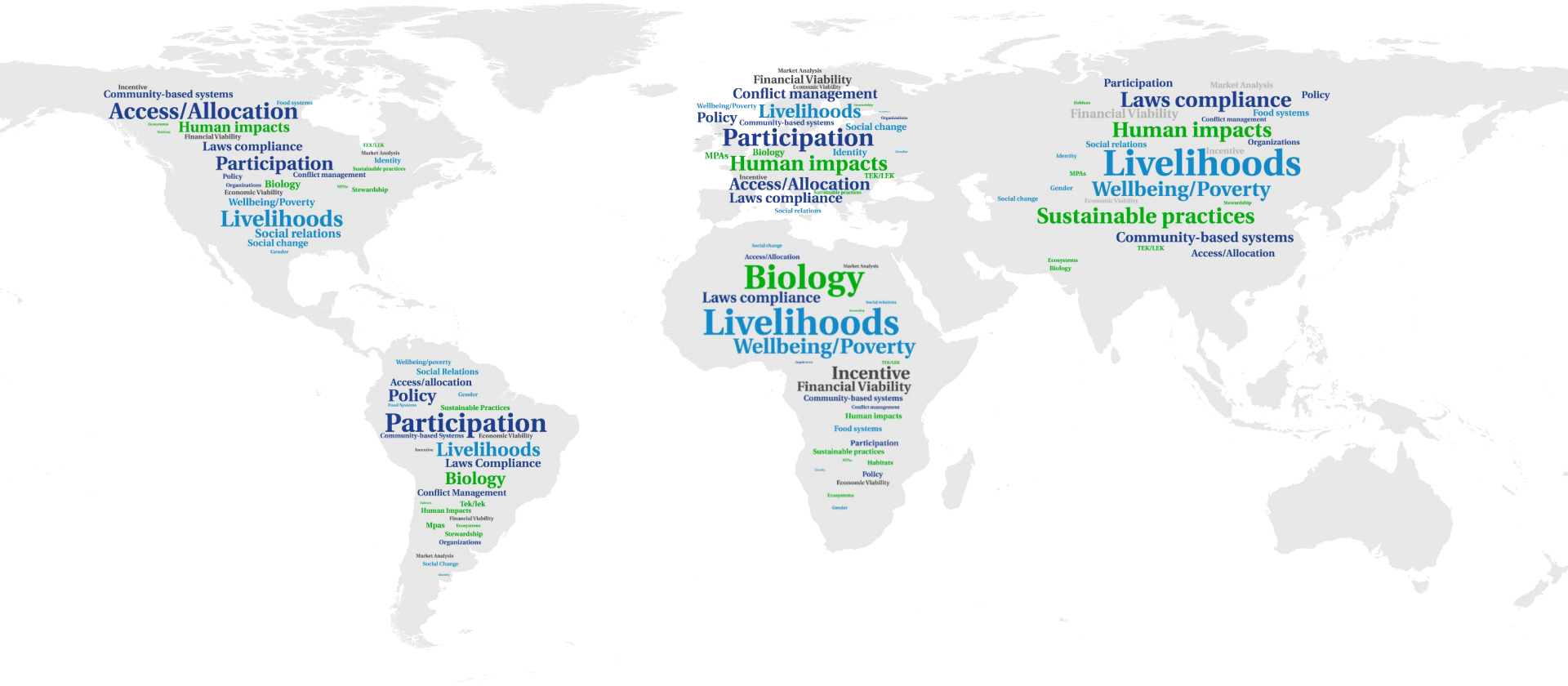
Based on 32 profiles in ISSF *(Rocklin 2016)*

ISSF Information System on Small-scale Fisheries

Many small-scale fisheries face several issues affecting their livelihoods and viability



(Rocklin 2016)

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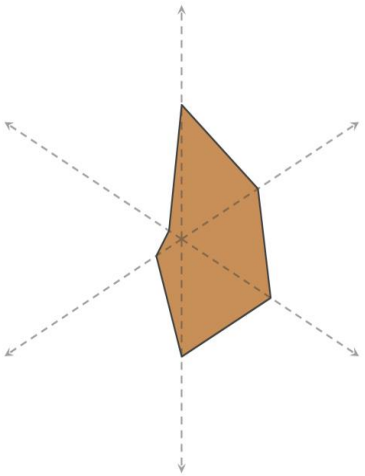
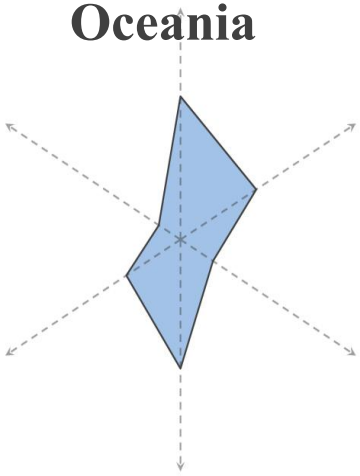
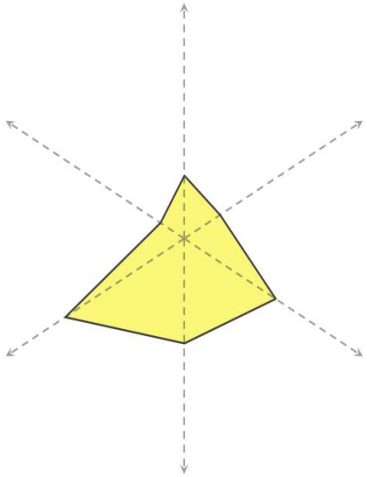
Africa



Asia and Oceania



Europe



Focus of SSF research in each region

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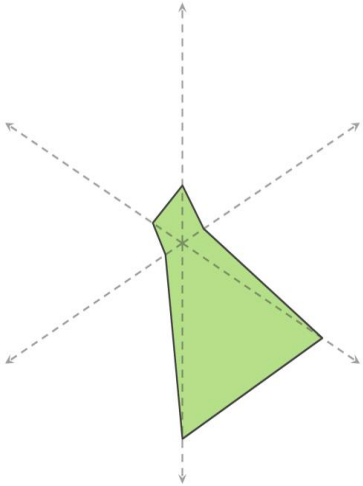
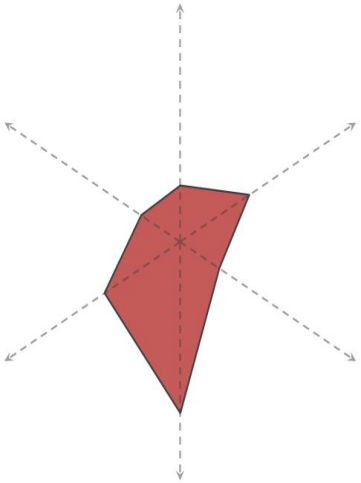
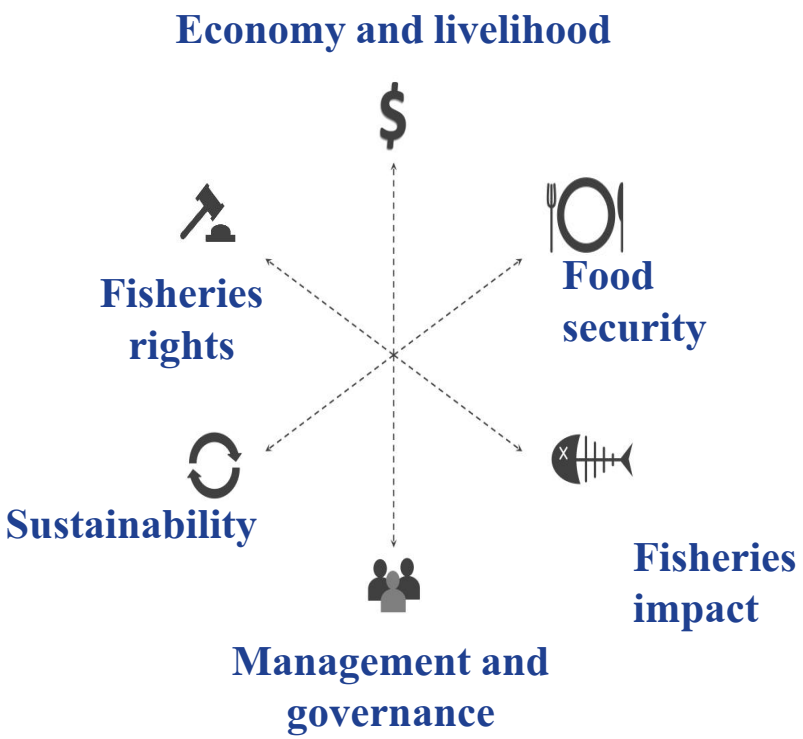
Latin America and Caribbean



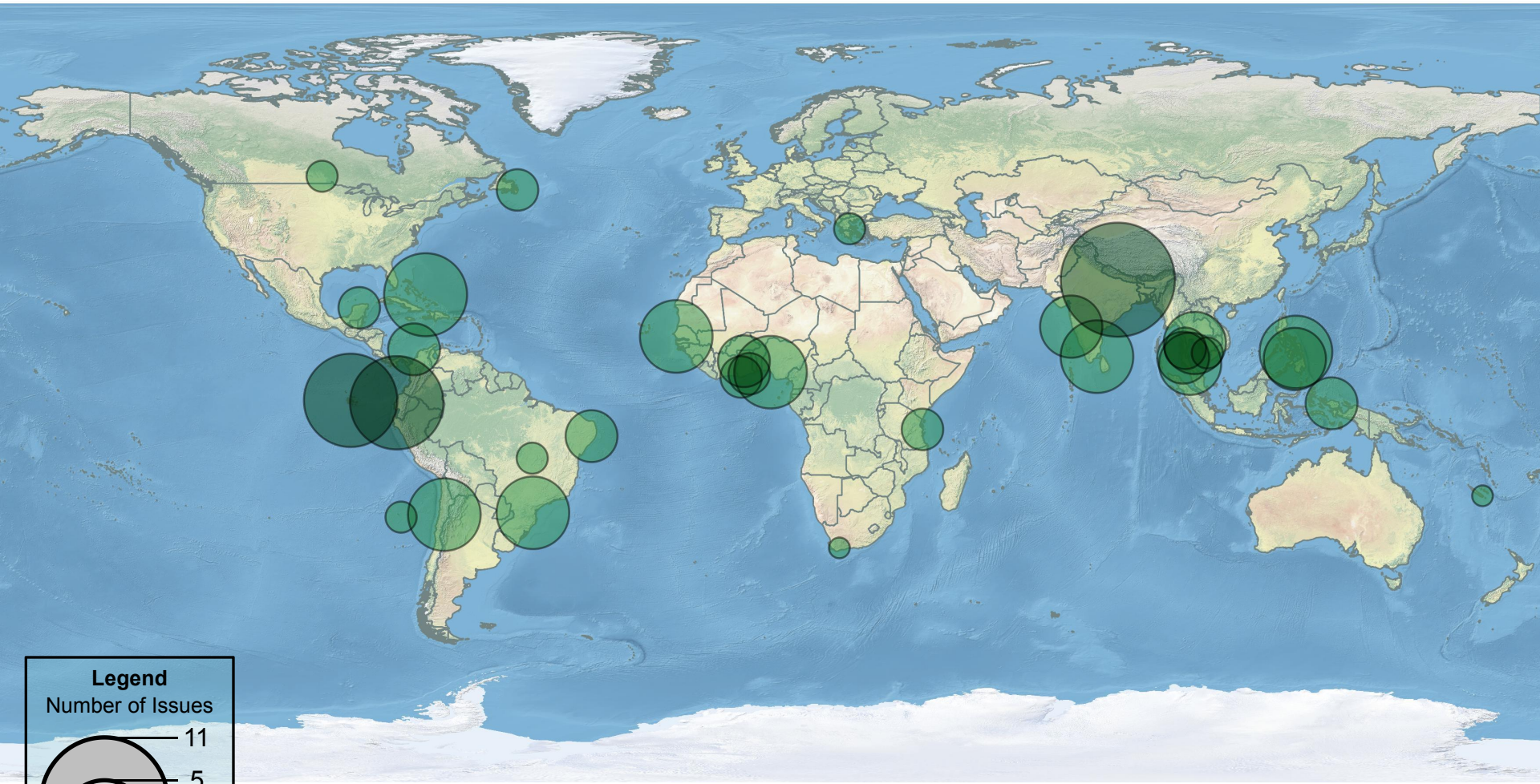
USA and Canada





(Rocklin 2016)

Many small-scale fisheries face several issues affecting their livelihoods and viability



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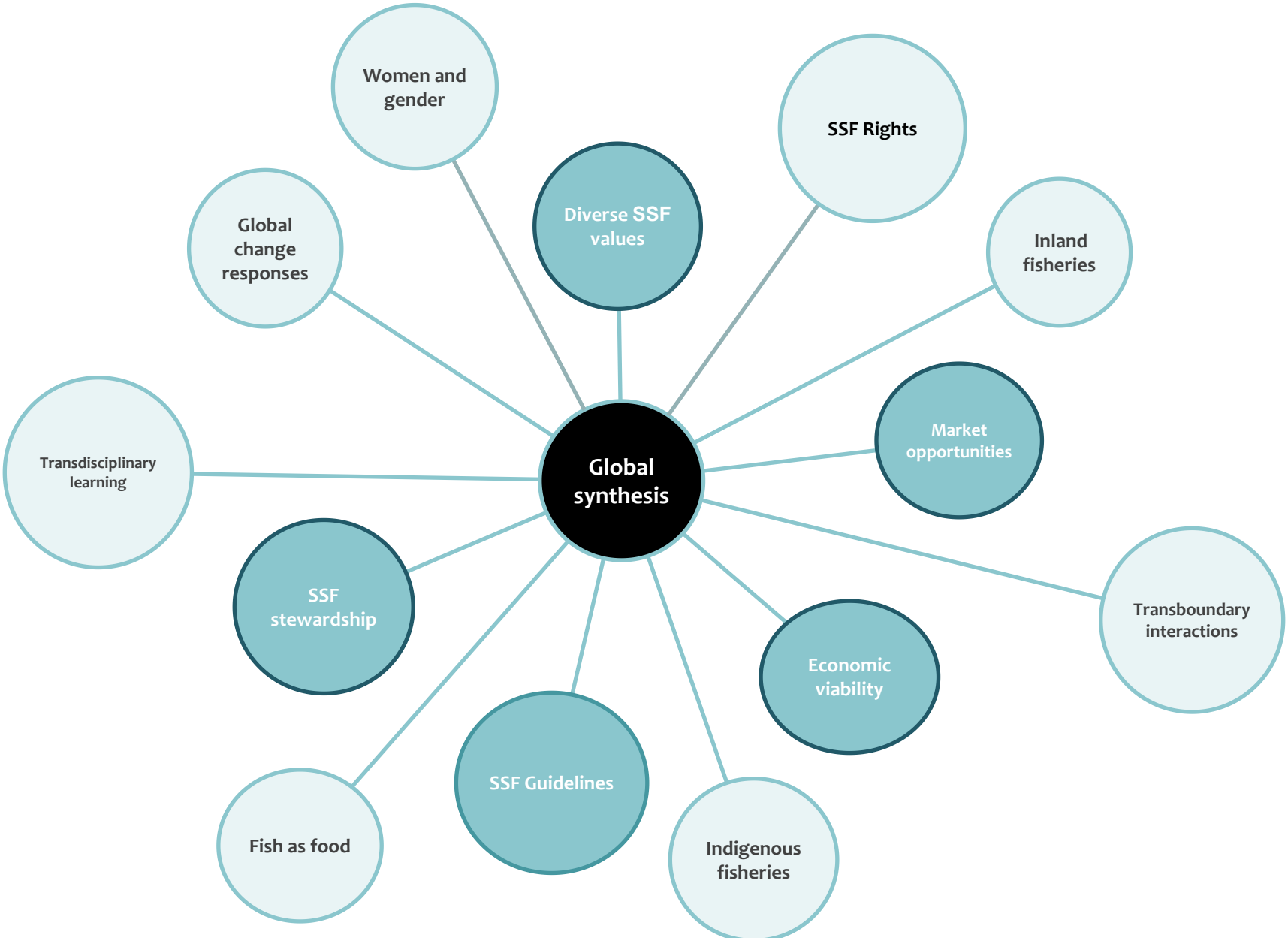
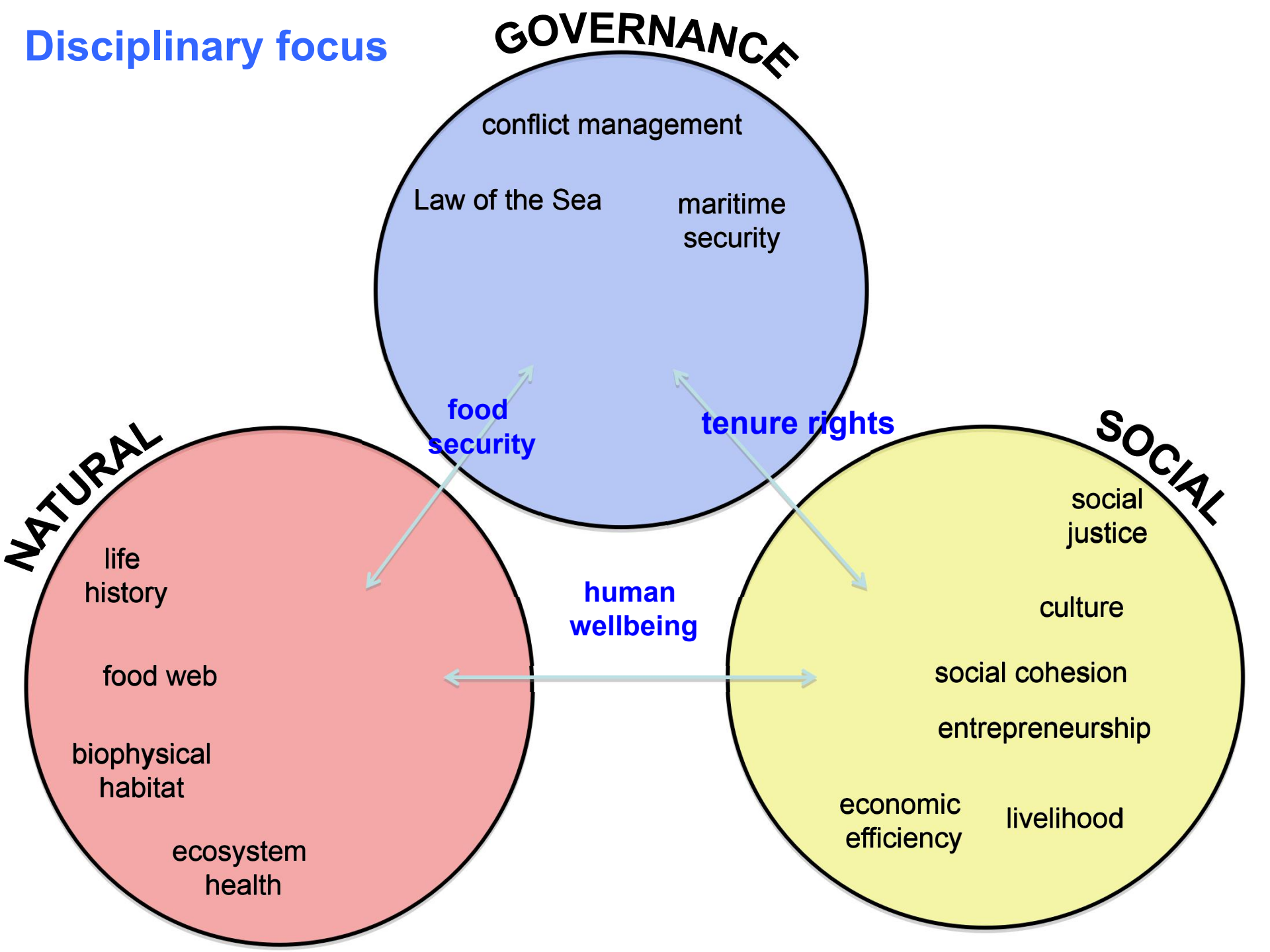
Holistic approach to research and learning

“Transdisciplinary ocean governance”

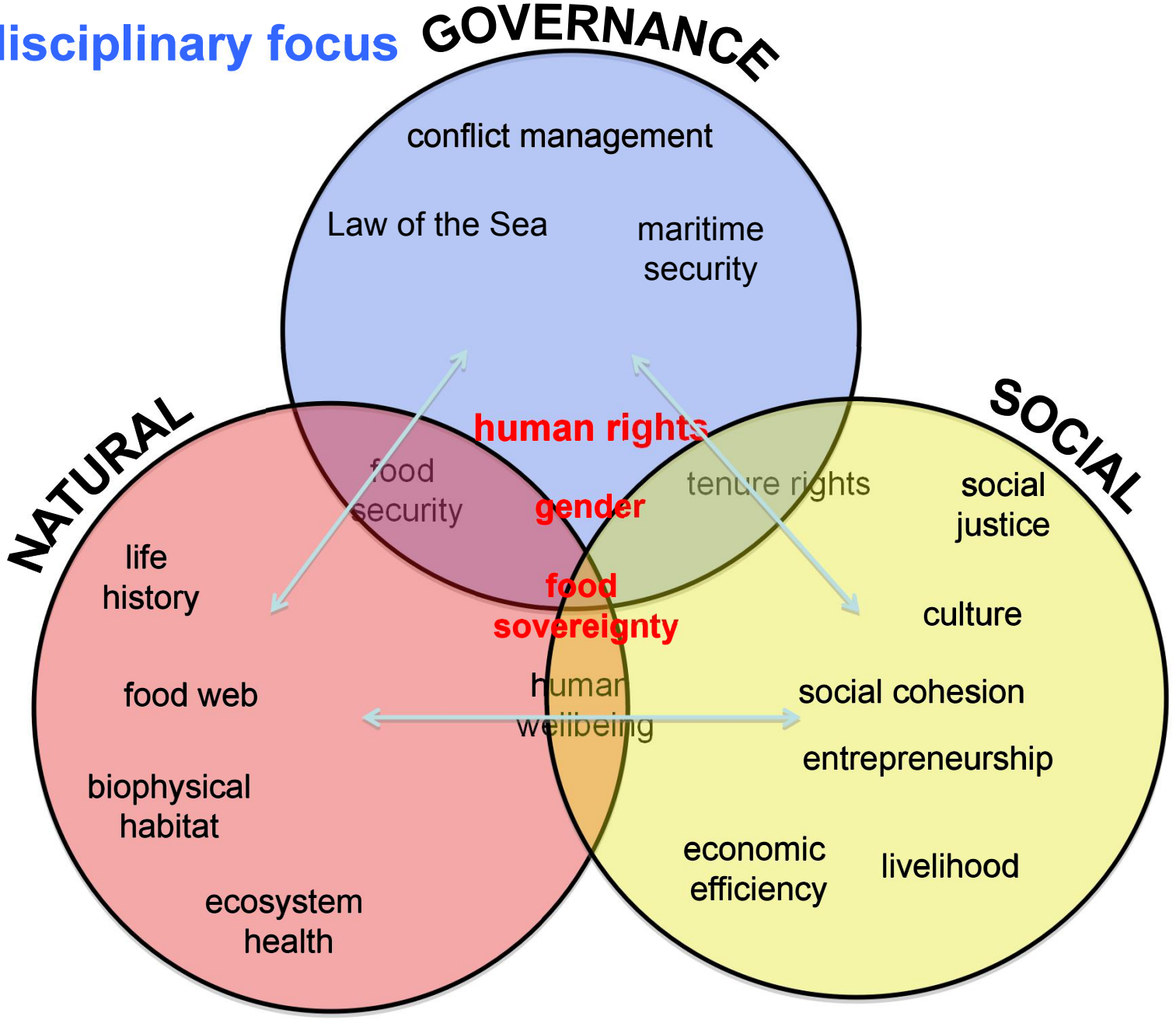
Too Big To Ignore research clusters covering multiple aspects of SSF



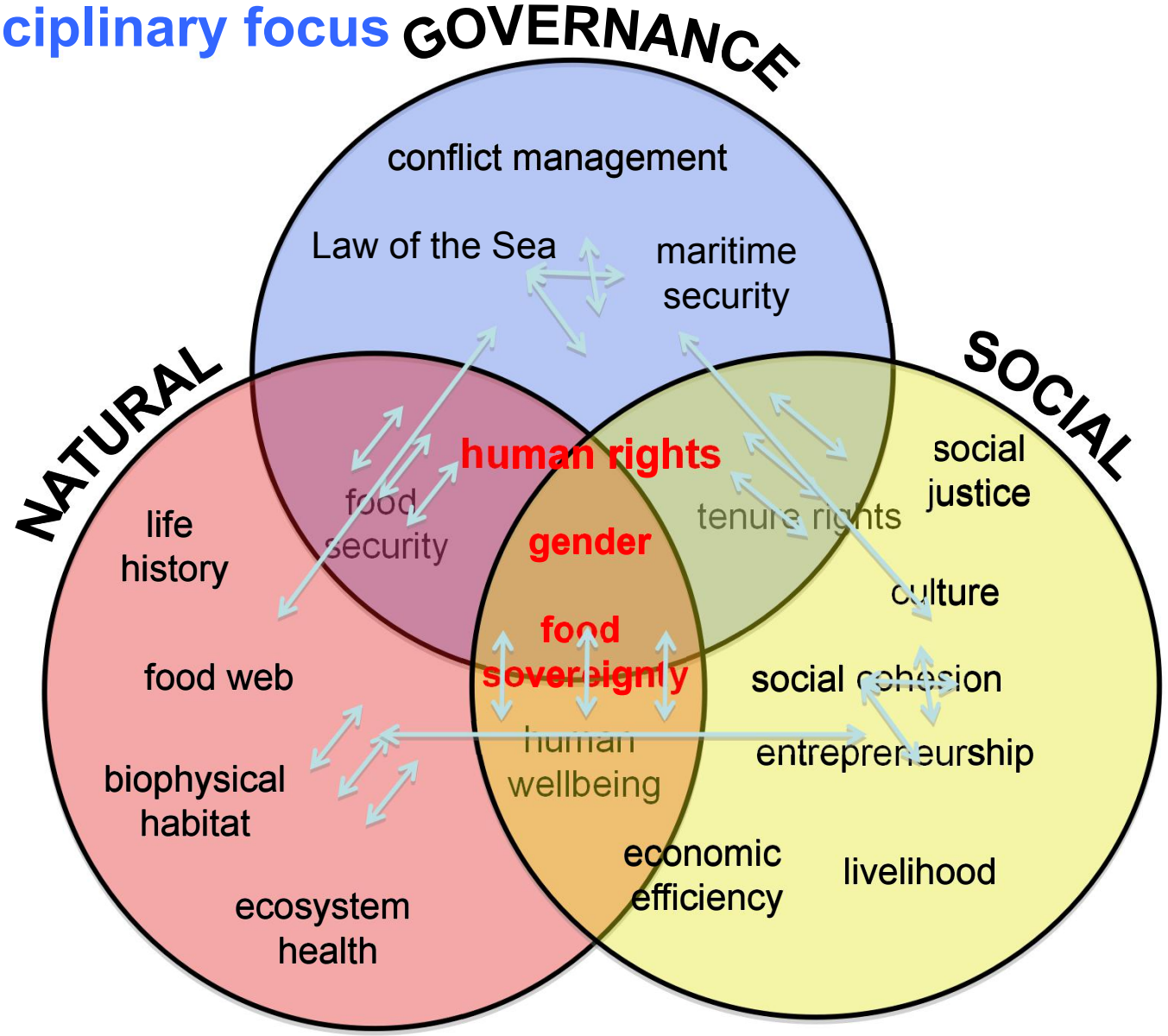
Disciplinary focus

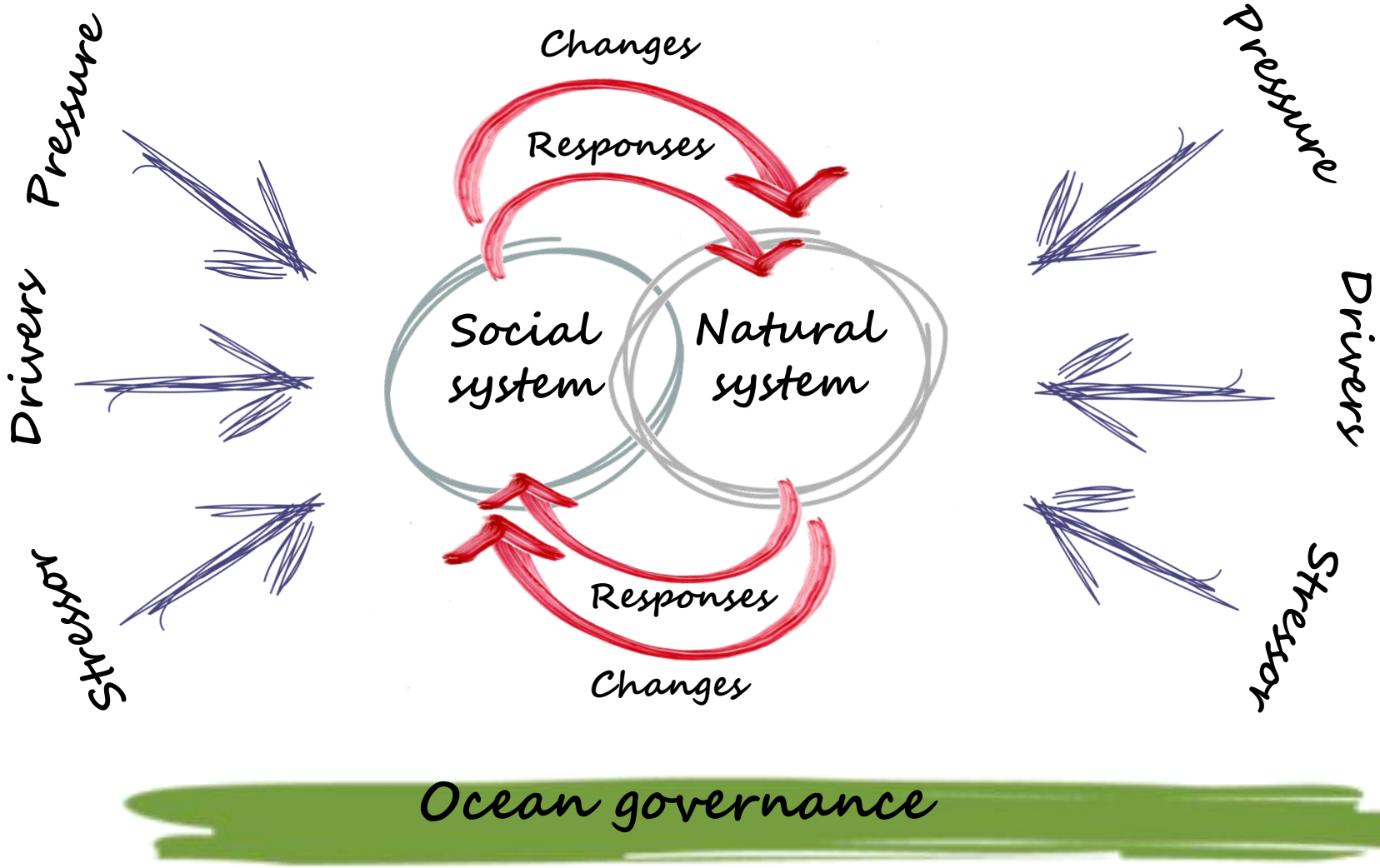


Interdisciplinary focus



Transdisciplinary focus





(Adapted from Muntoni 2016)

Thank you!

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