

Economics of (un-)sustainability in global fisheries

U. Rashid Sumaila

Fisheries Economics Research Unit
Sea Around Us project
UBC Fisheries Centre

r.sumaila@fisheries.ubc.ca



World Oceans Day Panel Presentation, United Nations,
Headquarters, New York, June 8, 2010



Outline of talk

- Why are ocean fisheries considered to be unsustainable?
- Why should we strive for sustainability in ocean fisheries?
- What are the elements of sustainability in ocean fisheries?

Overview of sustainability

Origins of sustainability

- Many would trace the origins of sustainability to the Brundtland Report: WCED (1987):
 - development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs".
- But there is a longer history ...

“The Earth and the fullness of it belongs to every generation, and the preceding one can have no right to blind it up from posterity”
(Adam Smith, 1766 Lecture on Jurisprudence).

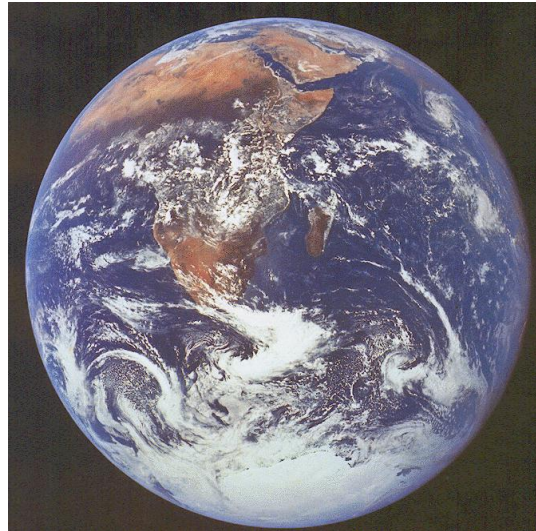


Photo: NASA

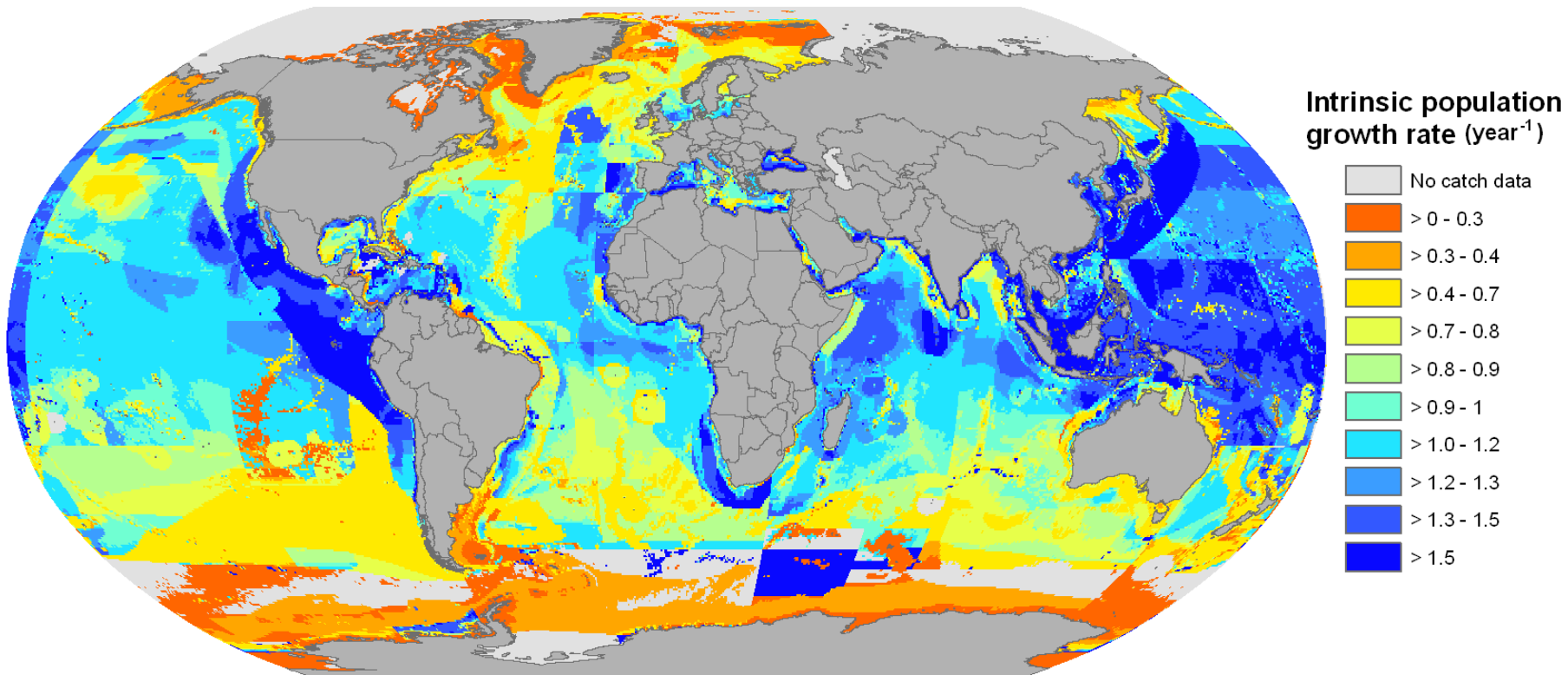
The sustainable development challenge

- How to reconcile society's development goals with the planet's environmental limits over the long term:
 - Fish protein;
 - Jobs and income;
 - Profits.

Ocean fish sustainability

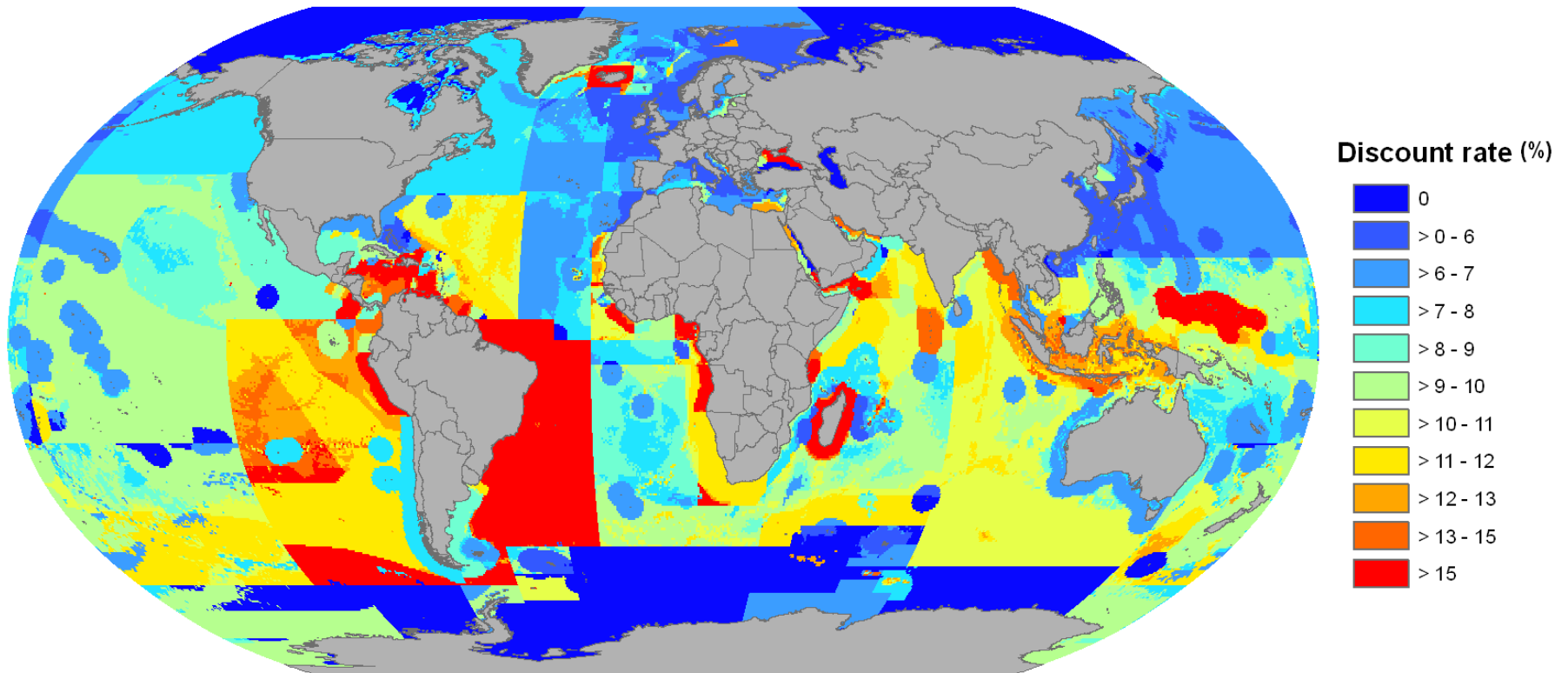
- Sustainability focuses on the dynamic interactions between nature and society – in our case, the interaction between fish & fishers:
 - Example: how vulnerable are different parts of the ocean?

Intrinsic growth rate as indicator of vulnerability



Sumaila, Cheung et al. (in prep.)

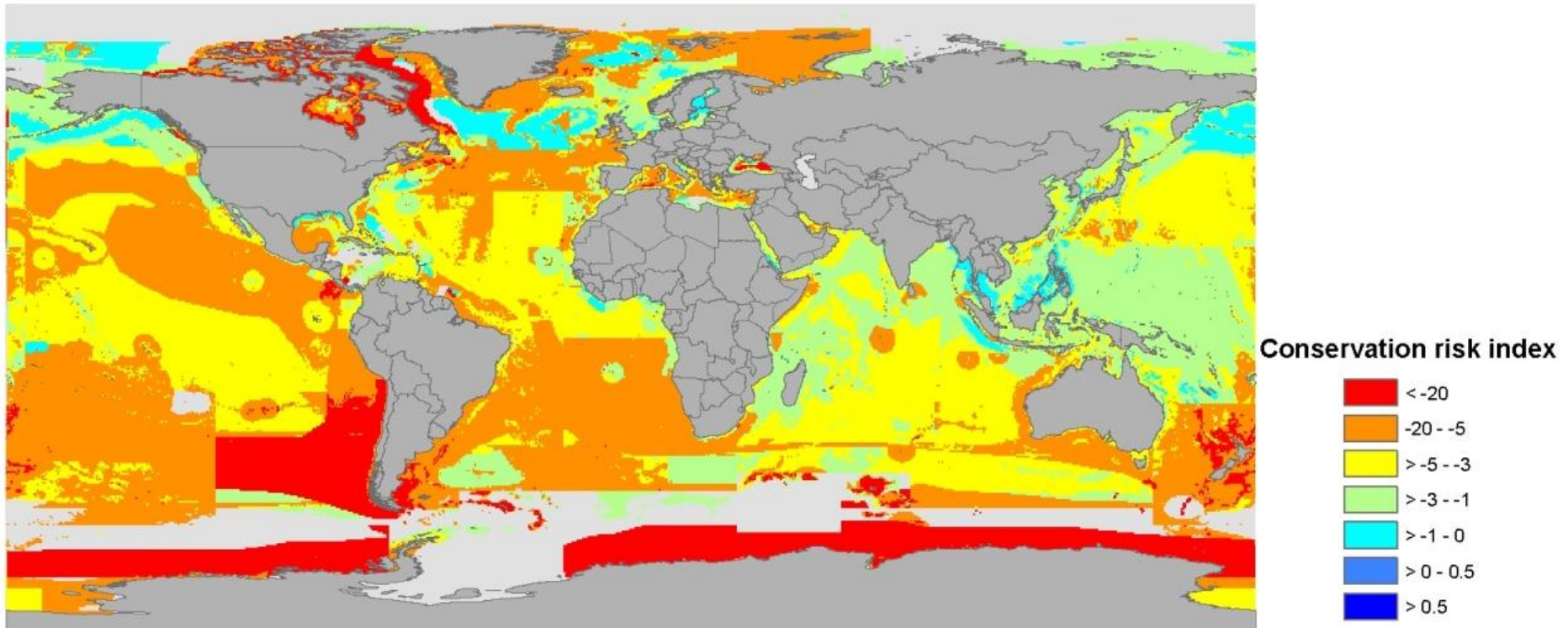
Official discount rates as indicator of vulnerability



Sumaila, Cheung et al. (in prep.)

Conservation indices for all fish species, globally

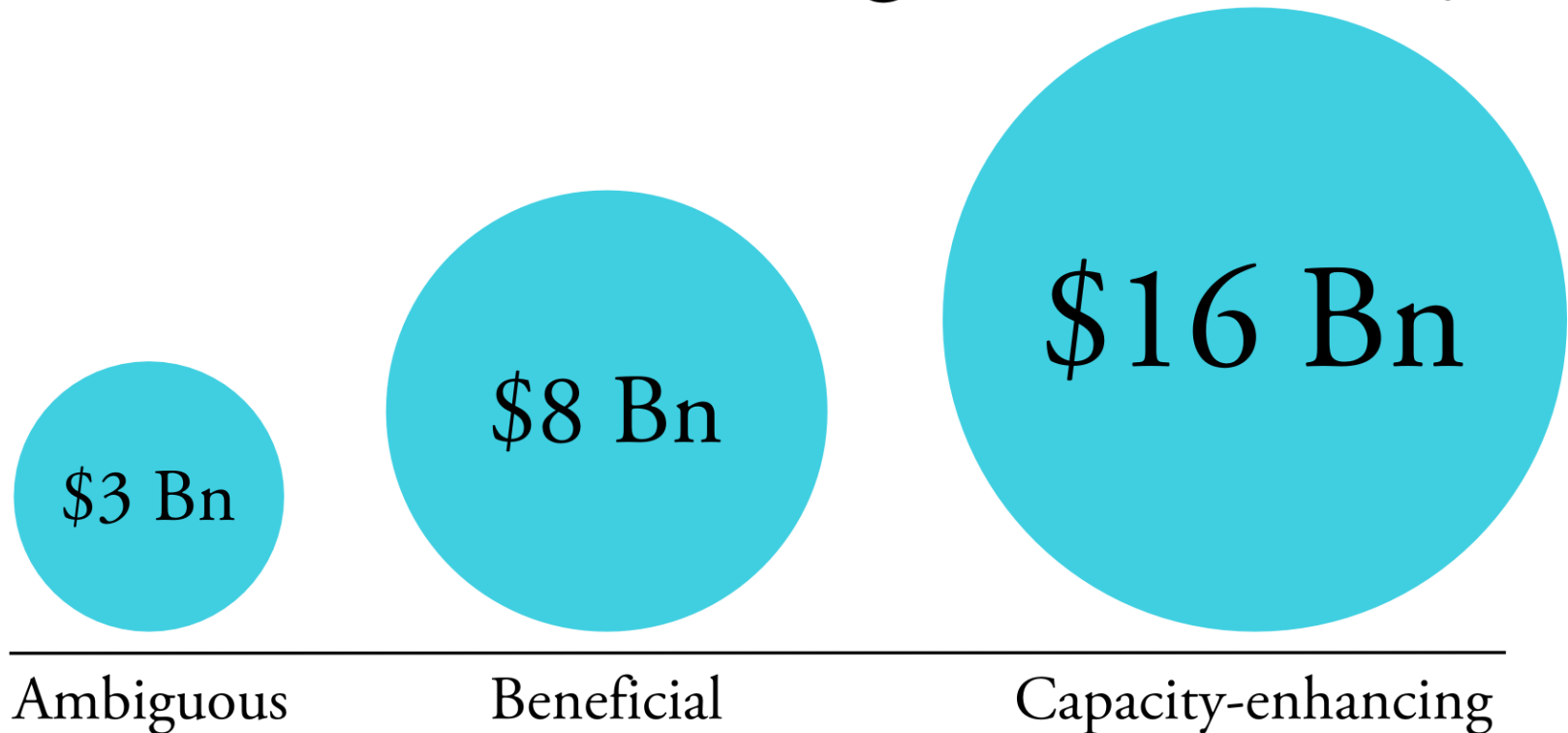
- Includes all fish species (assumed private discount rate).



Ocean fish sustainability

- Sustainability pays attention to how social and economic change shape the environment and how the environmental change shapes society;
 - Example: fisheries subsidies: payments by governments to fishing sector.

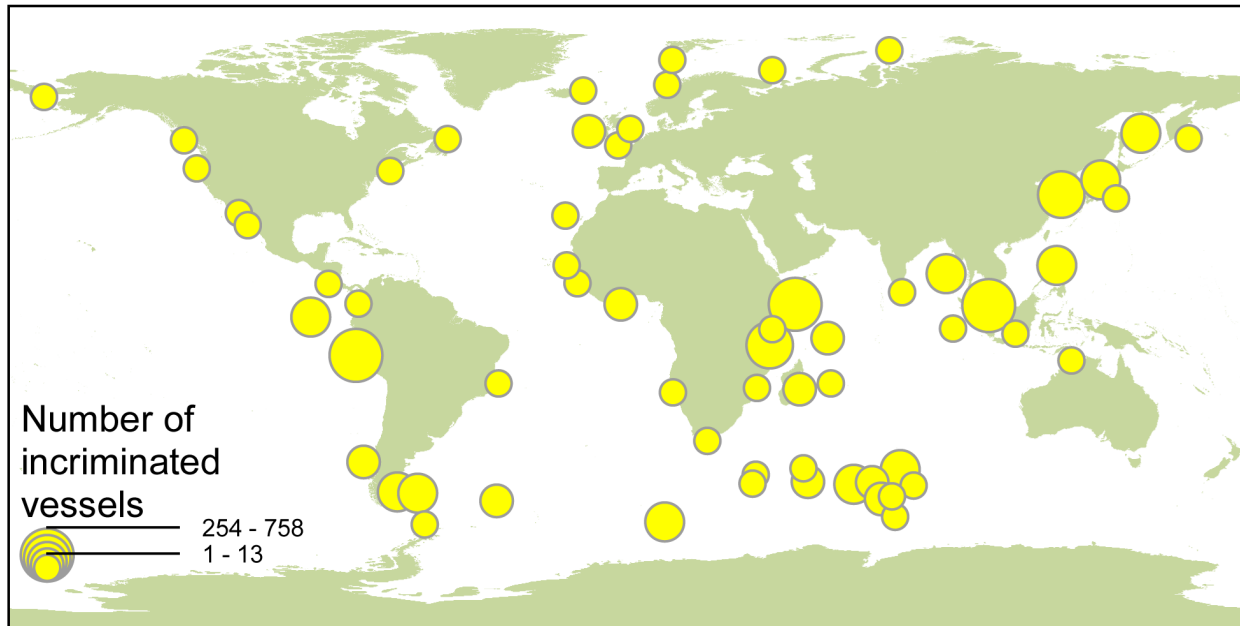
Subsidies in the global fishery



Ocean fish sustainability

- Sustainability is problem-driven, with the goal of creating and applying knowledge in support of decision-making for sustainable development;
 - Example illegal fishing.

Number of incriminated vessels fishing illegally between 1980 and 2003



Costs and benefit aspects of risks inherent in IUU activity

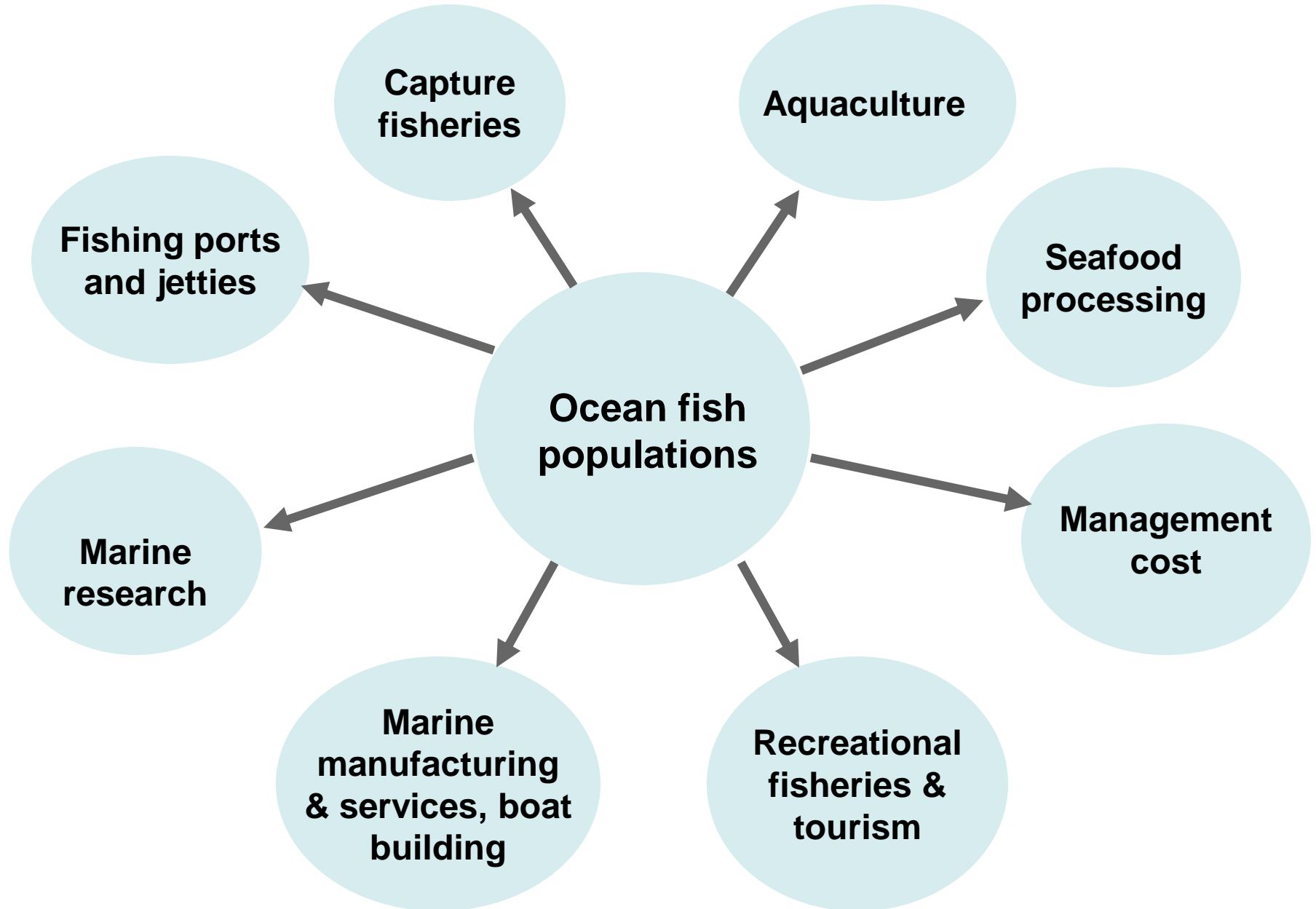
Arresting Country	Fishery	Expected Revenue (USD)	Expected Penalty (USD)	Total Cost (USD)	Total Cost / Expected revenue
Australia	Patagonian toothfish	504 000	87 000	526 091	1.04
Japan	Crab	38 256	1 483	31 131	0.81
Mexico	Shrimp	22 060	1 091	16 428	0.74
Russia	Alaska pollack	8 818	234	4 539	0.51
Mauritius	Patagonian toothfish	352 000	480 000	786 667	2.23

Ocean fish sustainability

- Sustainability is grounded in the belief that for the knowledge of nature-society interaction to be truly useful, they have to be ‘co-produced’ through close collaboration between scholars, managers, fishers, industry, and policy makers at different scales:
 - Example this meeting.

The need to strive for sustainability

Ocean fisheries activities



Input – output results

- Fisheries are a primary or ‘base’ industry
 - Source of resources out of which much economic activity grows.
- How much economic activity throughout the economy is sourced from fisheries output?

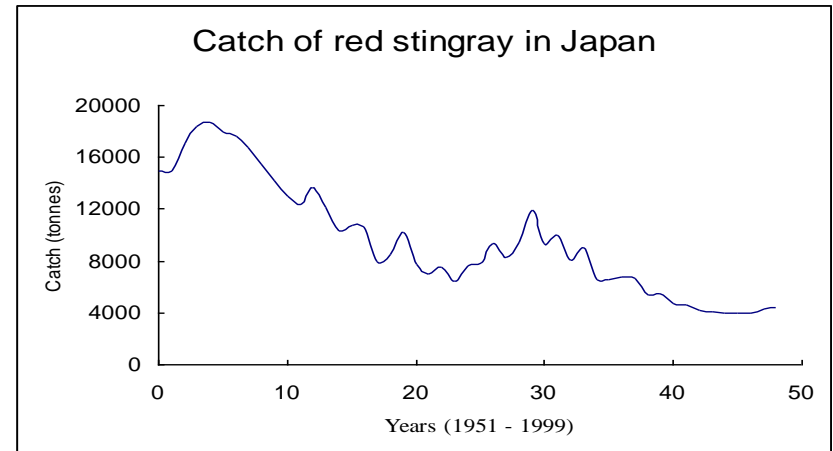
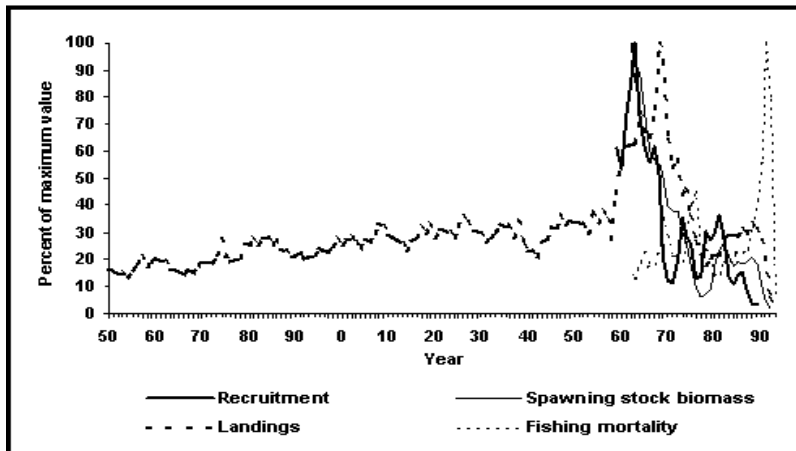
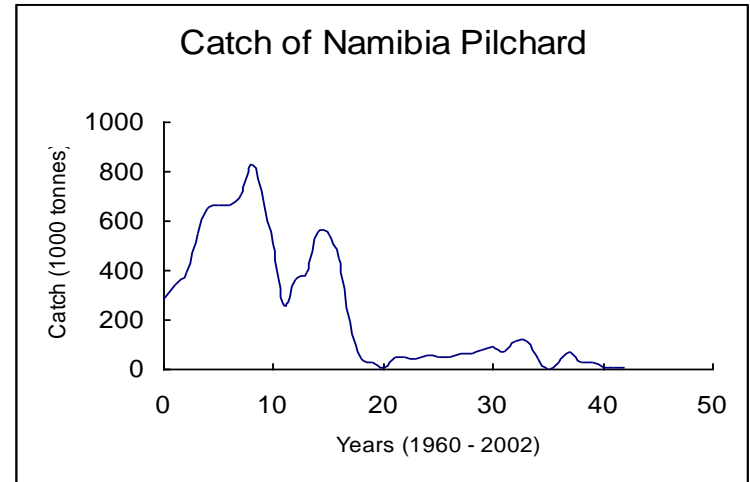
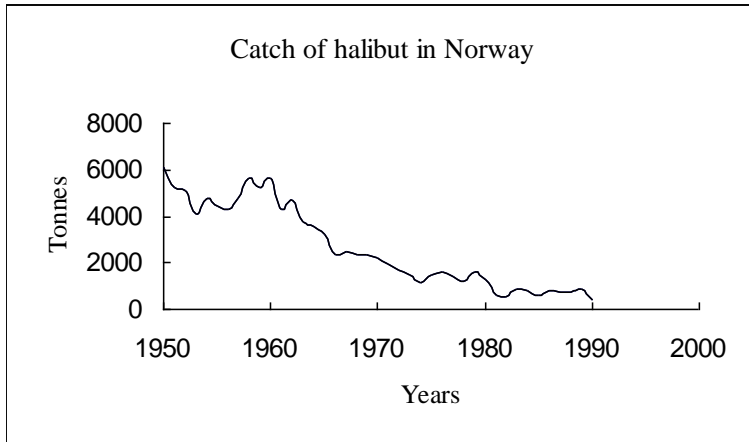
Economic impact of world fisheries output

	Landed Value (\$ billions)	Economic Impact (\$ billions)	Average Multiplier
Africa	2	5	2.59
Asia	50	133	2.67
Europe	11	36	3.12
S. & C. America	7	15	2.05
N. America	8	29	3.52
Oceania	5	17	3.27
World Total	84	235	2.8

Income effect of world fisheries output

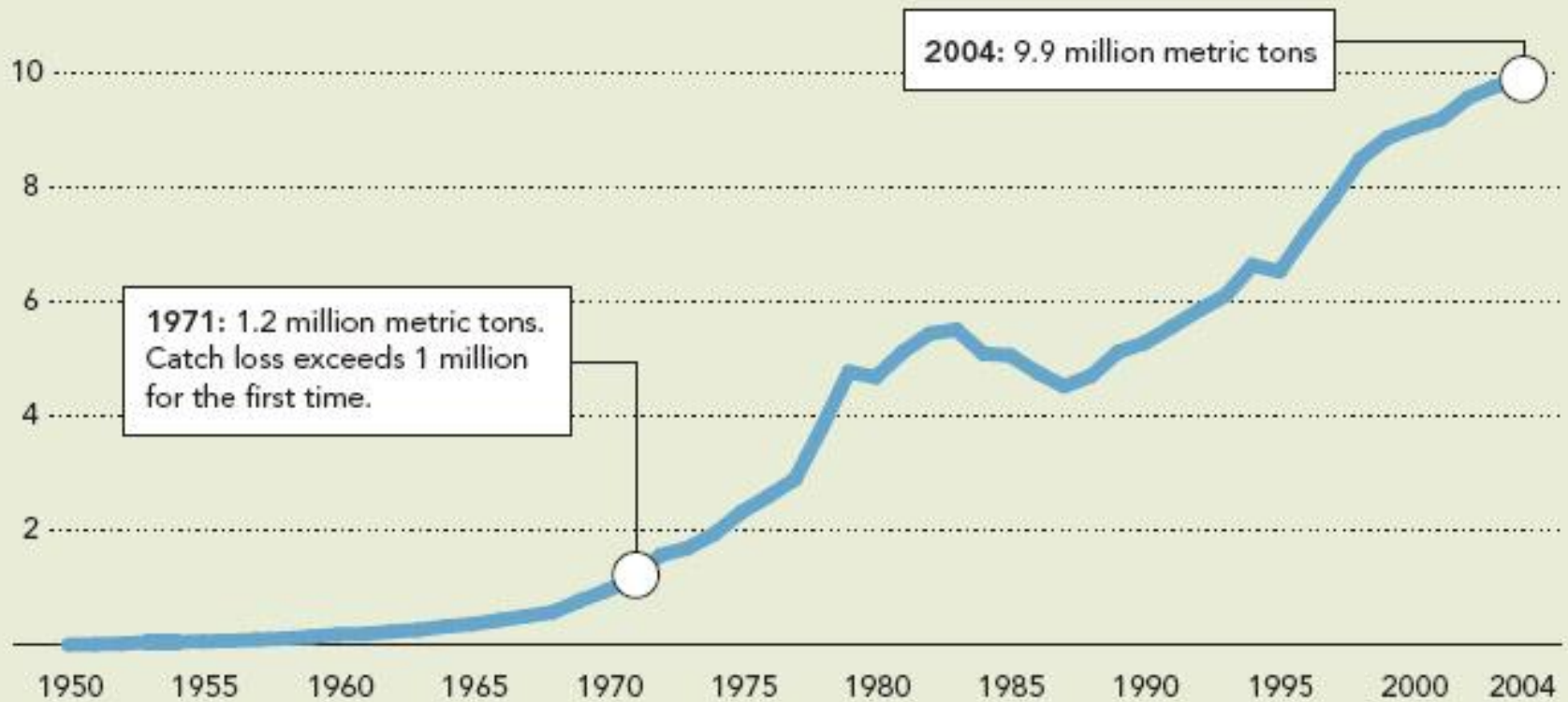
	Landed Value (\$ billions)	Income Effect (\$ billions)	Average Multiplier
Africa	2	1	0.62
Asia	50	35	0.71
Europe	11	9	0.76
S. & C. America	7	4	0.56
N. America	8	10	1.22
Oceania	5	4	0.73
World Total	84	63	0.75

Catch data: individual fisheries



Global Potential Catch Loss (in million tonnes)

Using midlevel criteria, the authors declared a species-EEZ pair as overfished if, after the year of maximum catch, the species stock fell to 50 percent of its maximum level for at least 10 successive years, or 15 in total from 1950 to 2004.



Food security

implications of overfishing

- Our analysis shows that eliminating overfishing could create food to avert undernourishment for about 20 million people mostly in countries with very high levels of undernourishment in their populations (e.g., Liberia, Sri Lanka, Grenada, Guatemala).

Elements of sustainability

Elements of sustainability in fisheries

- Recognize that there are limits to the amount of fish that the ocean can provide;
- Acknowledge that rebuilding overfished stocks is needed so they can deliver maximum sustainable yield through time for the benefits of all generations;

Elements of sustainability in fisheries

- Essential fish habitats need to be protected and preserved;
- Fishing and related activities are carried out to minimize the release of greenhouse gases;
- Education, education, education.

Elements of sustainability in fisheries

- Global governance:
 - sustainability based on the ecosystem approach such as the use of marine protected area;
 - Subsidies disciplines;
 - Joint management of shared stocks, e.g., high seas fish stocks;
 - Make it economically costly to engage in IUU fishing;
 - Encourage co-management of fisheries;
 - Define access rights to communities, etc.

Thanks for your attention

