



Introduction to fisheries

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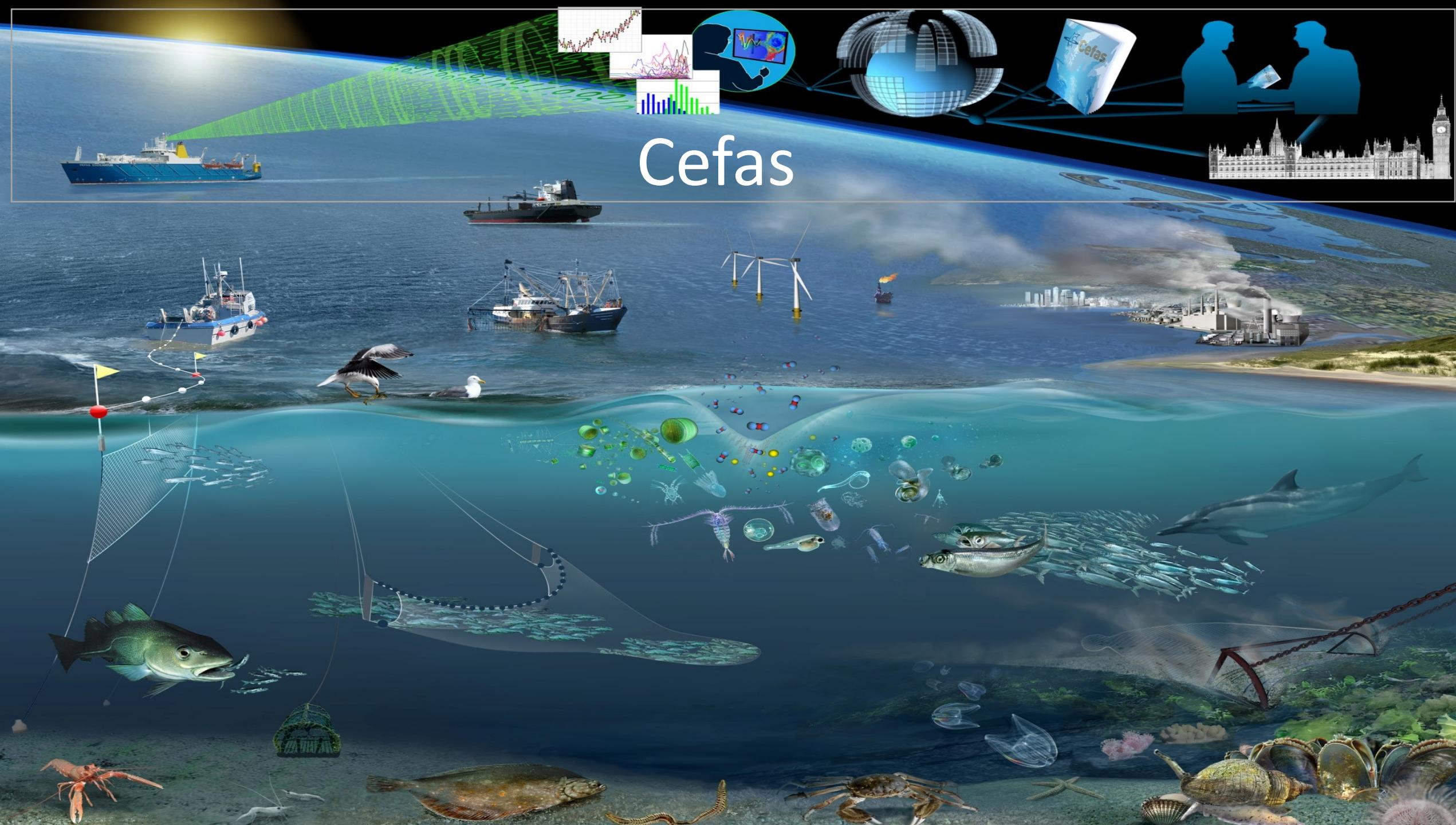
Together we are working for
a sustainable blue future



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Outline

- Why are fisheries important?
- How can you assess impacts?
- What is done to manage stocks?
- How are the benefits assessed?
- How is technology used?



Globally important

- High production important for food & nutrition
- Aquaculture important – sustainability?
- Global consumption is increasing
- Resources declining
- Reduction in fleet size needed
- Protect ecosystems alongside growth
- Supports livelihood of millions
- Blue transformation

FIGURE 1 WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

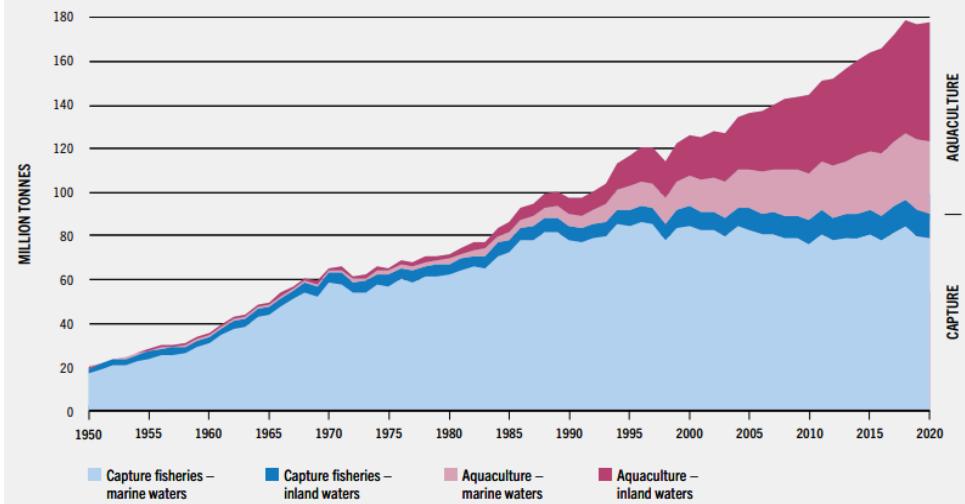
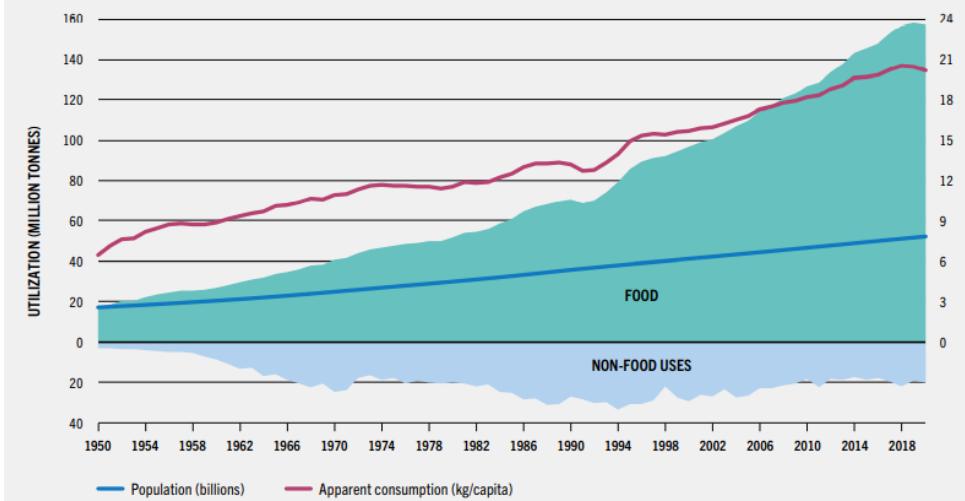
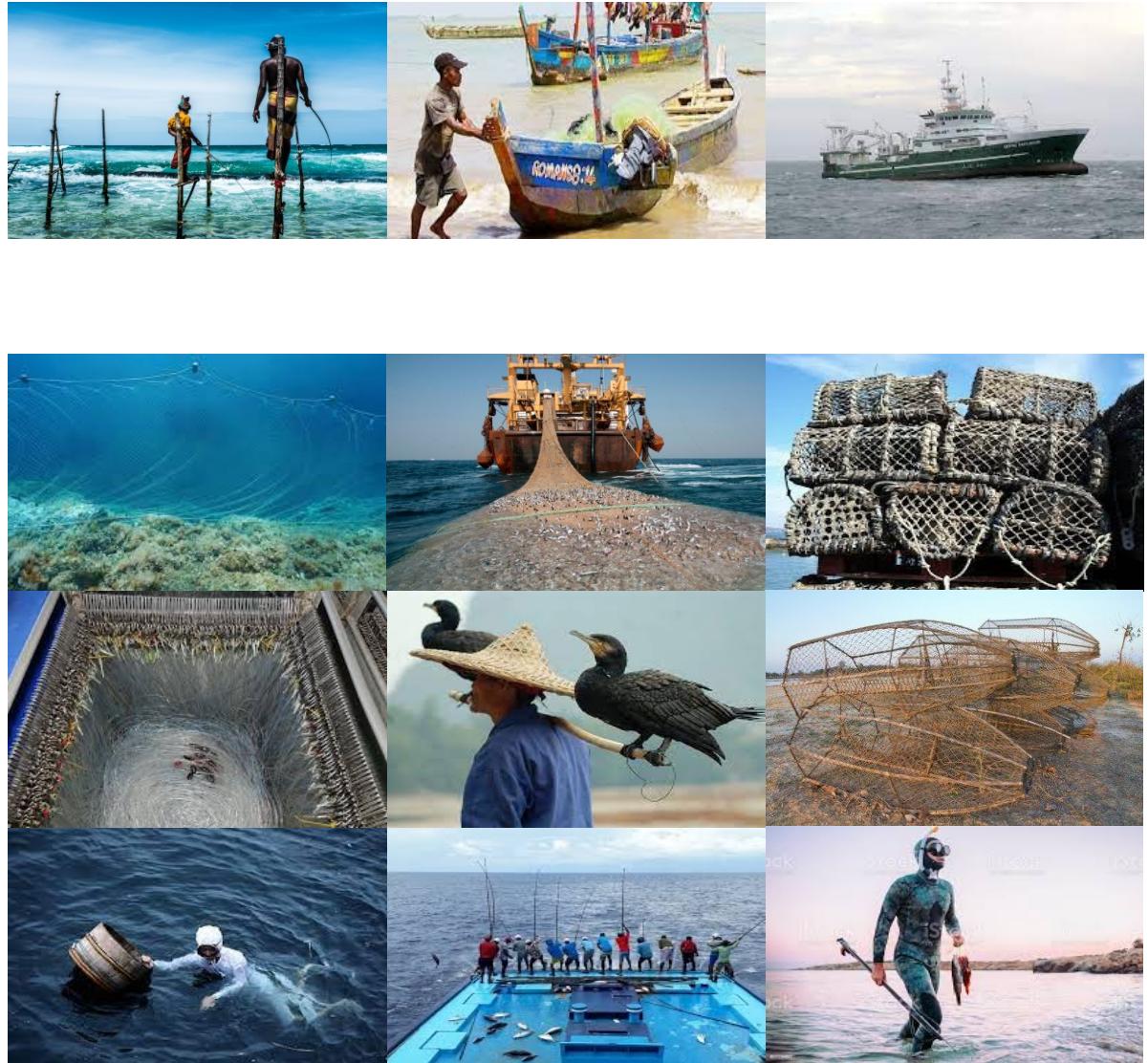


FIGURE 2 WORLD FISHERIES AND AQUACULTURE PRODUCTION: UTILIZATION AND APPARENT CONSUMPTION



Challenges

- Common pool resource
- Diverse sector
- Data collection
- Management
- Compliance
- Livelihoods
- Food provision



Varied policy drivers

Sustainability



Spatial prioritisation



Blue growth



Health



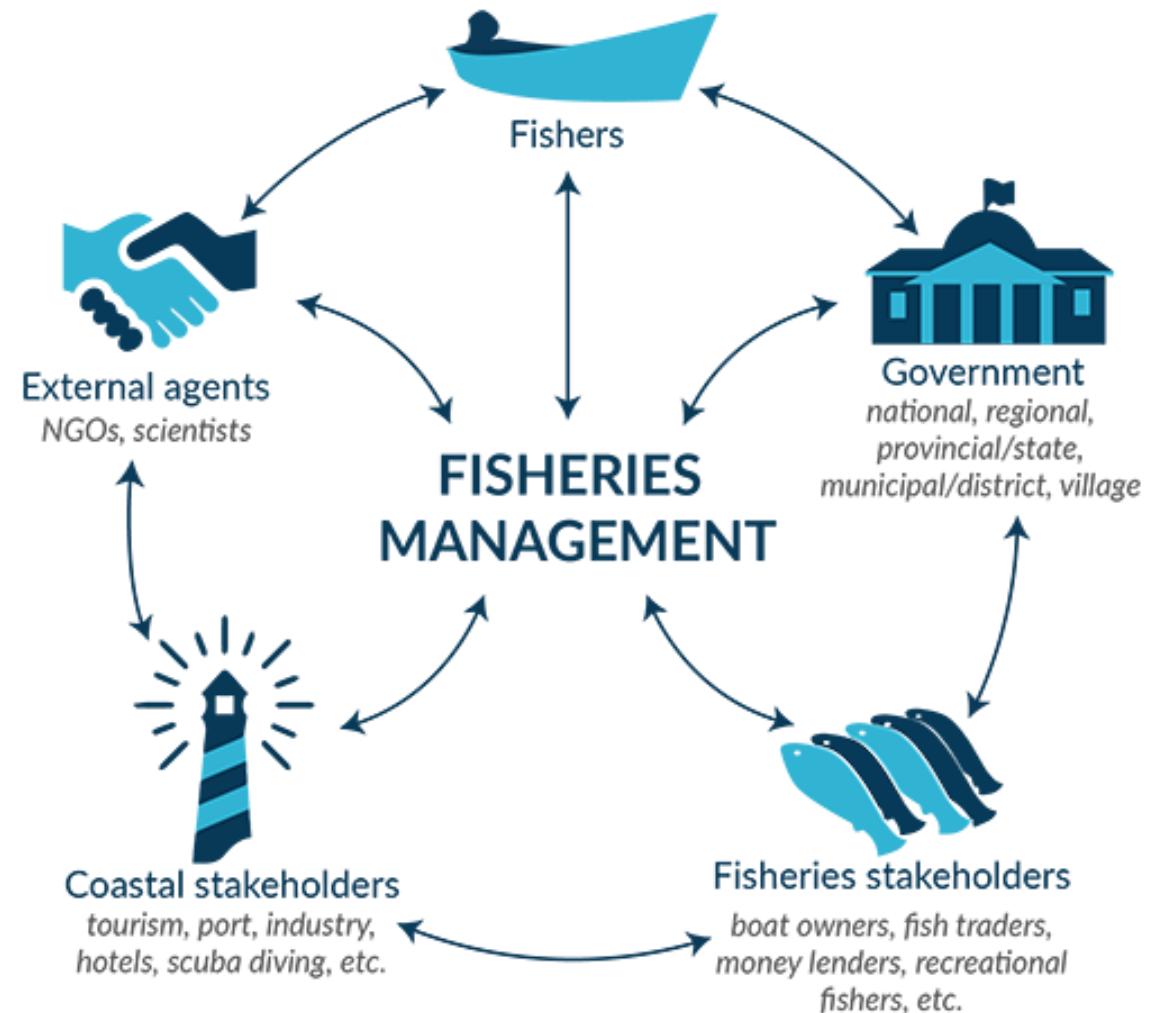
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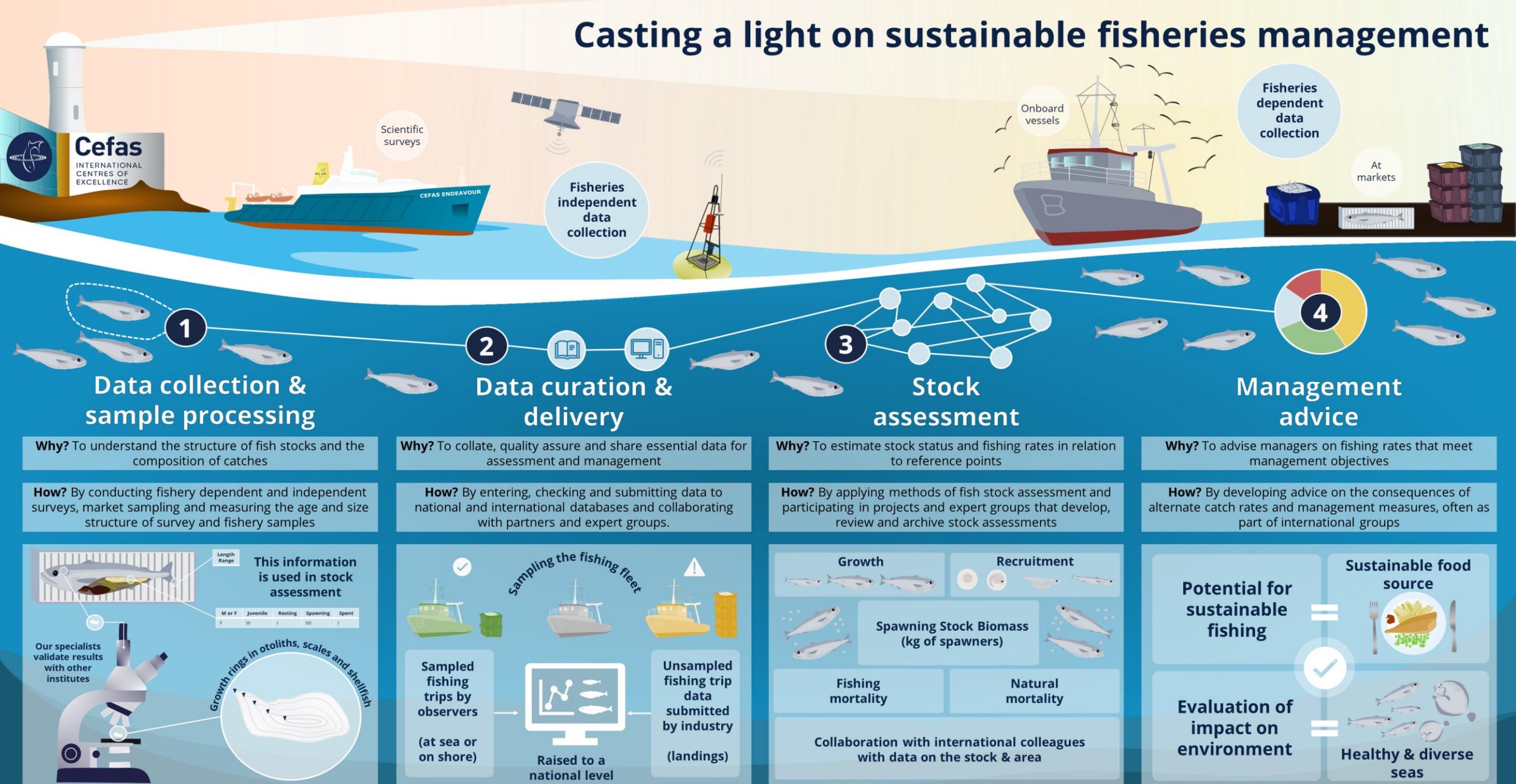
Not only about fisheries

Governance

- Varies – location & fisheries
- UK fisheries:
 - Independent coastal state
 - Shared stocks
 - Assessed (e.g. NASCO, ICES, ICCAT)
 - Fisheries Act (2020): FMPs
- Environment & biodiversity



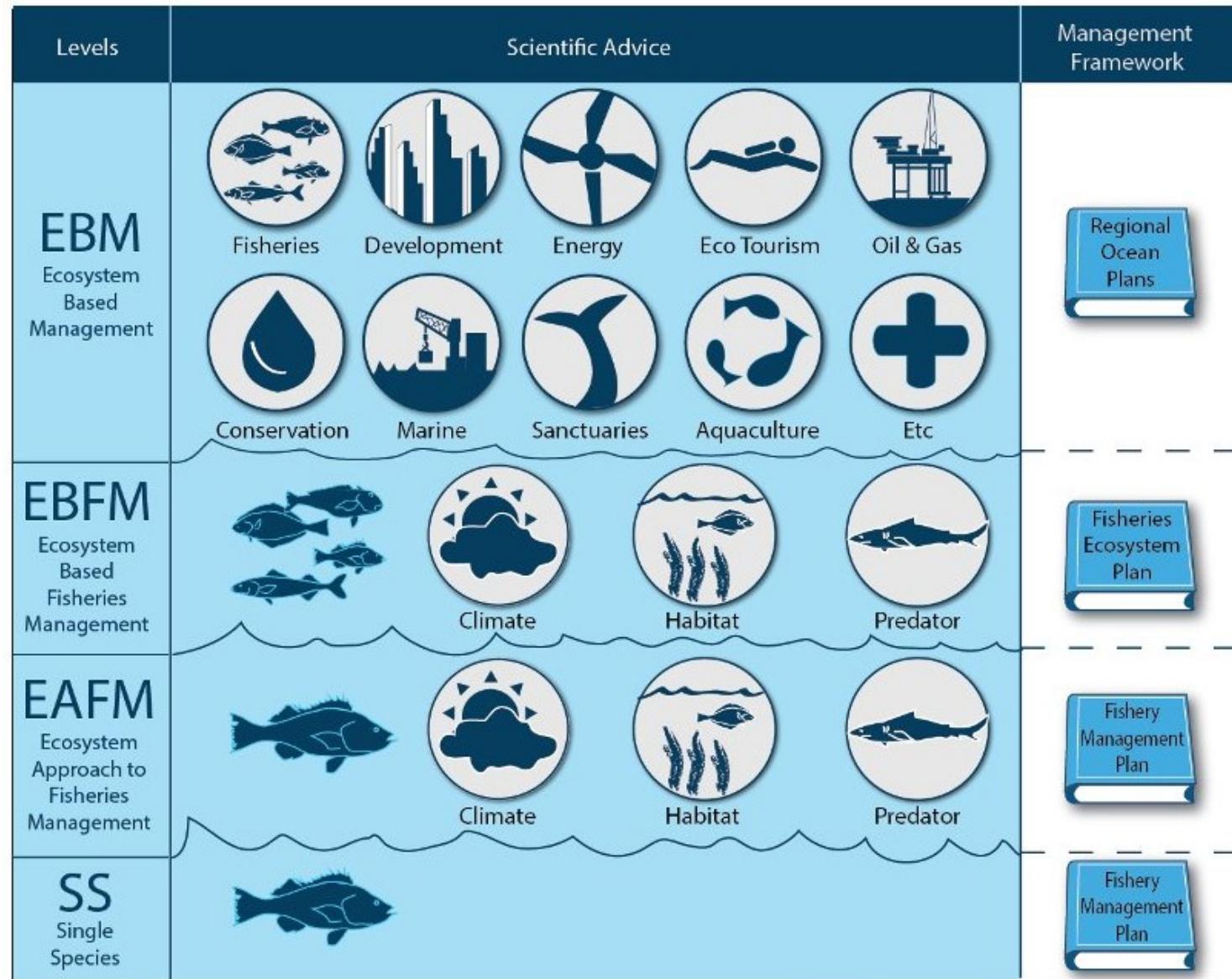
Casting a light on sustainable fisheries management



For more information on the Cefas Fisheries International Centre of Excellence please see:
www.cefas.co.uk/icoe/fisheries

Ecosystems

- Ecosystem based management
- Multiple interacting drivers, pressures, states, impacts & responses
- Humans are part of the system – biological-social-economic trade-offs



Recreational fisheries

- Diverse & often unregulated
- Socially & economically important, but impacts on the environment
- Conflict with commercials & conservation
- Benefits & impacts sometimes recognised
- Not embedded in marine governance

Category	Europe
Numbers (millions)	8.67
Participation (%)	1.60
Activity (million days)	77.6
Days per angler	9.04
Expenditure (billion €)	5.89
Spend per angler (€)	679
Economic impact (billion €)	10.5
Number of FTEs (thousands)	97.2



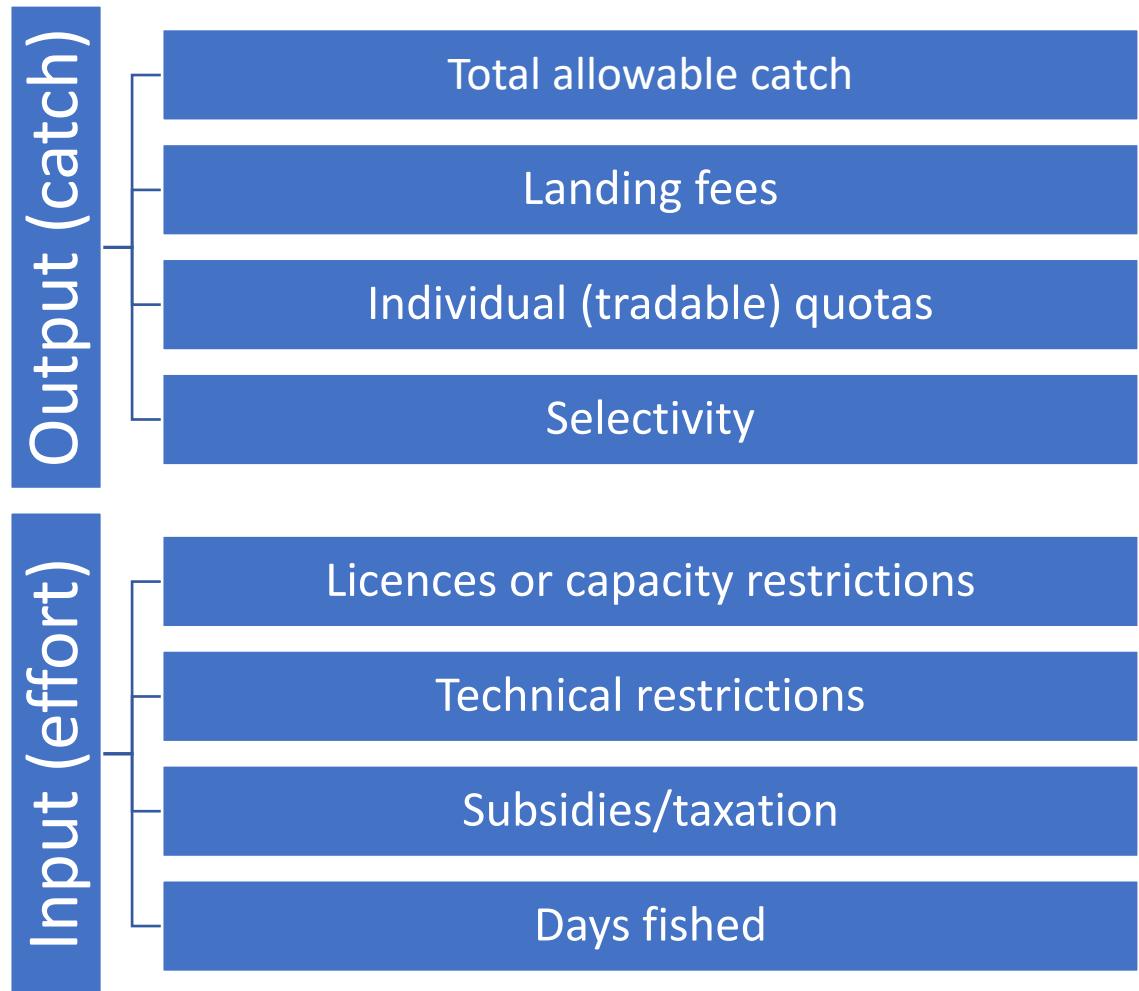
Impacts in Europe:

- Stock: 2-43% removals
- Live bait (disease & NNS)
- Lead (sinker loss)

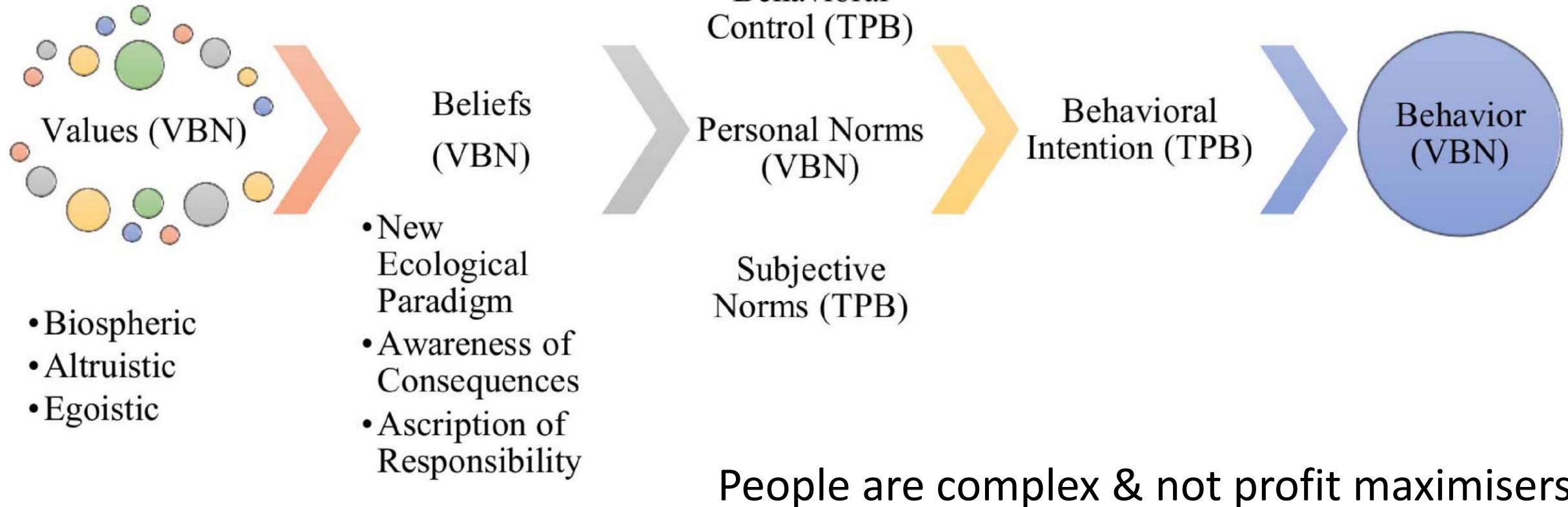


Management measures

- Limited approaches:
 - Outputs – catch
 - Inputs – effort
- Gear specific
- Varies between fisheries
- Predict outcomes

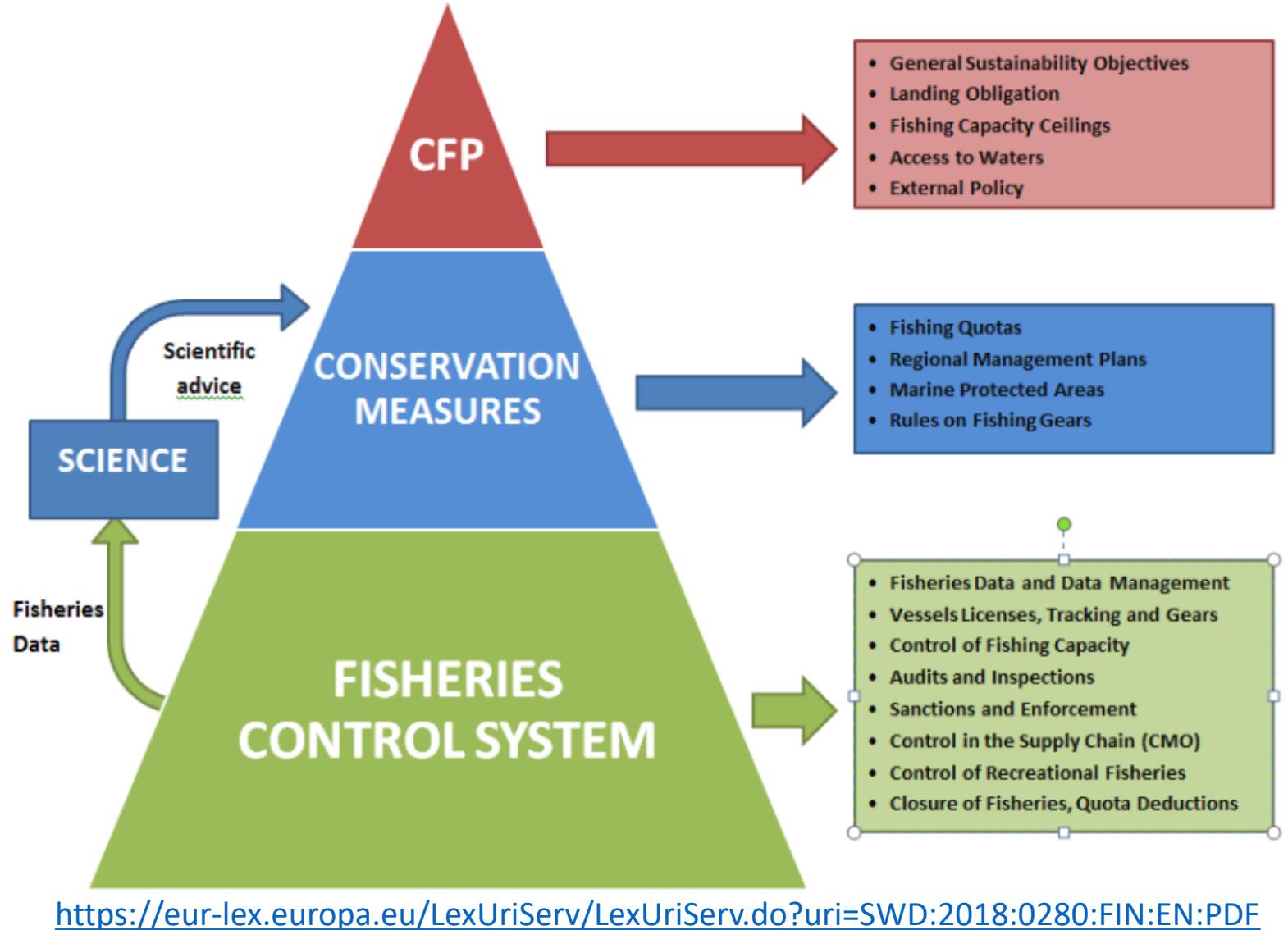


Response to management

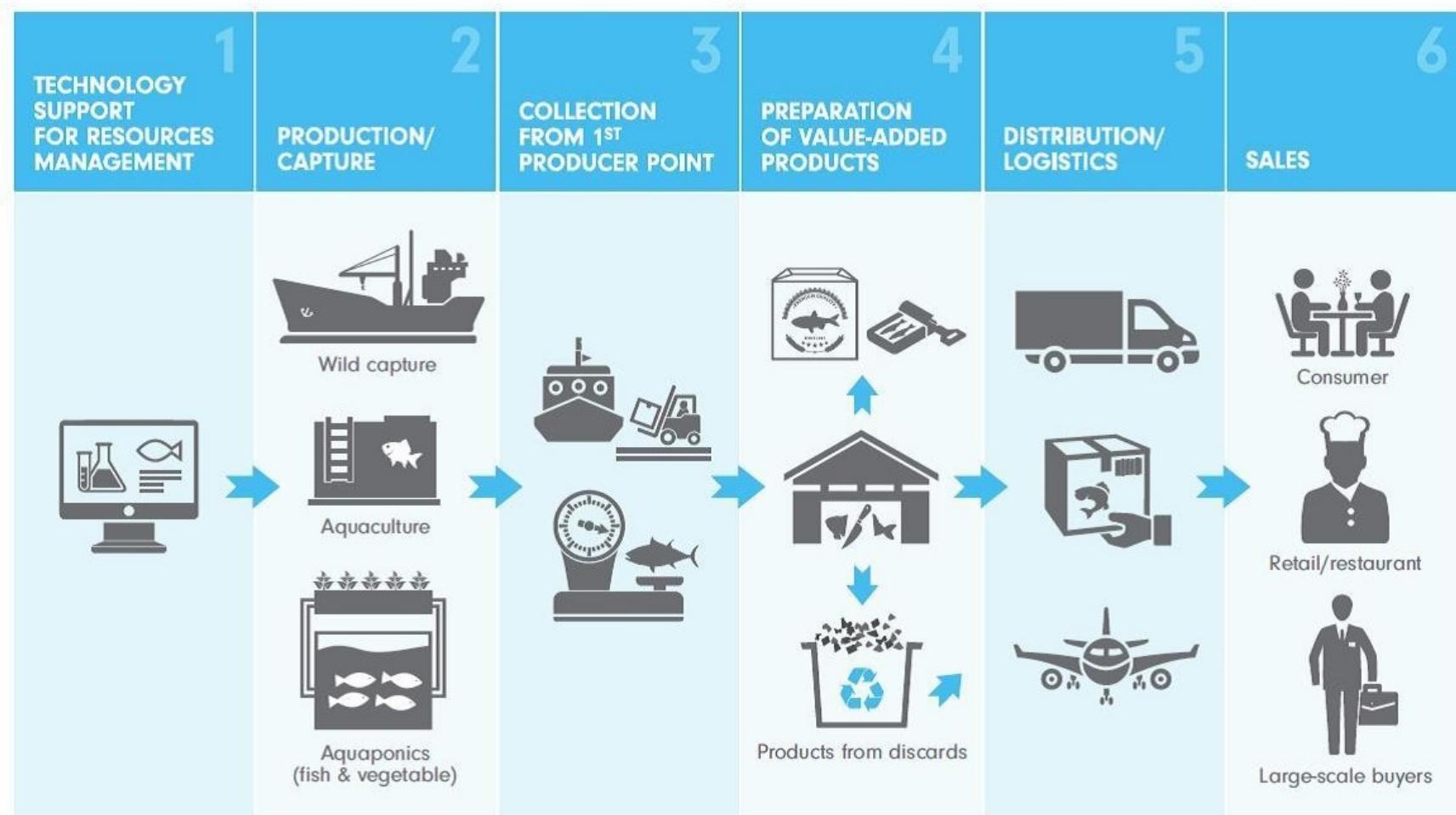


Control

- Separate control system:
 - Catches
 - Tracking
 - Supply chain
 - Audits
- Enforcement challenging



Supply chains



Societal benefits



cultural services

Recreation and tourism
Aesthetic values
Inspiration
Education and research
Spiritual and religious experience
Cultural identity and heritage
Mental well-being and health
Peace and stability



provisioning services

Food
Water
Raw material
Medicinal resources
Ornamental resources
Genetic resources



regulating services

Climate
Natural hazards regulation
Purification and detoxification of water, air and soil
Water / water flow regulation
Erosion and soil fertility regulation
Pollination
Pest and disease regulation



supporting services

Ecosystem process maintenance
Lifecycle maintenance
Biodiversity maintenance and protection



1 Fish More

- Better weather - safer at sea, more pleasant to be outside
- Increased motivation - access to preferred species for food or pleasure, easier or more challenging to catch
- Cheaper if travel less for preferred fish



3 Fish Differently

Autonomous Adaptation

- Target new species
- Different gear, new boat, change fishing season, duration
- Retain more or less catch
- Travel further for same experience
- New social media and fishing forum pages for new species

2 Fish Less

- Worse weather - less safe at sea, less pleasant to be outside
- Reduced motivation - smaller fish or wrong species for pleasure or food, harder or too easy to catch fish
- Too expensive to buy new gear or more fuel



Directed Adaptation

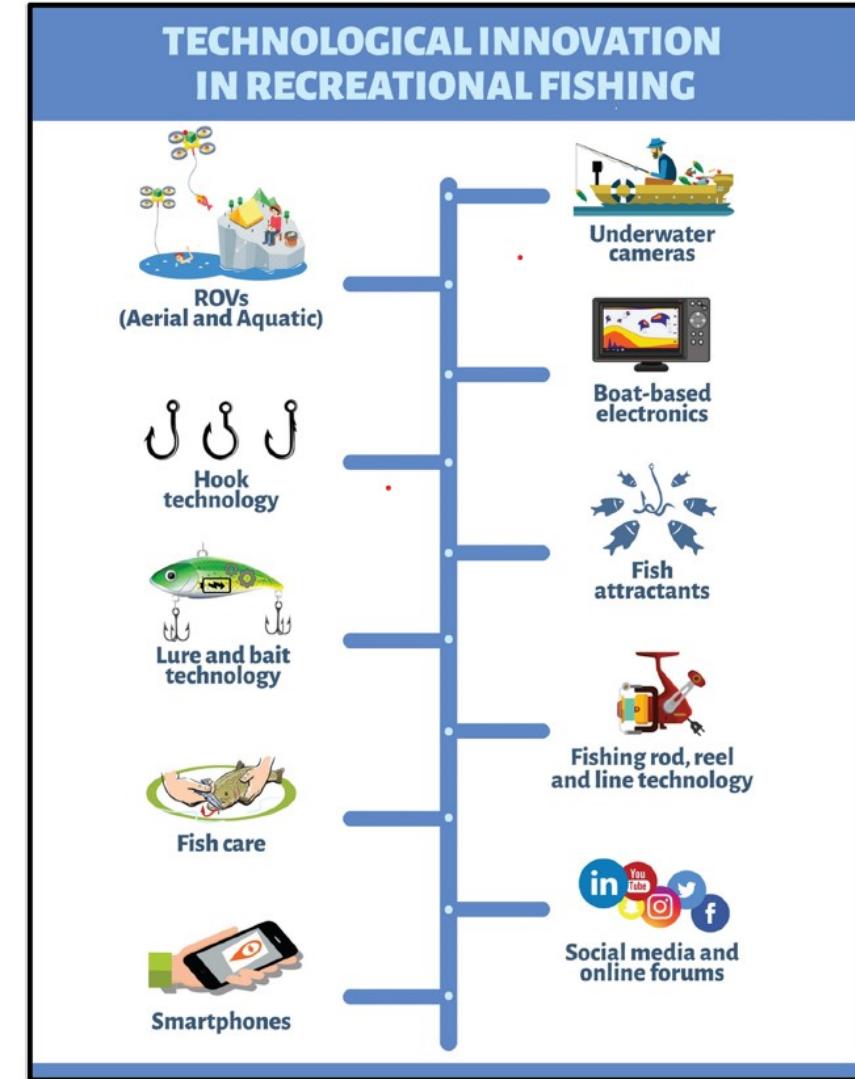
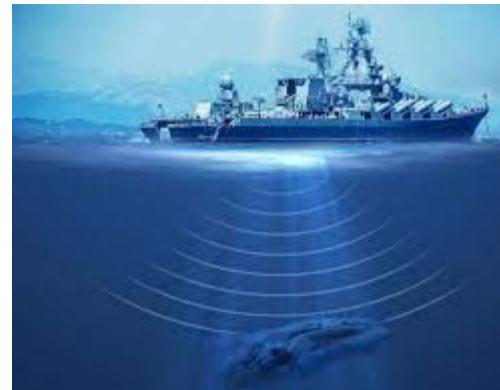
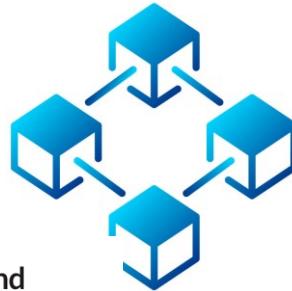
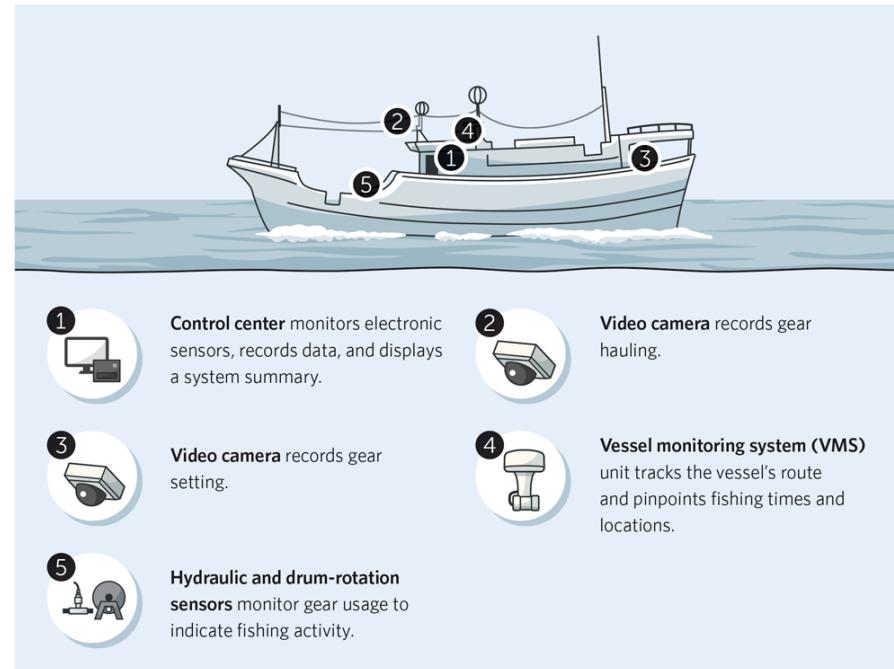
- Promoting areas as destinations for new target species
- Promoting gear for new target species
- New launch sites
- Gear restrictions
- Bag limits
- Incentives to catch certain species (e.g. non-natives)



Technology

Figure 1

Electronic Monitoring Uses Technology To Collect Timely and Verifiable Catch Information



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<https://link.springer.com/article/10.1007/s11160-021-09643-1>



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Summary

- Important social & economic benefits,
but impact fish stocks & the environment
- Complex biological & social systems that
need to be managed & controlled
- Technology is needed for fisheries that
support sustainability goals



The background image shows a coastal scene at sunset. The sky is filled with orange and yellow clouds, with the sun partially hidden behind them. In the foreground, there's a dark, textured surface, likely a beach or a low wall. The middle ground features several large, dark, tilted rock formations, some standing upright and others lying on their sides. The ocean waves are visible in the background, crashing against the rocks.

THANK YOU

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