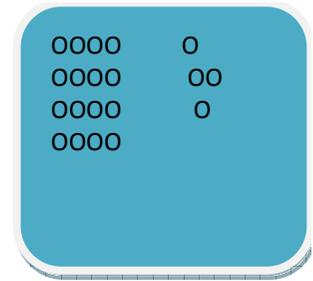




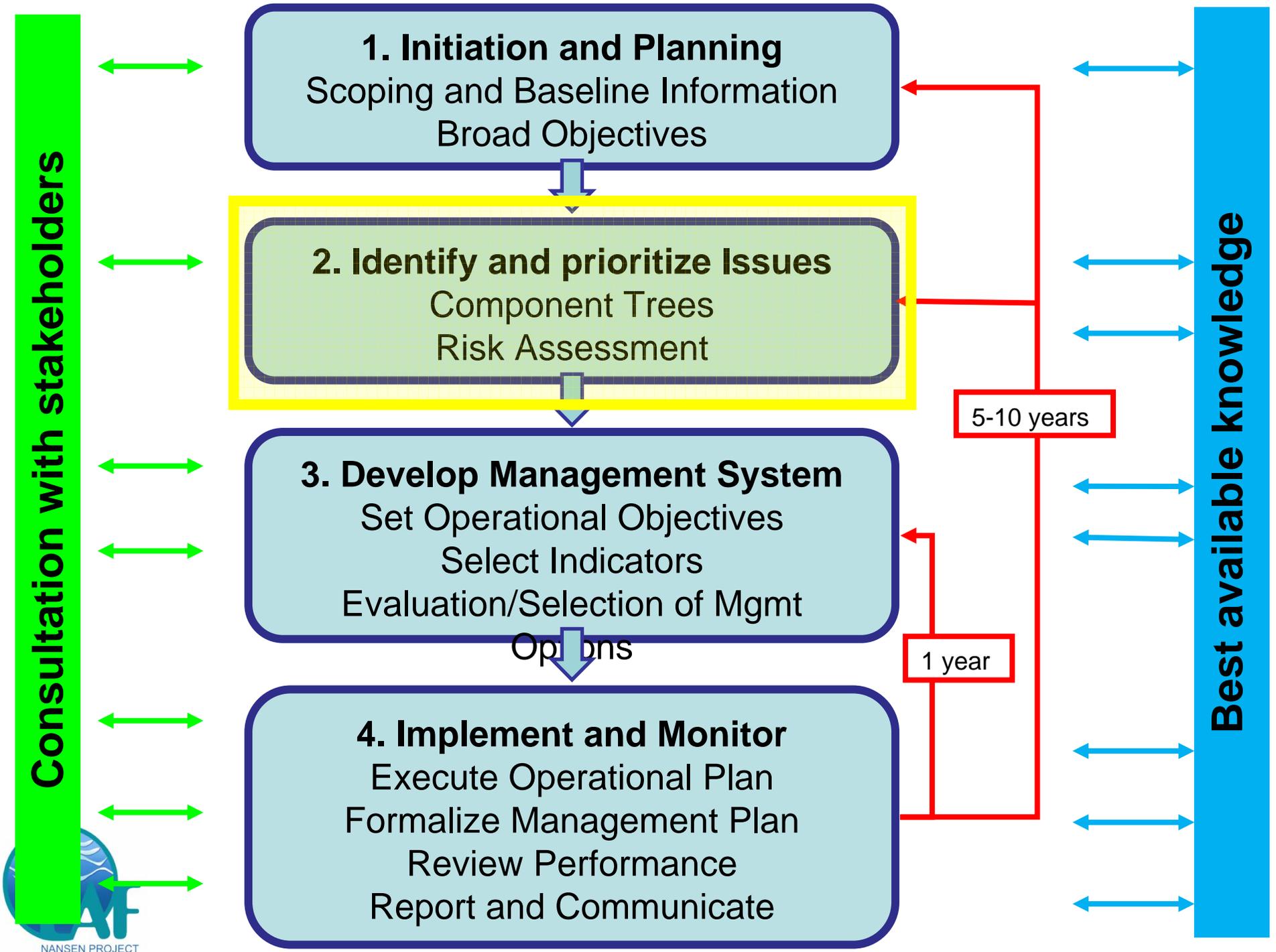
**Ecosystem Approach to Fisheries:
Tools and Implementation**
A Training Course for Fisheries Practitioners



The EAF Implementation Process

STEP 2 Identification of Assets, Issues and their Priority





Step 2 Key Activities

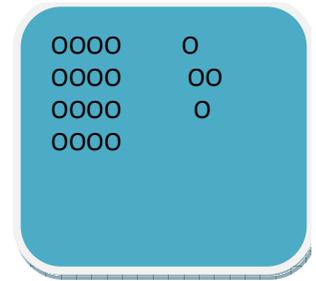
2.1 Asset and Issue Identification

- Output: a complete set of EAF-related assets, issues, outcomes, systems and drivers relevant to the fishery

2.2 Asset and Issue Prioritization (Risk Assessment)

- Output: the relative level of risk and priority, plus the recommended level of direct management action or other specific activities, needed to deal with them





2.1 Asset and Issue Identification

A systematic way to ensure that all relevant issues and assets have been identified – component trees

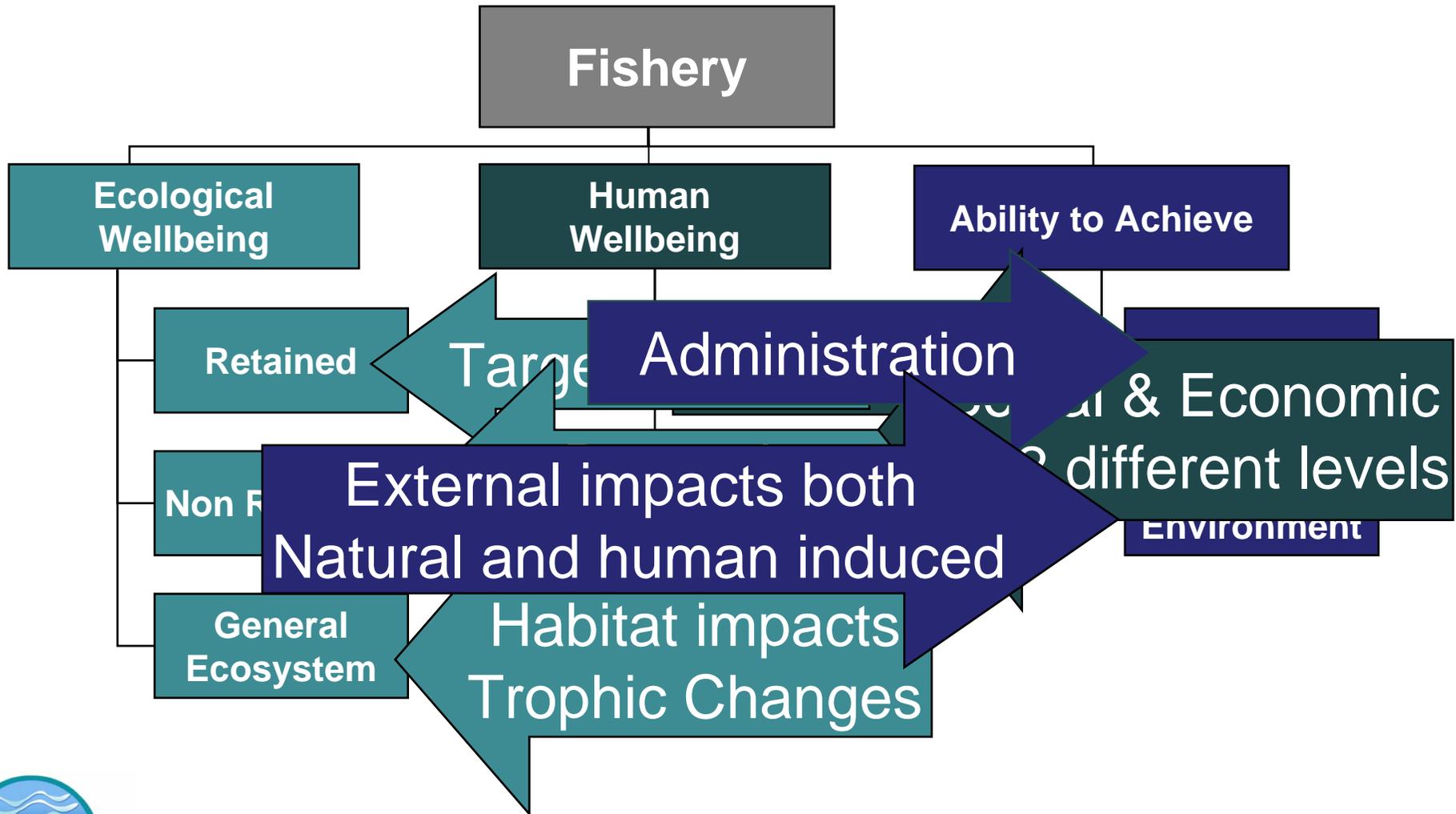


Identifying Issues: General

- Based on the scope and values of the fishery, the next step, which is central to the entire EAF process, is to identify all the relevant issues (assets, outcomes, systems and drivers) associated with the fishery across each of the EAF components (ecological wellbeing, human wellbeing and ability to achieve).
- Provide details of how to identify all issues relevant to the sustainability of the fishery in an EAF context



Issue Identification



Identifying Issues

- These trees/lists are tools to help identify issues and to lower the chances of missing important issues.
- They also help structuring the issues into related groups, which assists in determining their priority and developing management objectives and strategies.
- The generic trees just make a good starting point to help the process of identifying what issues are relevant to the fishery being assessed.



Identifying Issues

- The process works by modifying each of the trees or lists by adding any relevant category of issues not already included and deleting any issues that are totally irrelevant.
- At this stage, the process is about issue identification, not prioritisation so there should be little discussion of the importance of an issue.
- Even if a stakeholder raises an issue that is known to be wrong, deal with it.
- Identifying the issues is best done during a workshop where all relevant stakeholders are present (eg representatives of the fishers, managers, scientists, community groups, and environmental groups etc.)
- Such workshops provide each of these groups with the opportunity to have input to the process.

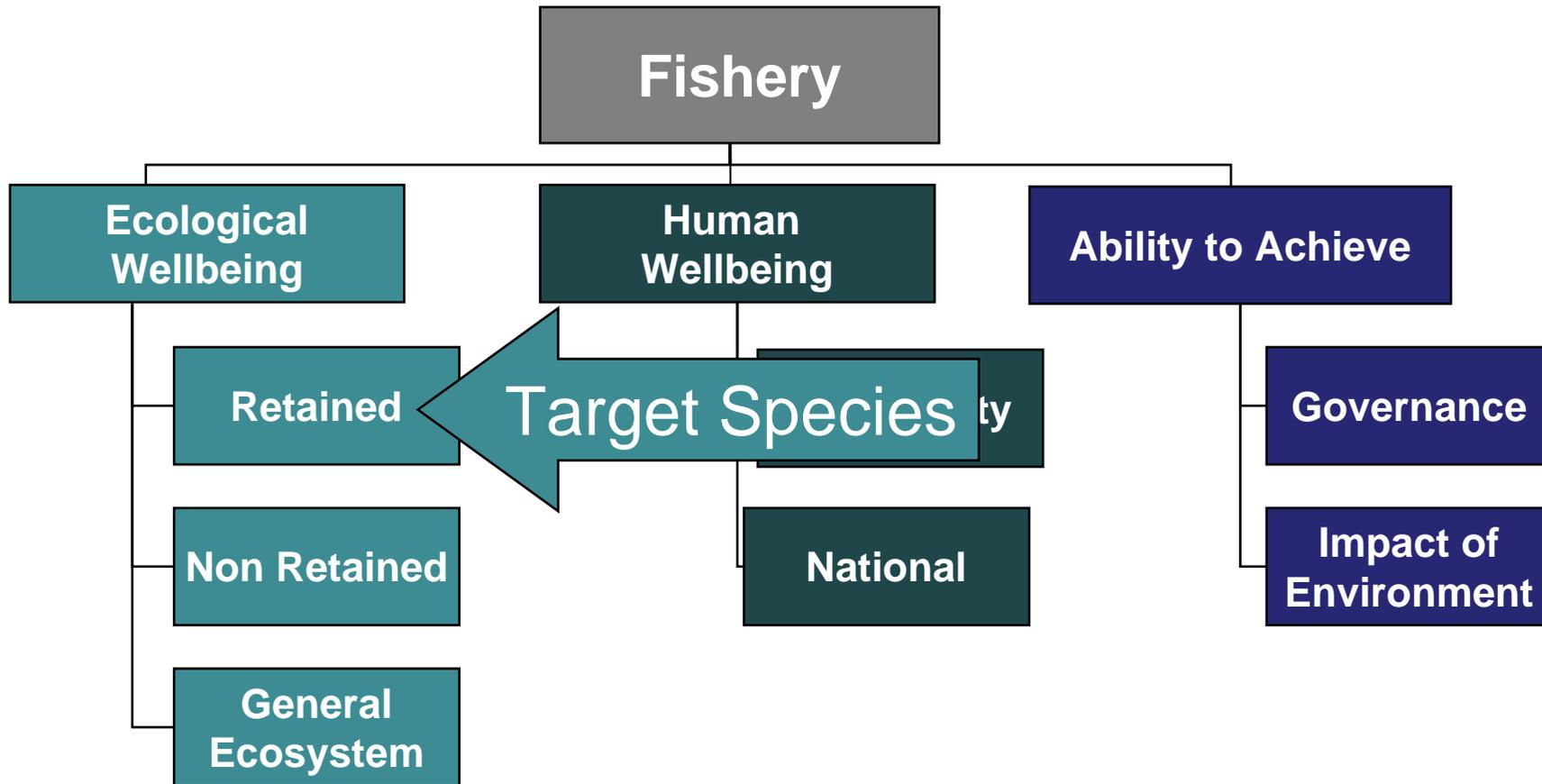


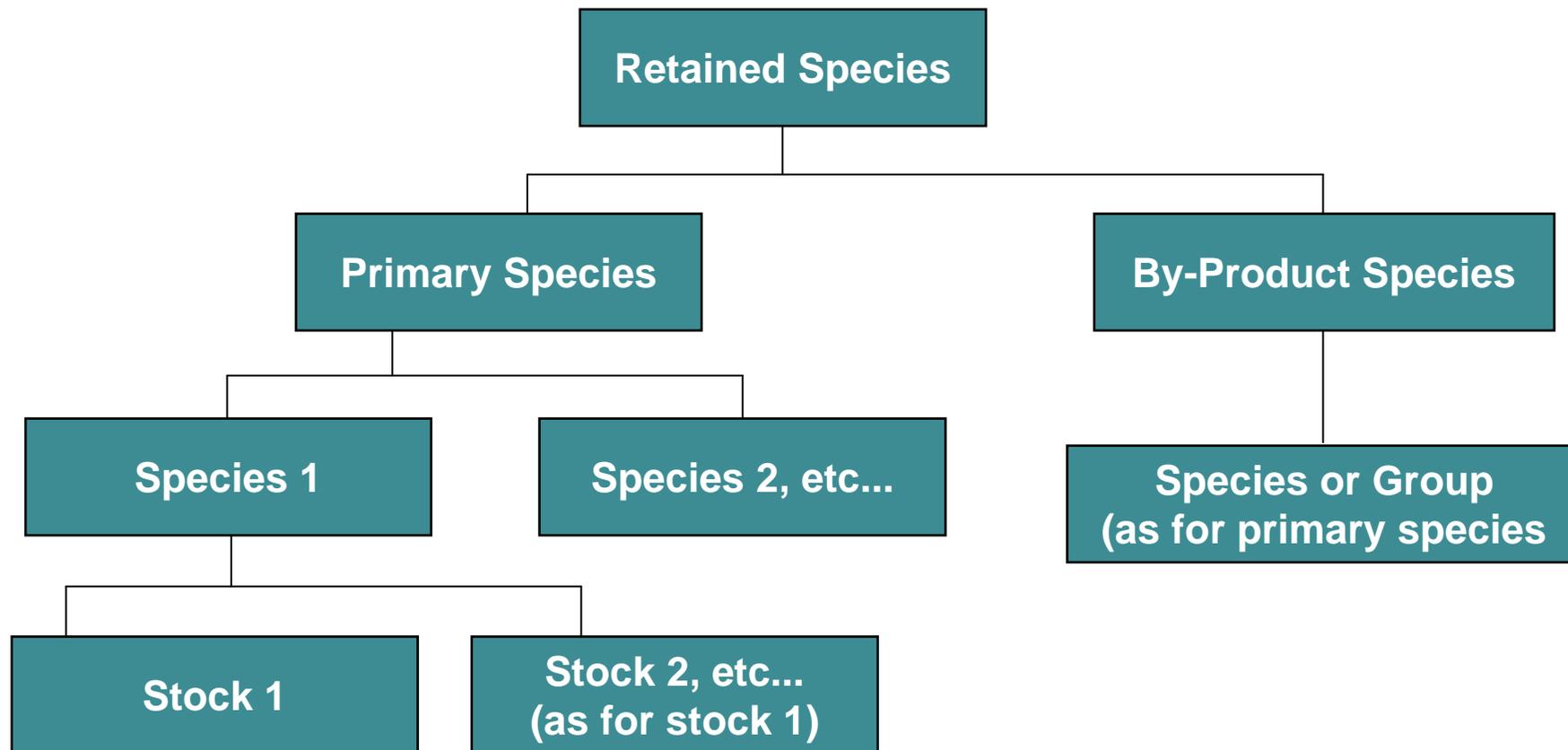
Ecological Wellbeing Issues

- What are the main species or groups captured by the fishery?
- Are there any species that are captured but not wanted?
- Are there any special species caught?
- Does the fishery cause habitat damage?
- Does it affect the ecosystem more generally?
- Does the environment affect the fishery?
- Are there other man made impacts on the fishery?



Issue Identification





Retained species

- Include target species plus all **species** that are not target (e.g. byproducts) but are kept because of commercial value
- This includes the discards of these retained species
- Common objective for these species:

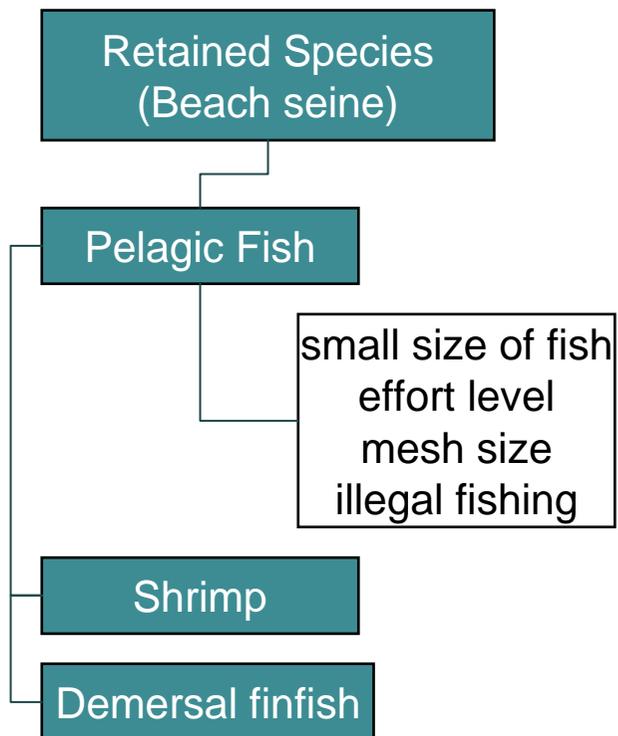
**Maintain retained species
at appropriate stock levels**



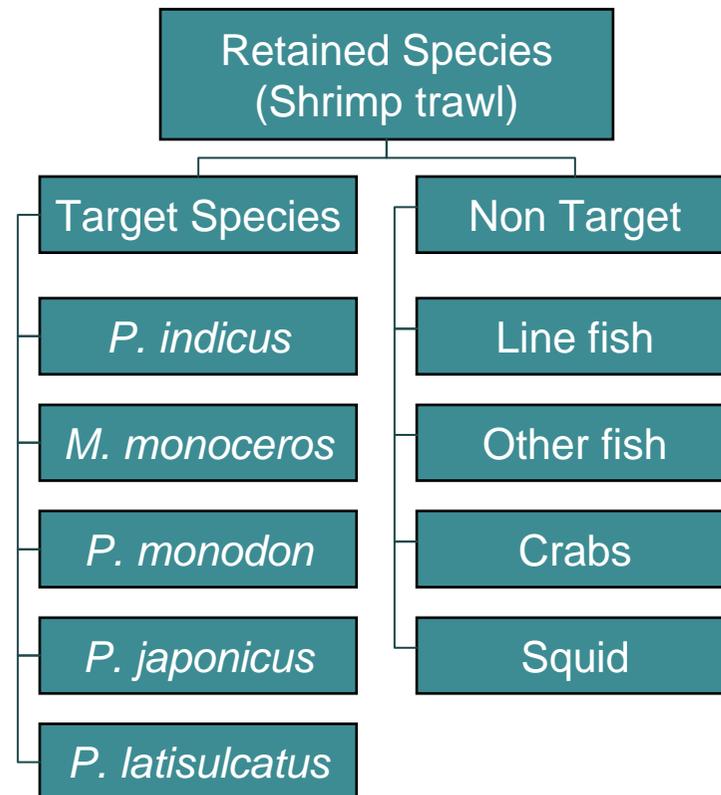
Examples

A revised component tree for retained species for:

(a) a coastal beach seine fishery



(b) an industrial shrimp trawl fishery



Issues for Retained Species

Beach Seine Fishery

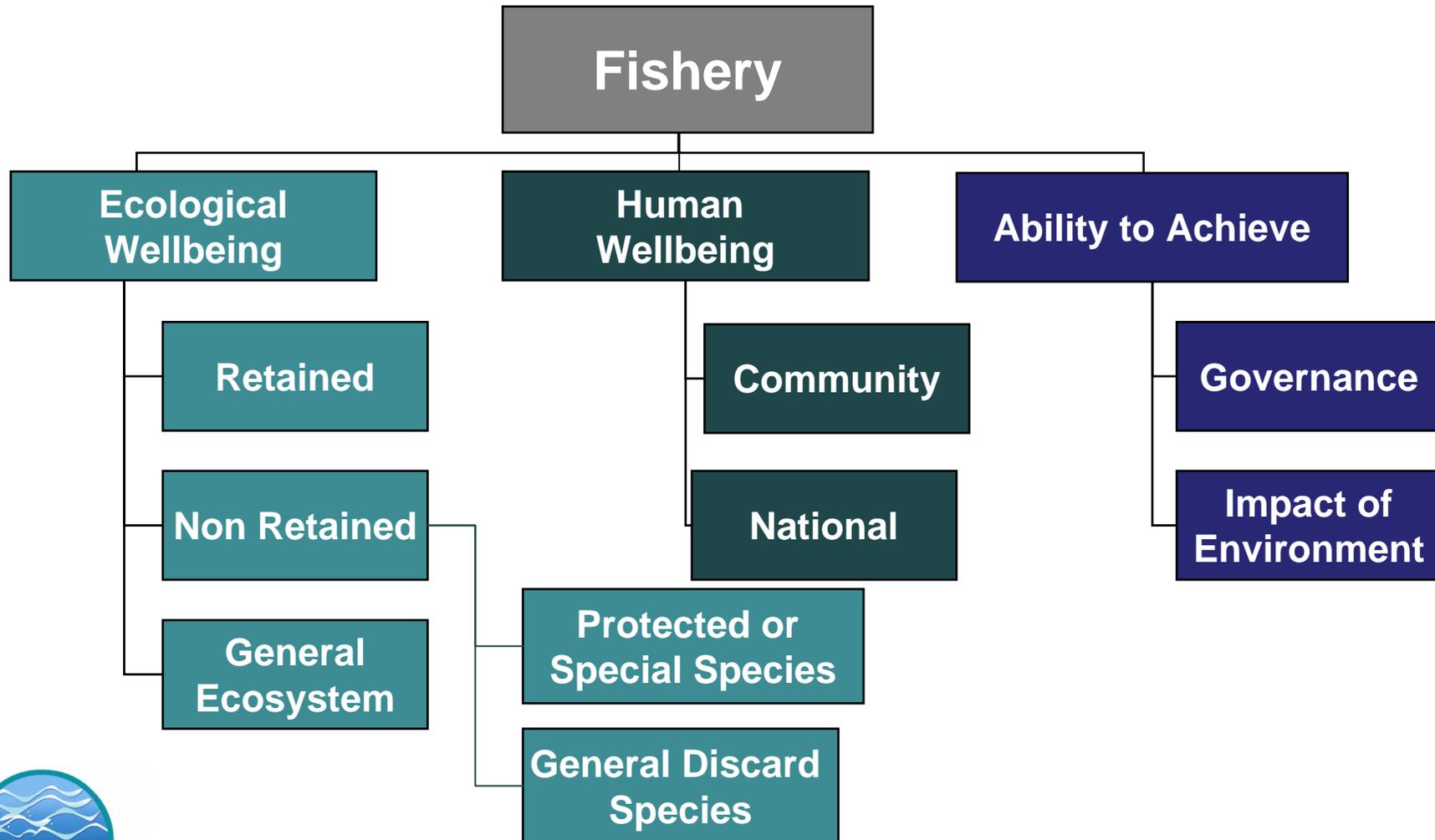
- Not much information at species level for the pelagic fish captured
- A number of problems associated with this group

Shrimp Fishery

- Information is available at species level for shrimp fishery
- No detailed information available for retained fish species except if they are line caught or not



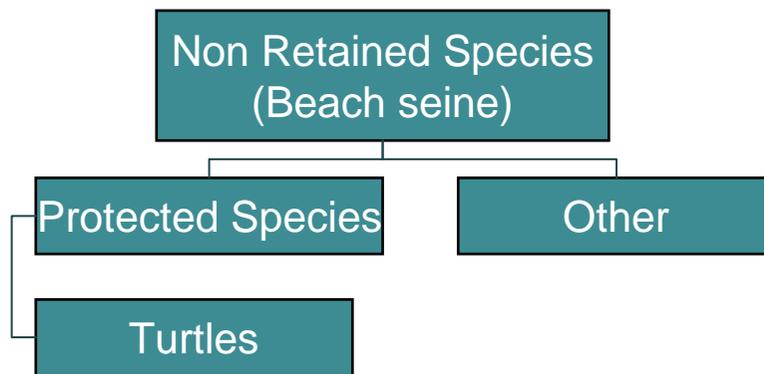
Issue Identification



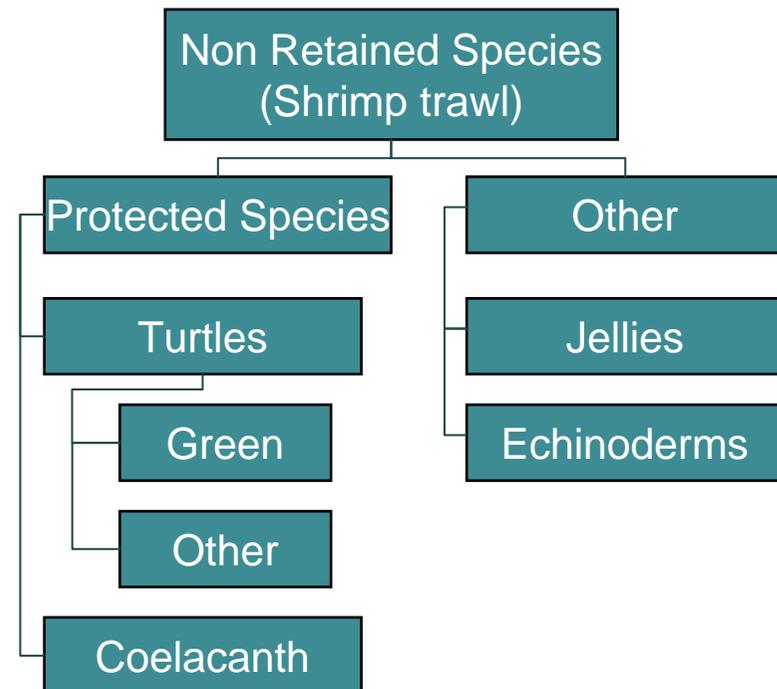
Non-retained species (discards)

Examples of modified trees for non retained species for:

(a) beach seine fishery



(b) industrial shrimp trawl fishery



Sea Turtles in the area



Leatherback



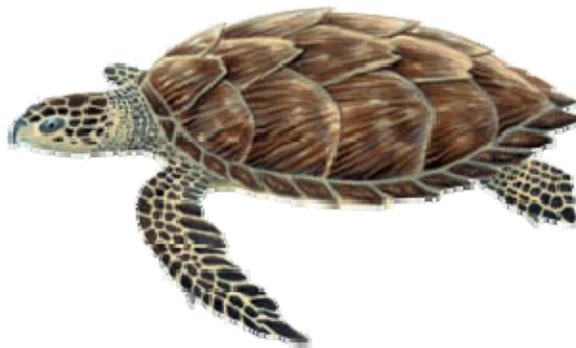
Loggerhead



Green turtle



Olive ridley



Hawksbill

Entangled sea turtle



Societal response: media

SCIENCE ONLINE SCIENCE MAGAZINE HOME SCIENCE NOW NEXT WAVE STKE/AIDS/SAGE SCIENCE CAREERS E-MARKETPLACE

Institutional Science Letters

SCRIPTING THE CASE FOR WAR

AAAS

cemag.org

How immigration is changing London PAGES 10 AND 26

Bussia's unraveling power struggle

U.S. News & World Report

June 9, 2003

EMPTY

WHY THE WORLD'S SEAFOOD SUPPLY IS DISAPPEARING

A SPECIAL REPORT

U.S. News & World Report

August 9th - 15th 2003

Blue

The

NATIONALGEOGRAPHIC.COM

HOME | SEARCH

NATIONAL GEOGRAPHIC NEWS

Search news.nationalgeographic.com

GO Sign up for our free e-mail newsletter: Also

This Story National Geographic Today

"Dirty Fishing" Emptying Oceans, Experts Say

- Related Sites & Stories

- E-mail this story

Sharon Guynup
National Geographic Channel
August 11, 2003

Science, V
DOI: 10.11
Previous
How
Ransom A
Biology Dep
4/1
Serious c
Although Pauly *et al*
situation with their hy
mean trophic level of
explanation is solely
w., substantiates suc

\$3.99 U.S. / \$4.99 CANADA

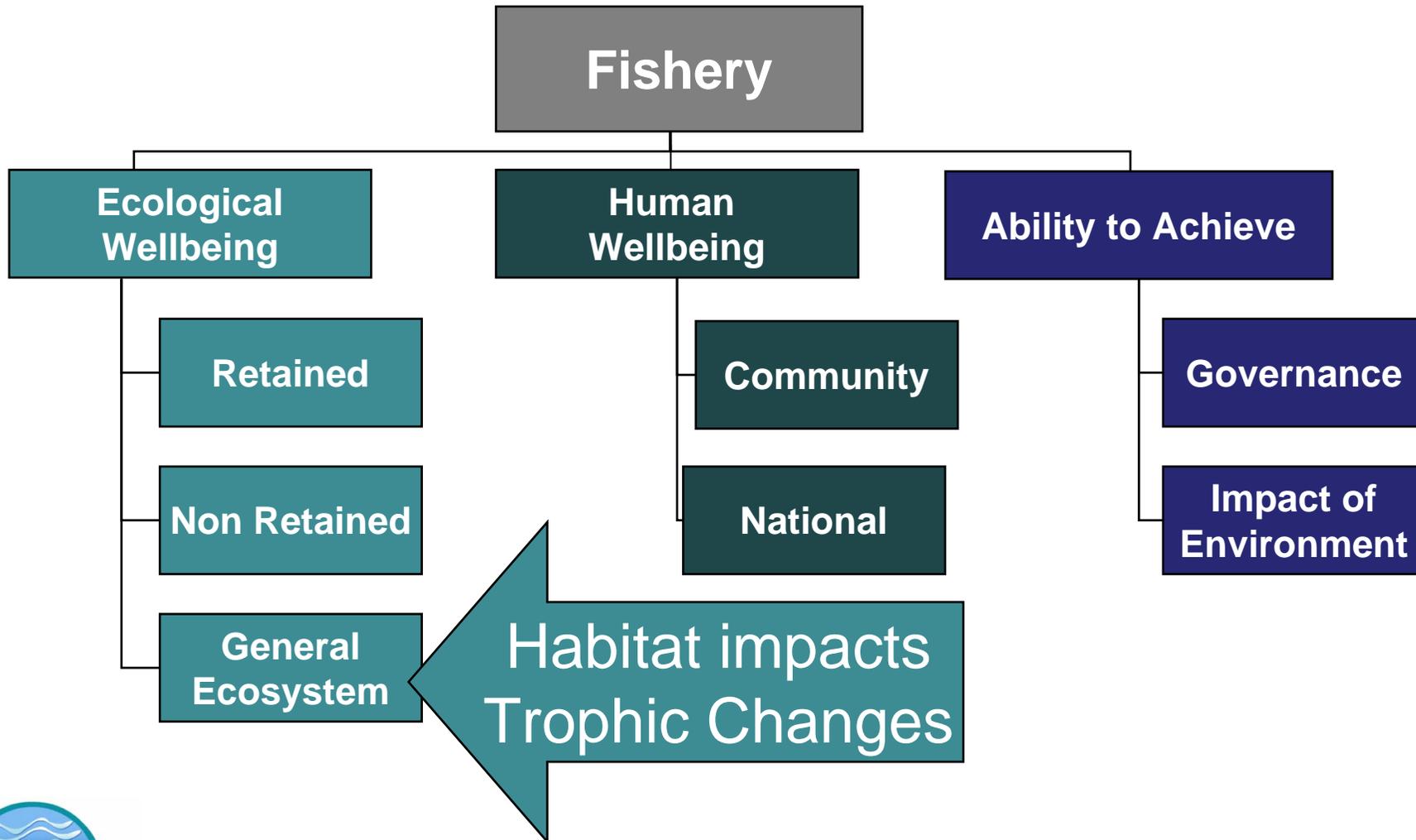
0 14608 02239 7

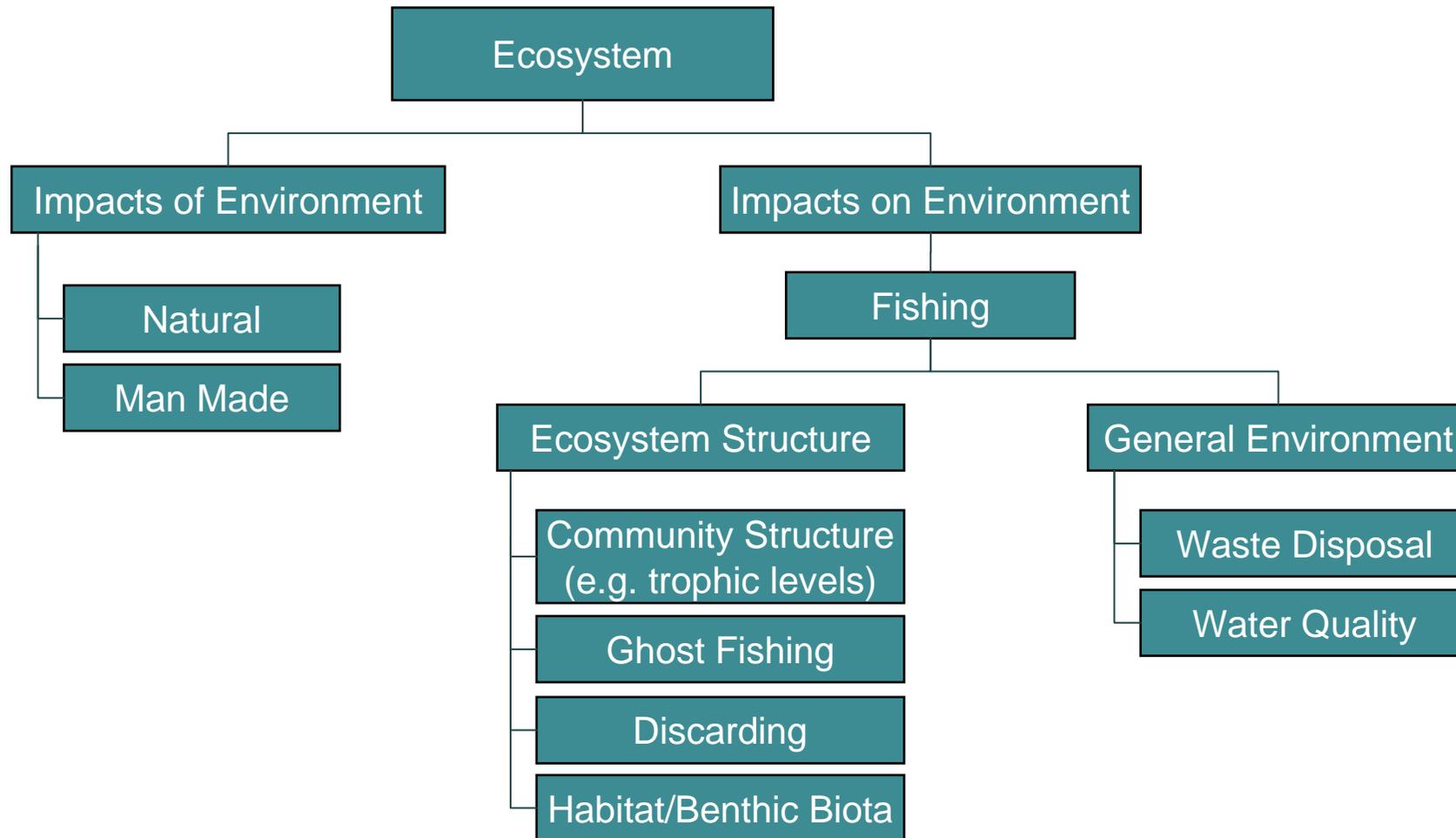
9 770019 061158 7

Issues related to non-retained species

- Protected species (in addition to sustainability, catching them may result in trade barriers for shrimp)
- Sustainability/viability of discarded species

Issue Identification

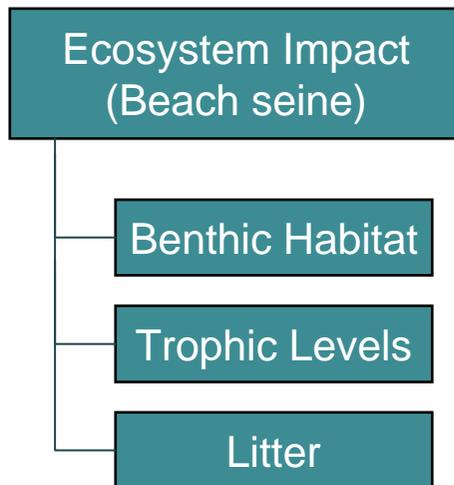




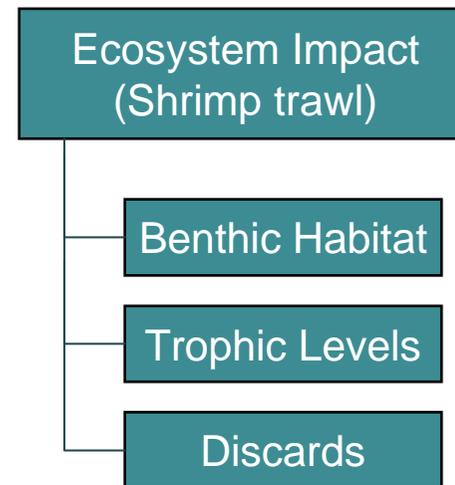
Examples

A revised ecosystem tree for:

(a) a coastal beach seine fishery



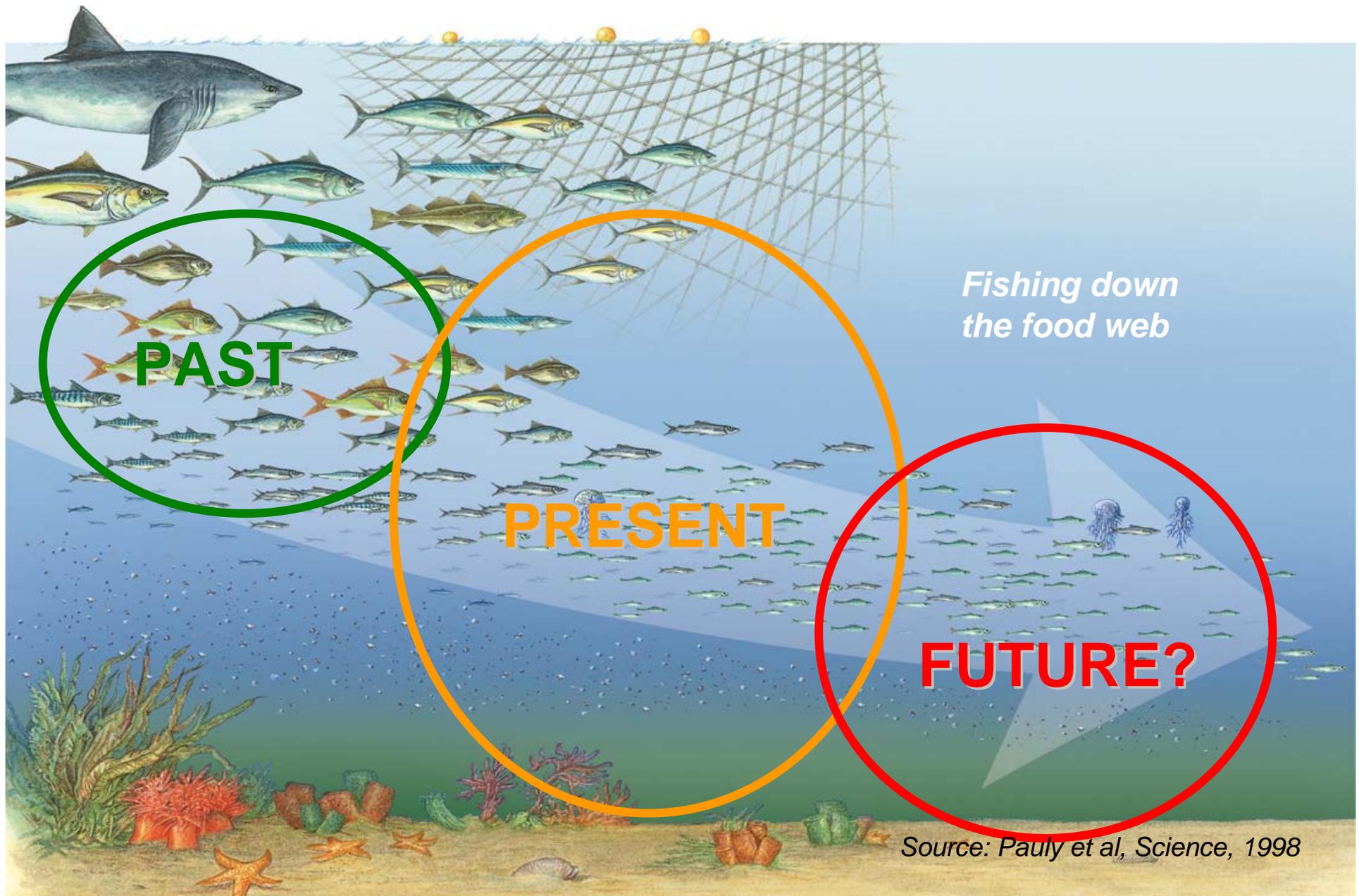
(b) an industrial shrimp trawl fishery



Ecosystem impacts (Community structure and trophic levels)

- Species composition and size composition of fish communities change as a result of fishing pressure

Changing catch composition

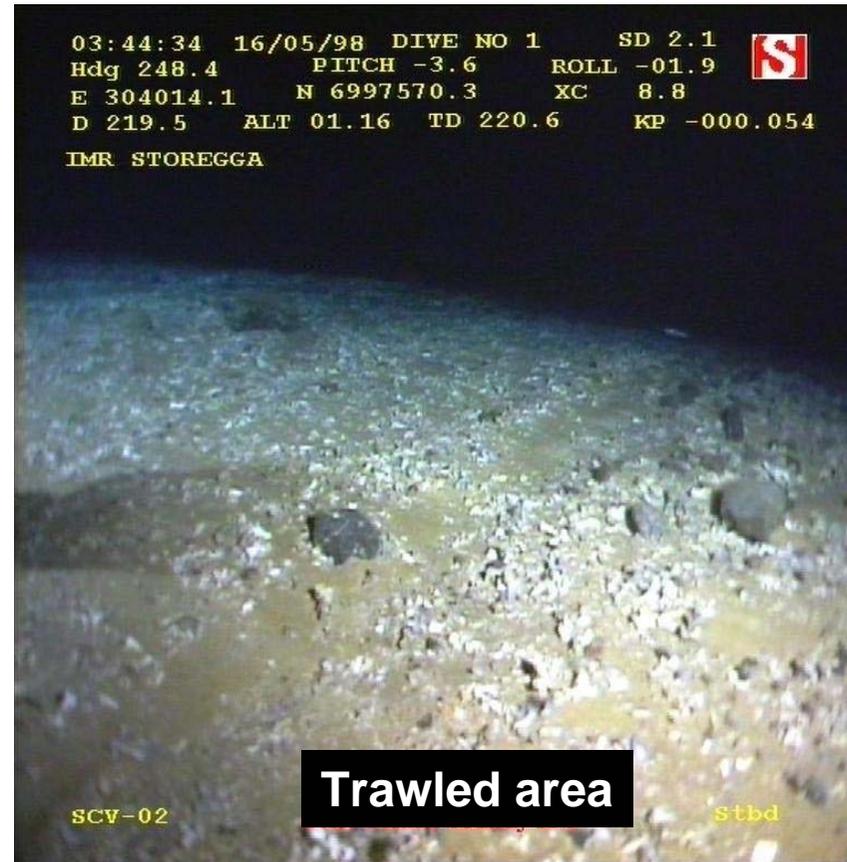
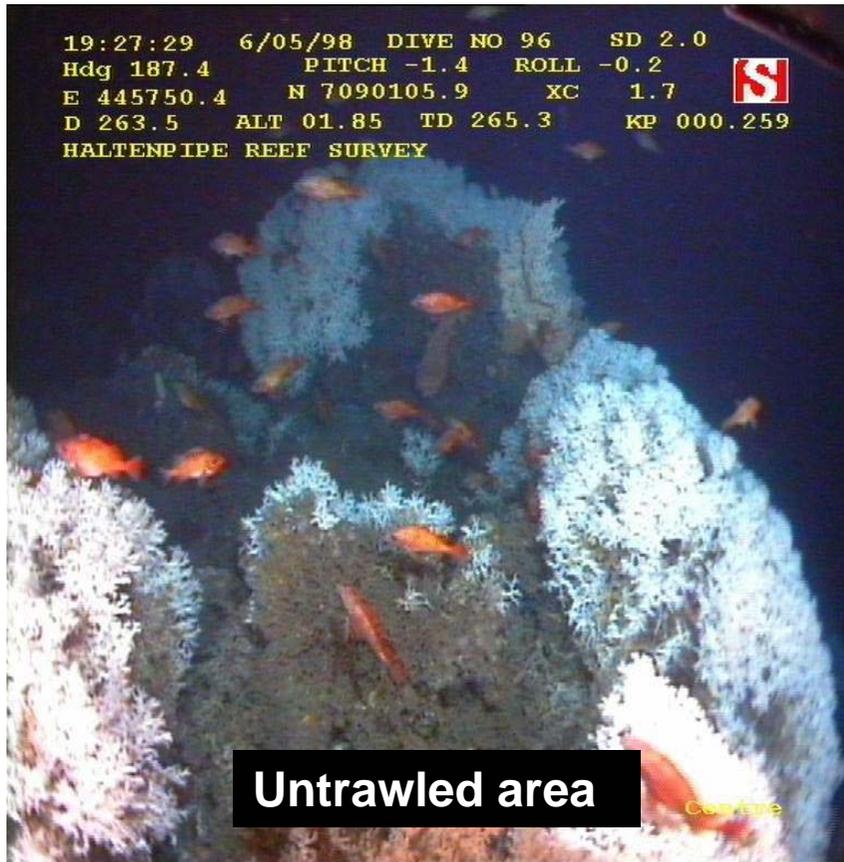


Source: Pauly et al, Science, 1998

Community structure/trophic levels

- Various approaches to monitor:
 - Integrated community size composition
 - Various ecosystem models (e.g. ECOPATH)
 - Trophic level in the catches
 - PSA (Productivity Sustainability Analysis)

Impact of bottom trawling on habitat (benthos)



Impact of the environment on the industry

- Climate
 - Temperature
 - Rainfall
- Human induced changes
 - Water quality
 - Habitat modification
 - Exotics
 -

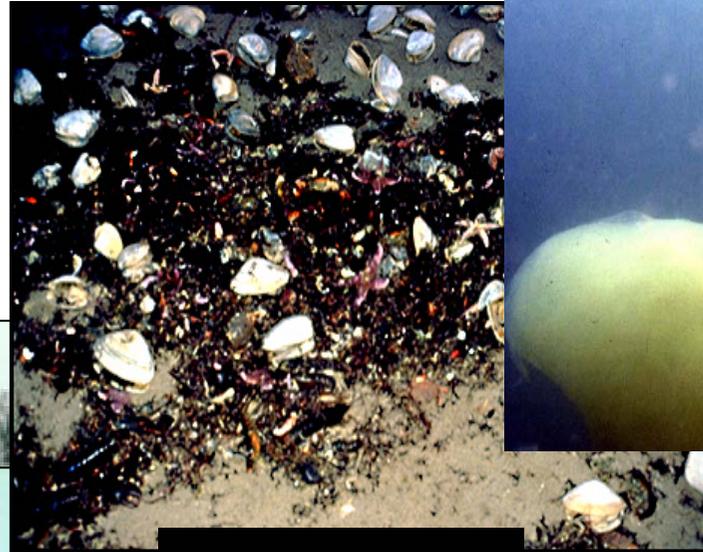


Other impacts

Effluents



Pesticides



Oil spills



Eutrophication



Exercise

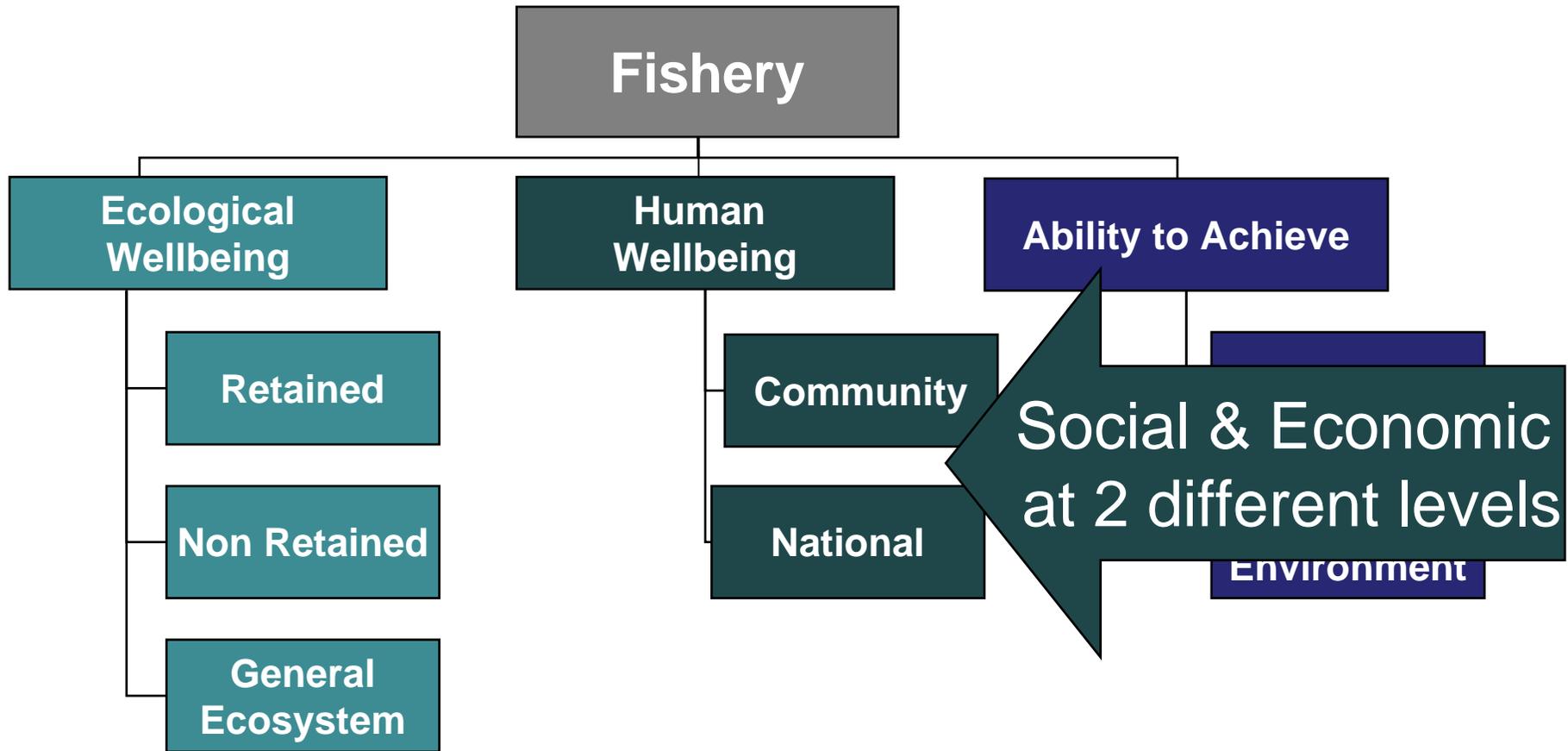
- Produce a component tree of the ecological well-being issues for a local fishery. Discuss all the different elements identified by the whole class

Human Wellbeing Issues

- What are social and/or economic outcomes (positive and negative) currently being generated by the fishery?
- What outcomes does the community want to have generated in the future?
- This will relate to the community values identified in the scoping phase.



Issue Identification

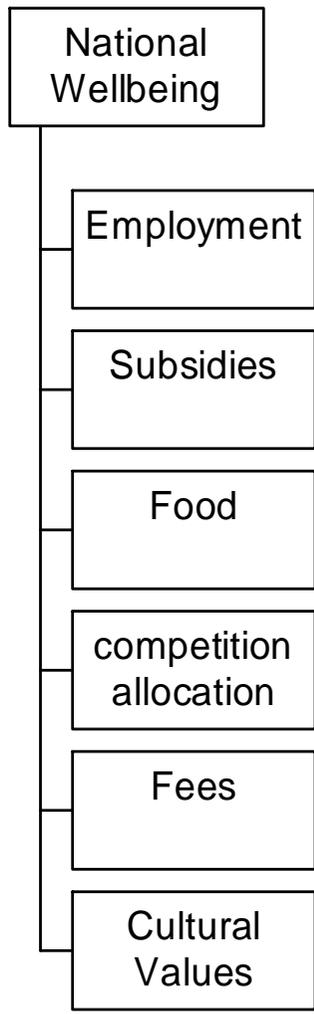
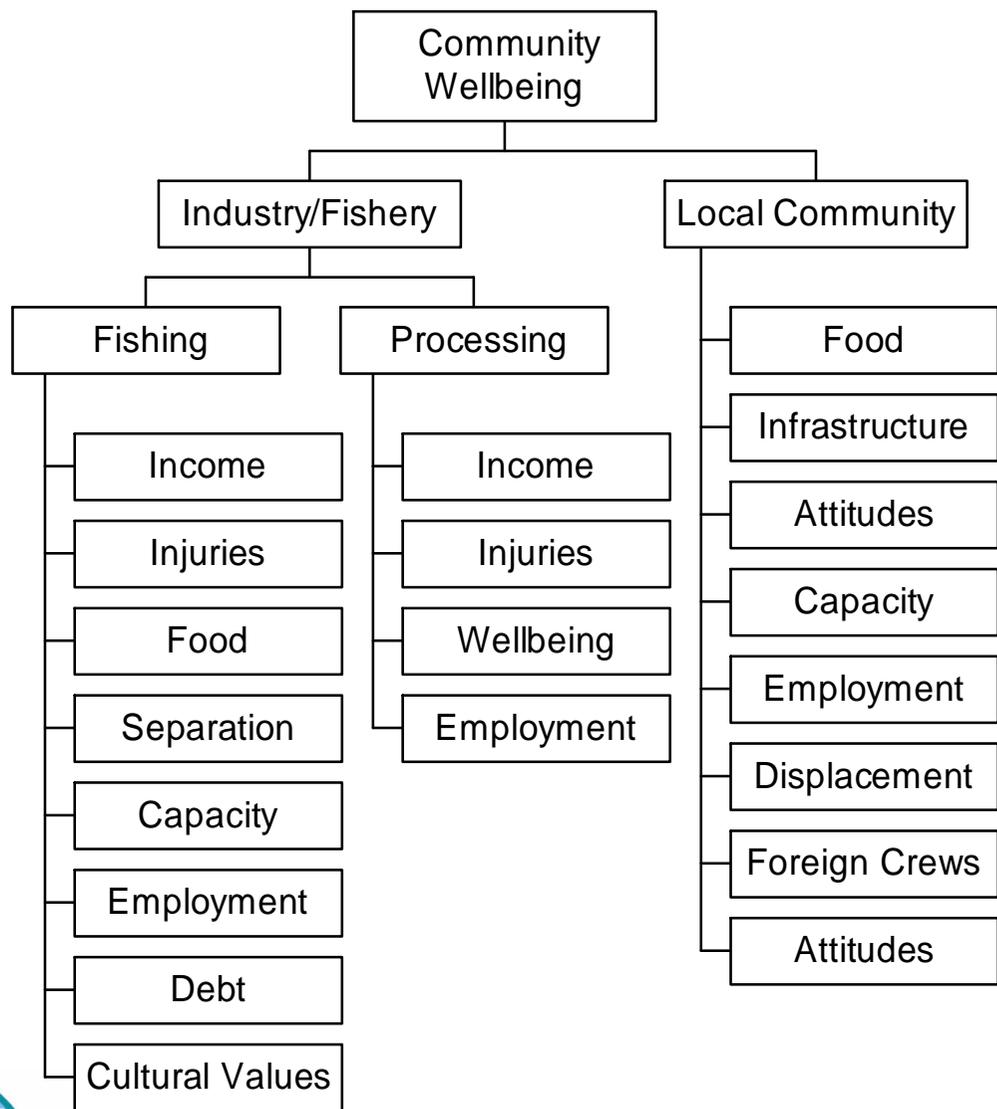


Community Wellbeing

- What are the social and economic issues generated by the fishery that affect the
 - The fishers
 - The local community (ies)
 - The national community



Generic Community and National Wellbeing Trees

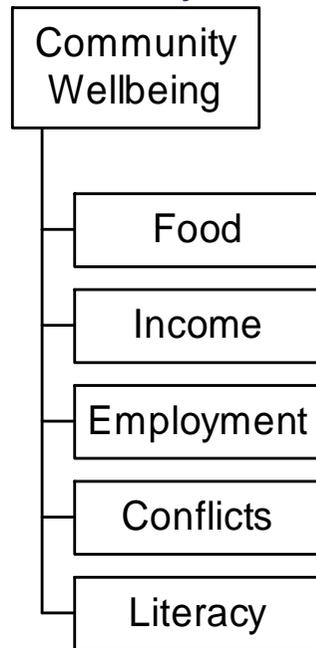


The importance of the fishery sector, and particularly SSF is often undervalued! 34

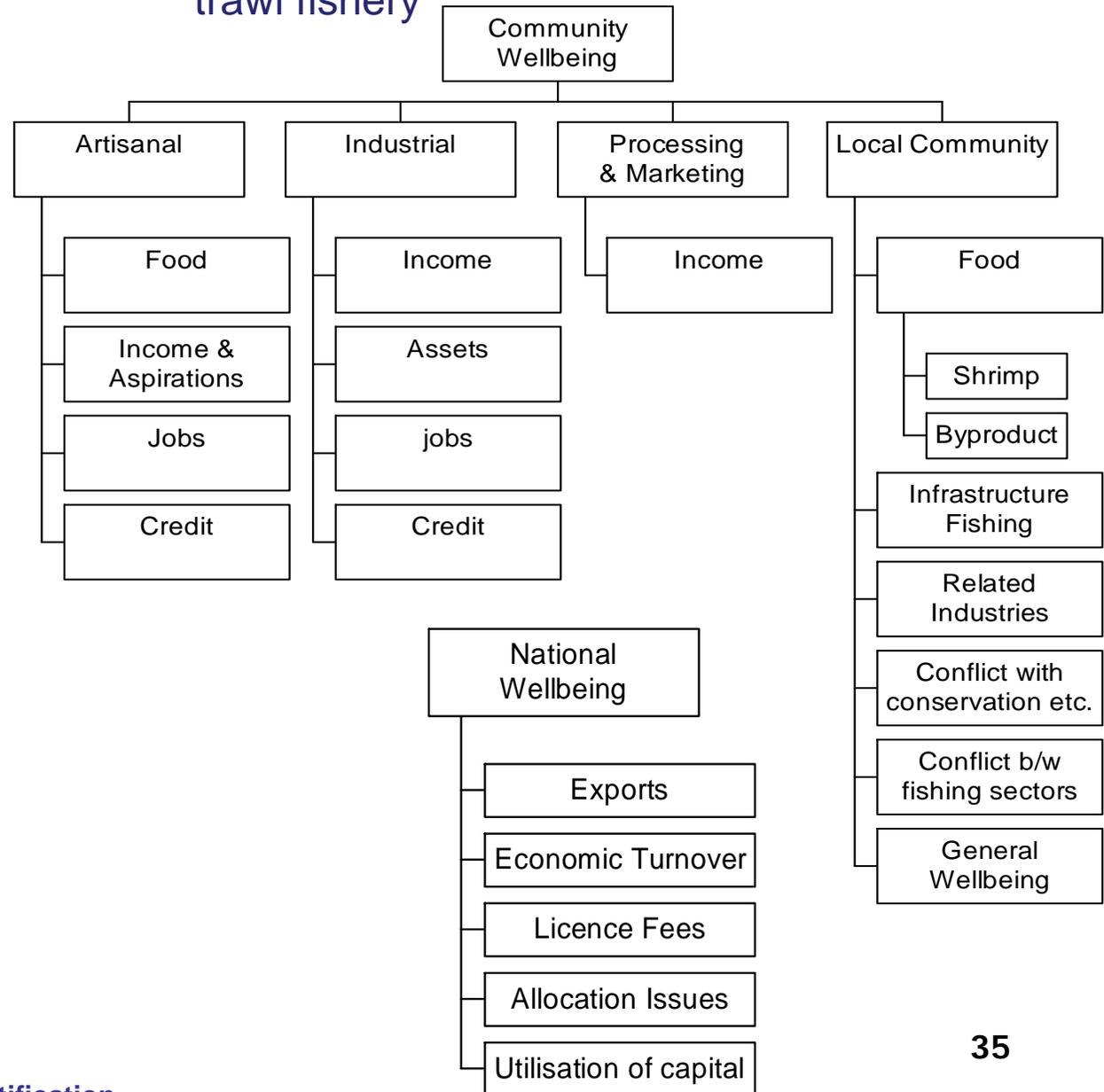


Examples

(a) Modified component trees for Community Wellbeing for a beach seine fishery



(b) Modified component trees for Community and National Wellbeing for an industrial shrimp trawl fishery



Social-economic considerations

- Where a management decision is likely to have a severe social impact, measures should be taken to assist the community
- Where two or more management options are possible which are equally beneficial in ecological terms, understanding the social impacts would allow managers to choose the option which causes least impact on the community

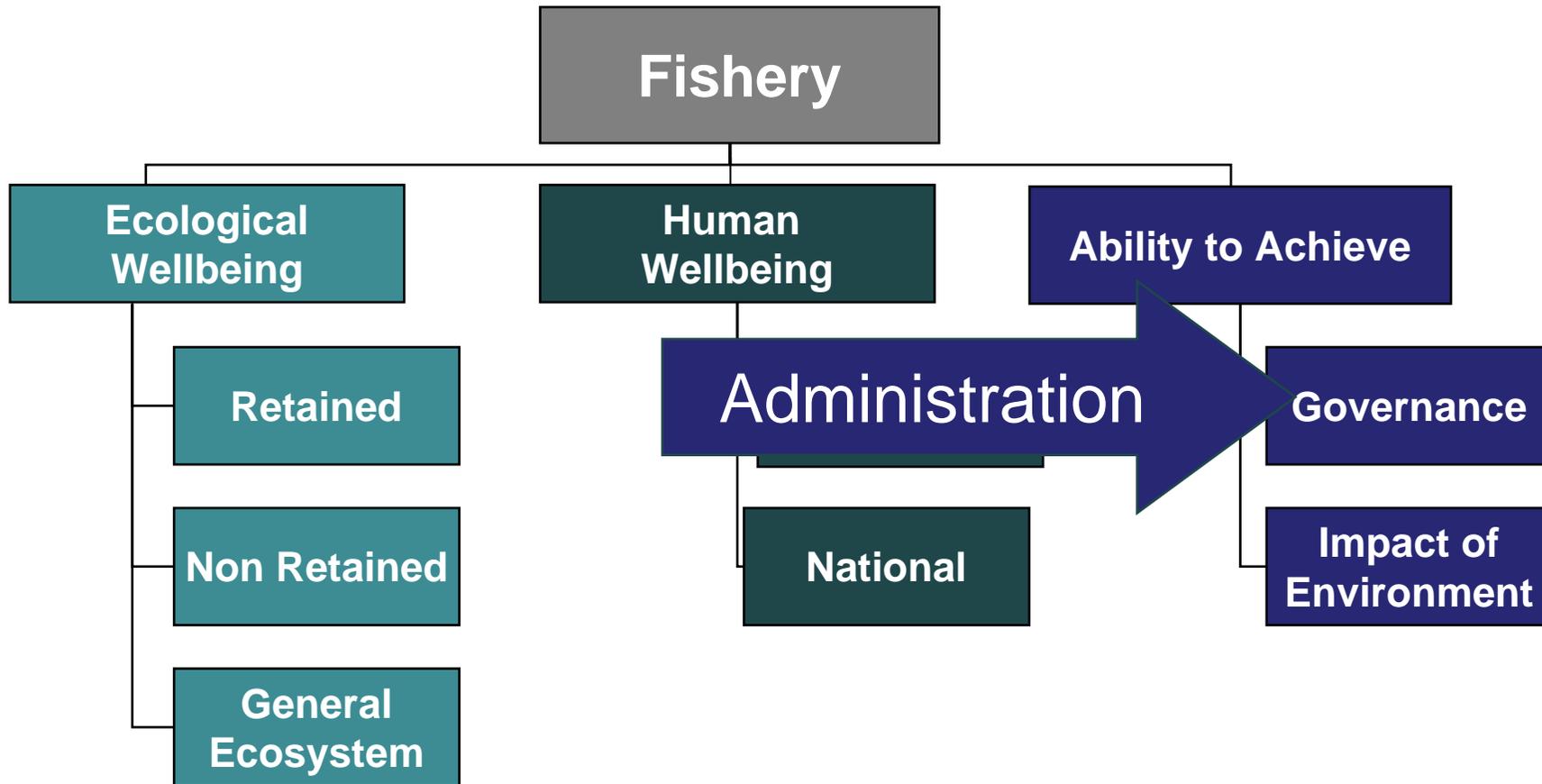


Ability to Achieve Issues

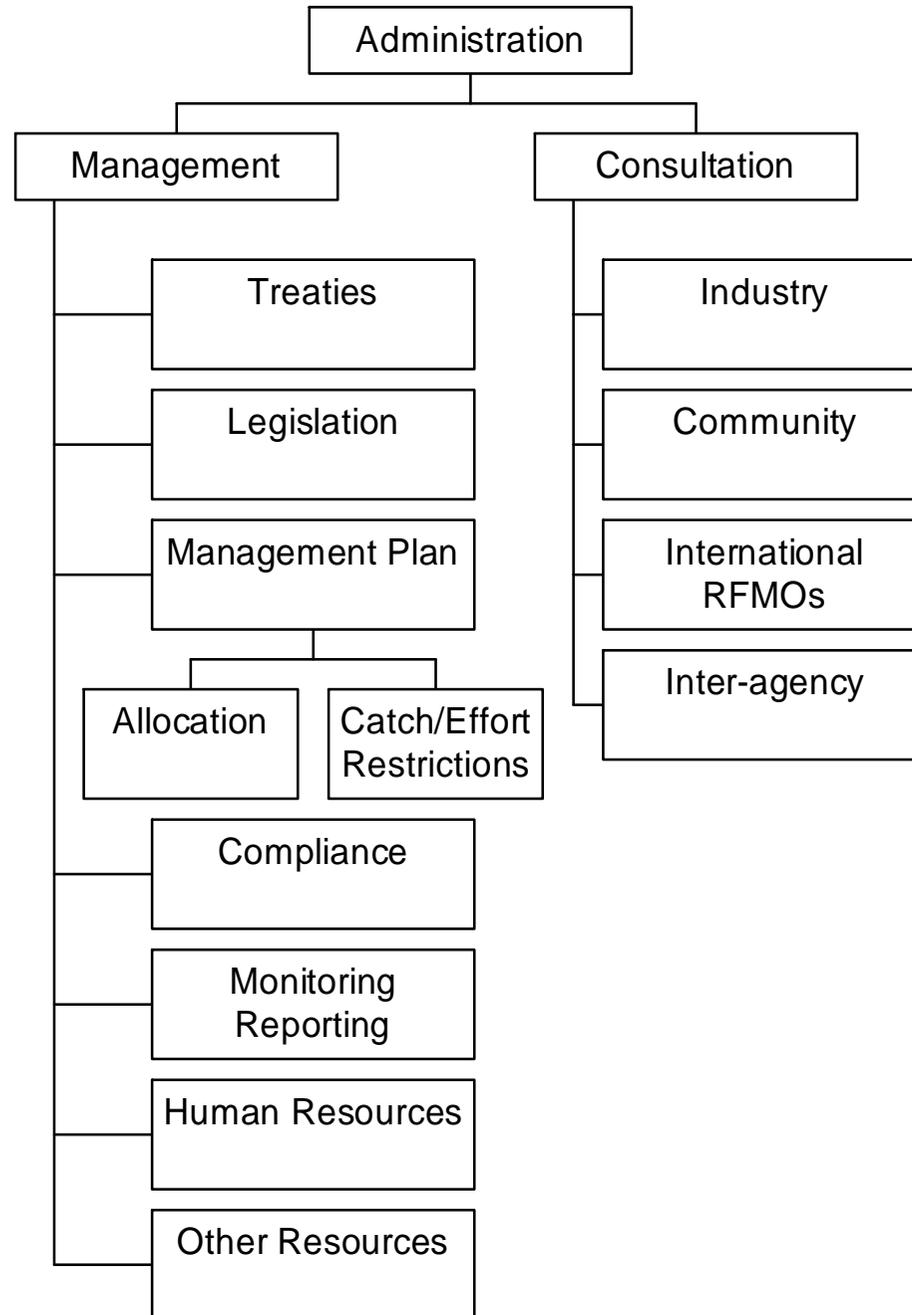
- What governance systems are in place or required to manage ecological impacts and generate social/economic outcomes?
- Should include fishery management, government, agencies, fishers and community
- What external drivers may be affecting the fishery performance that are not controlled by management?
- Includes other agencies, world drivers, natural



Issue Identification



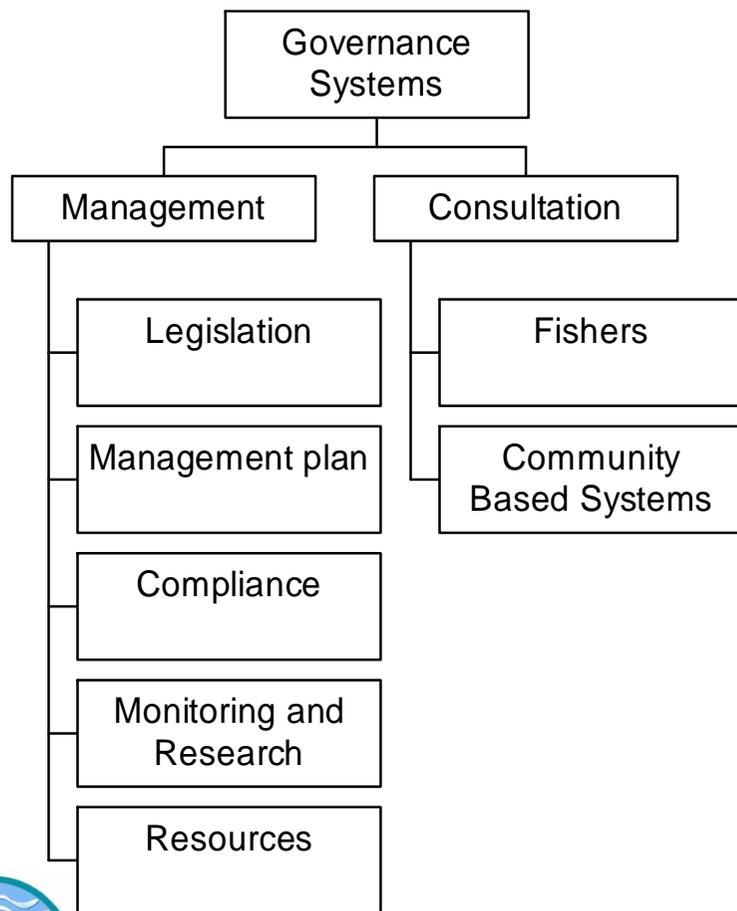
Generic Governance Trees



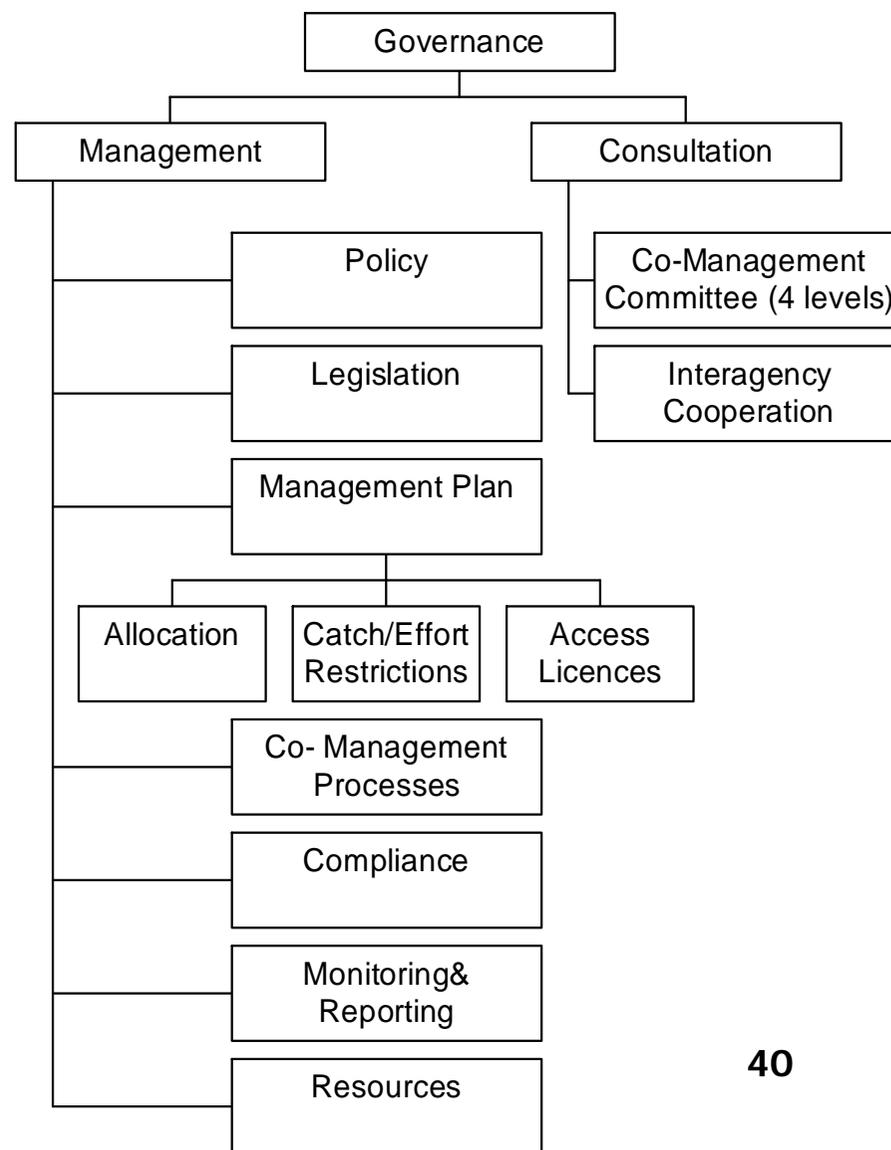
Examples

Revised governance component trees for:

(a) beach seine fishery



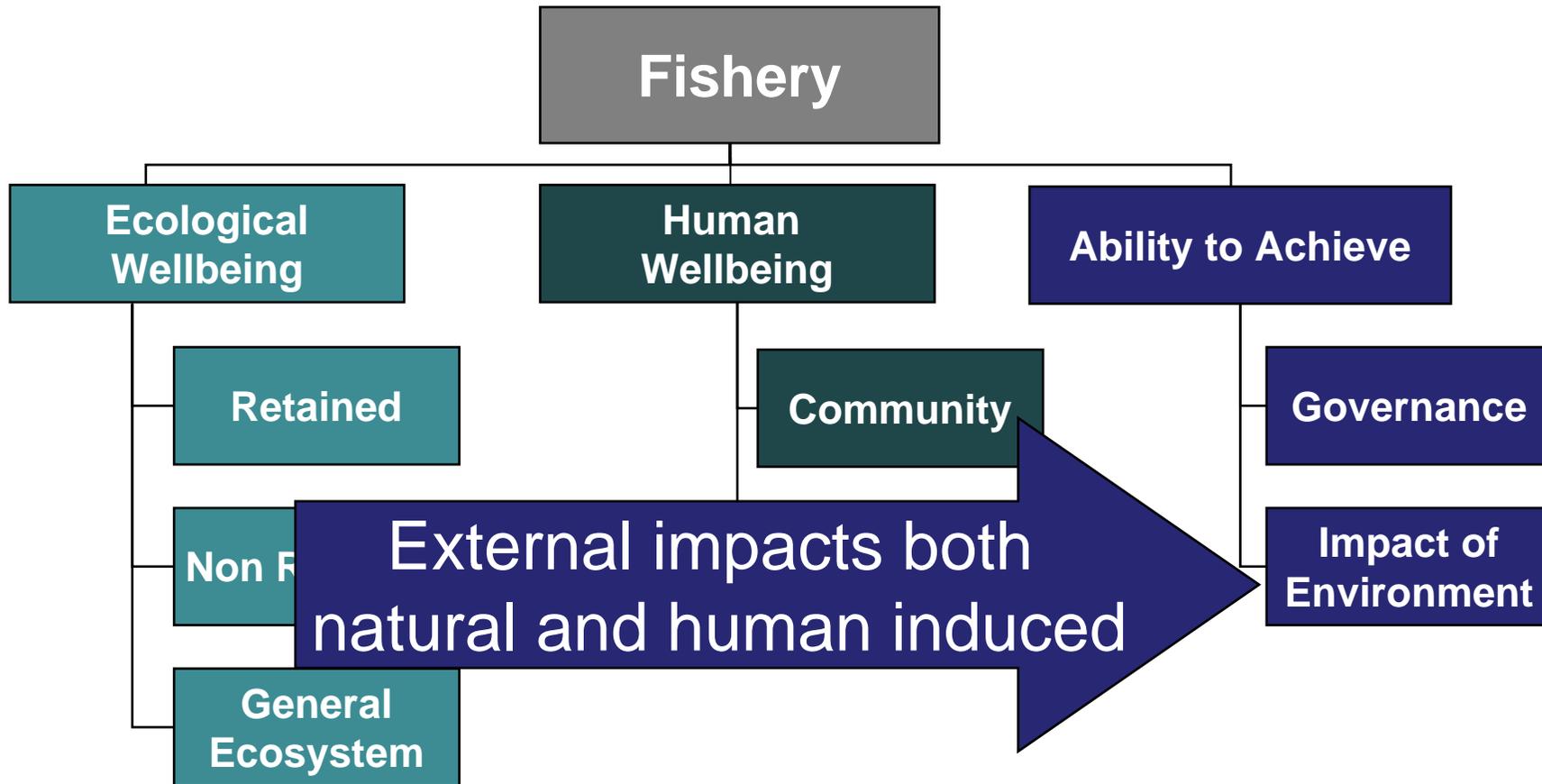
(b) an industrial trawl fishery



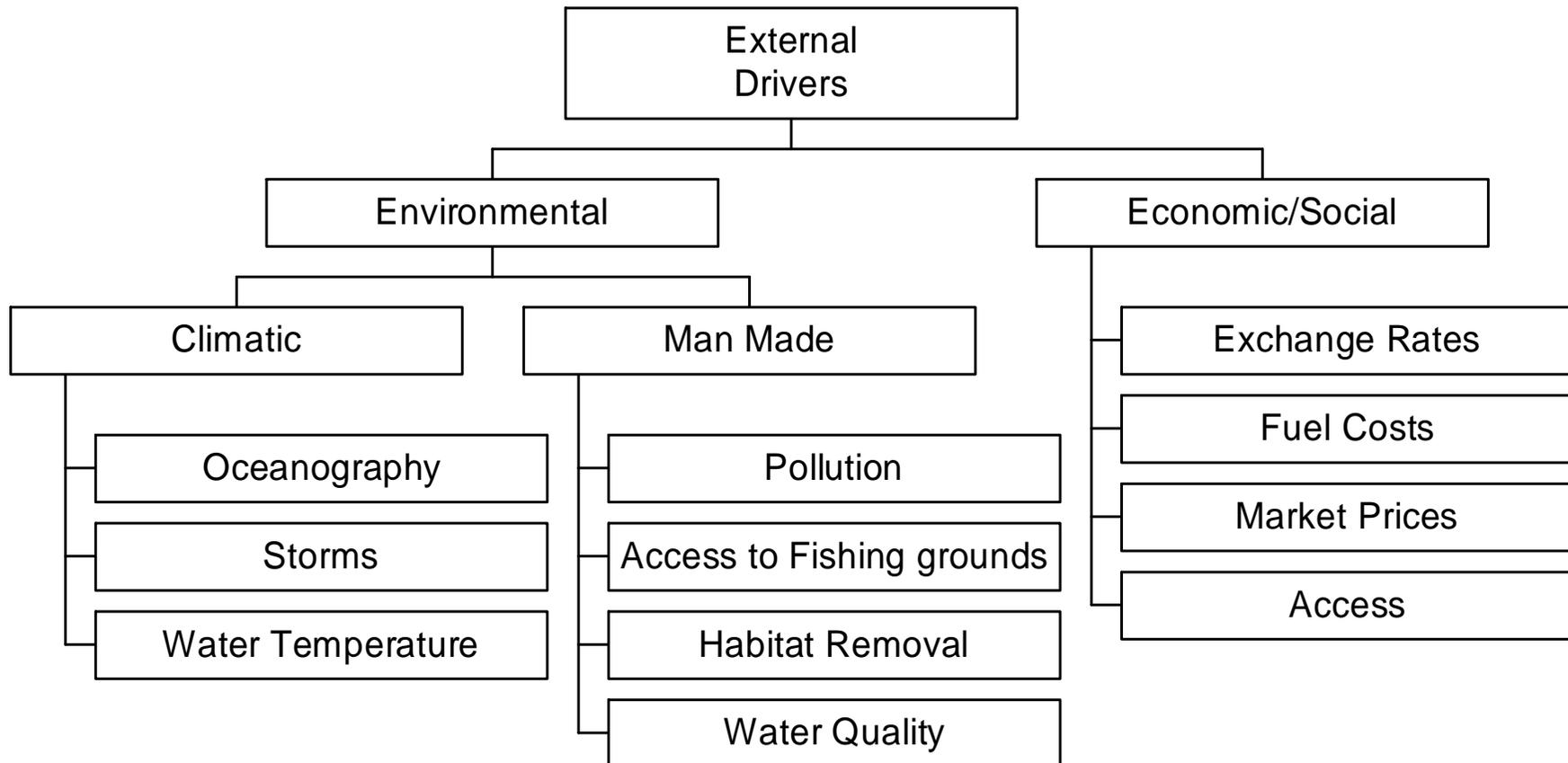
Governance: considerations

- These trees don't change that much.
- All the elements identified in the governance generic tree are important to any fisheries,
- The final mix depends on the fishery and on the context (e.g. level of decentralization of management, allocation of user rights etc.)

Issue Identification



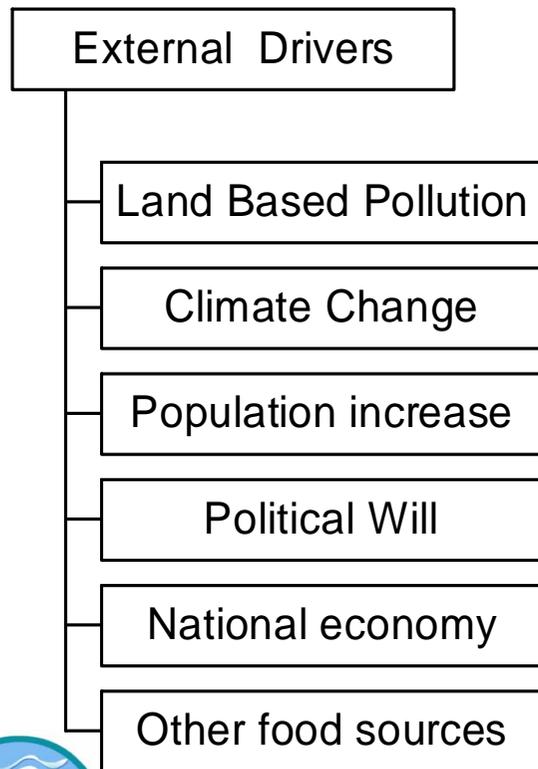
Generic External Driver Tree



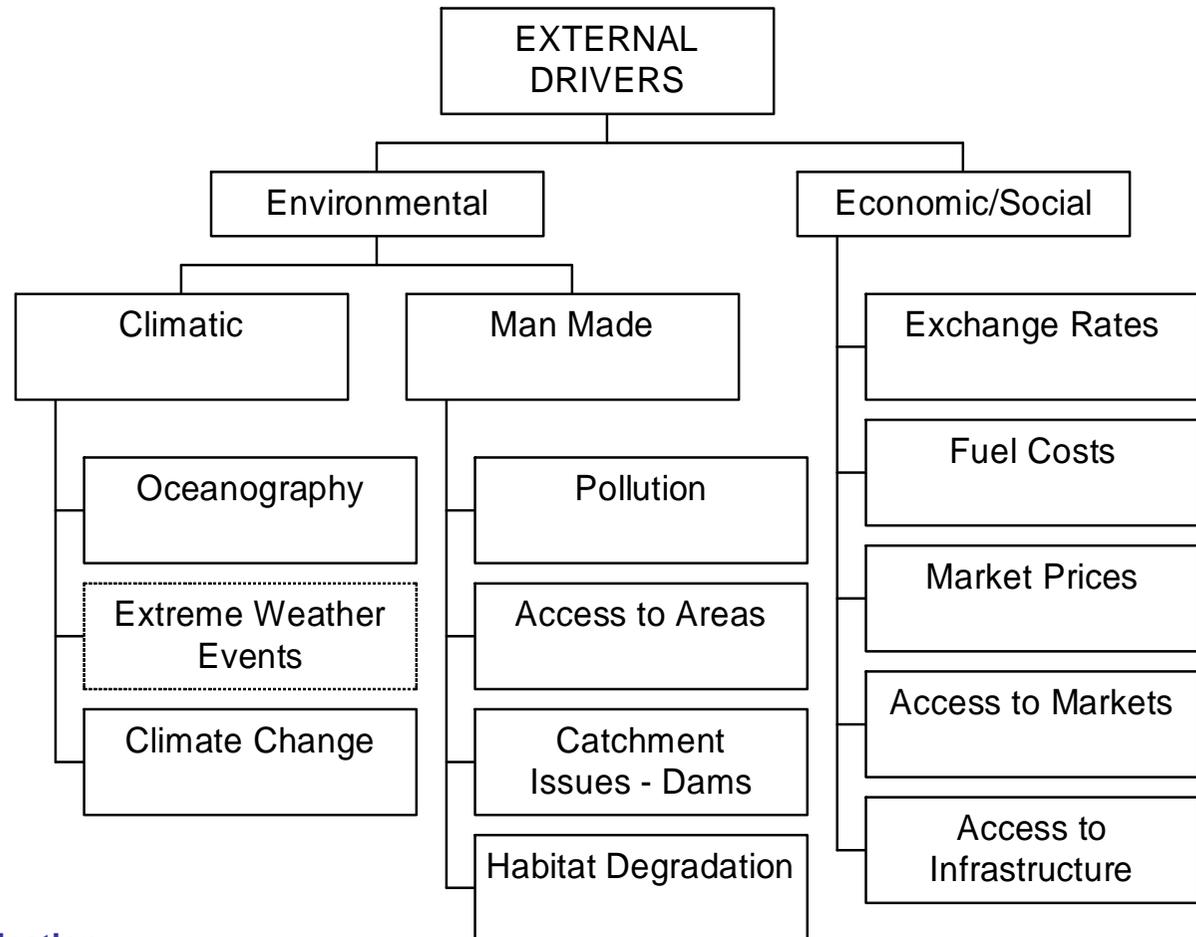
Examples

Modified external drivers trees for:

(a) and a beach seine fishery



(b) an industrial shrimp fishery



2.1 Toolbox

- Stakeholder input is essential!
- Adapt the tools to the stakeholders
- Use a combination of tools

Tools and information sources	Selection criteria						
	Difficulty	Cost	Capacity	Know.	Participation	Time	Robust.
Brain and Card Storming	Easy	L	L -M	L	M-H	S	L-M
Component trees	Easy - Moderate	L -M	M	L	M	S	M-H
Check lists	Easy	L	L-M	L	M	S	M
Impact - asset matrices	Moderate	L- M	M	L	M	S	M-H
Conceptual Models	Moderate	M	M	M	L	S	L-H

L= Low or Long; H= High; M= Medium, S=Short



Case Study

- Review the preliminary issue identification carried out in 2007
- If necessary, redo the issue identification
- Agree on the issues to include