Systems Approach Framework
Issue Identification

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A SYSTEM APPROACH FRAMEWORK FOR
COASTAL RESEARCH & MANAGEMENT

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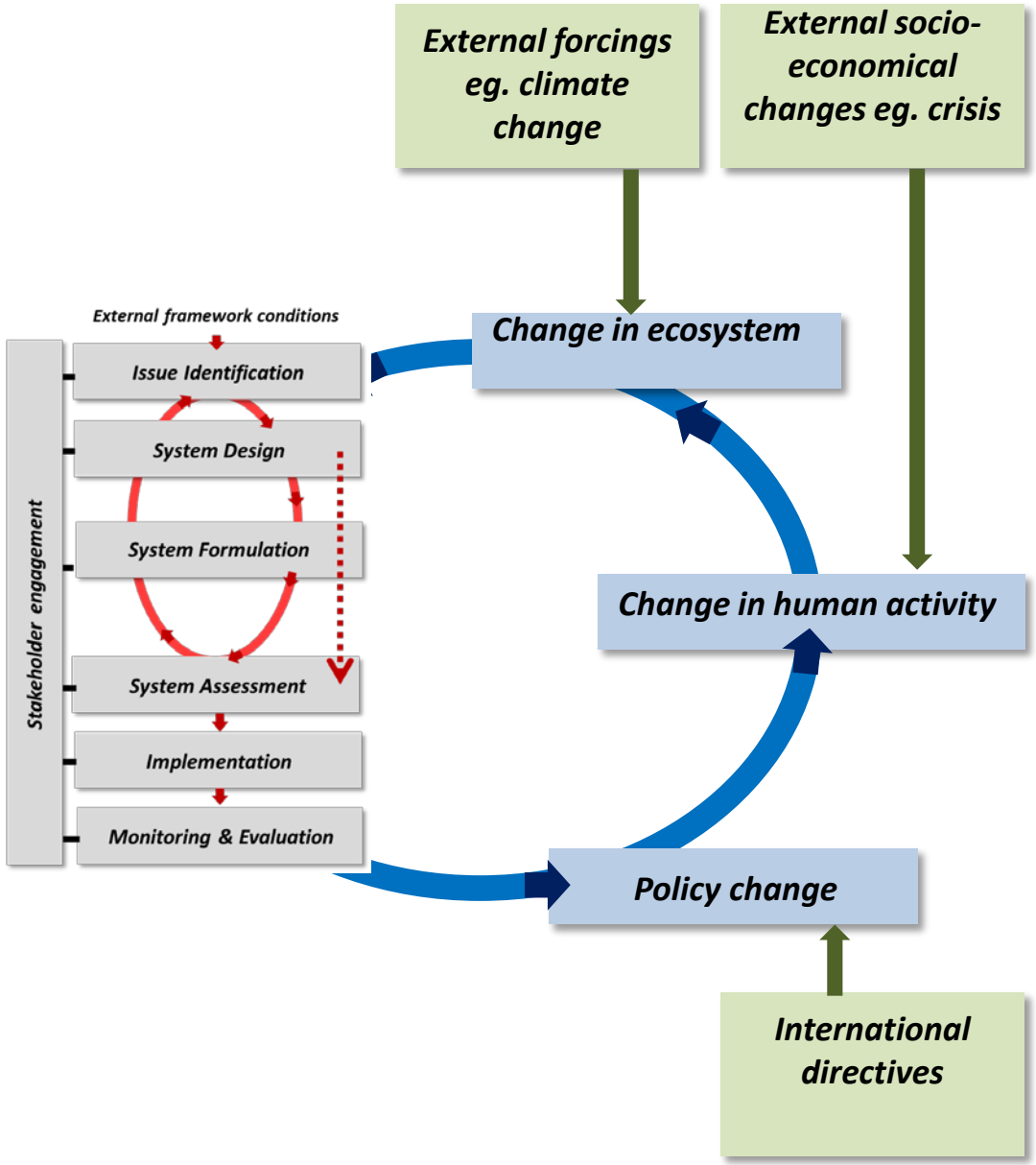
Systems Approach Framework

The SAF ICM loop:

SAF with the ESE assessment



SAF - Issue Identification

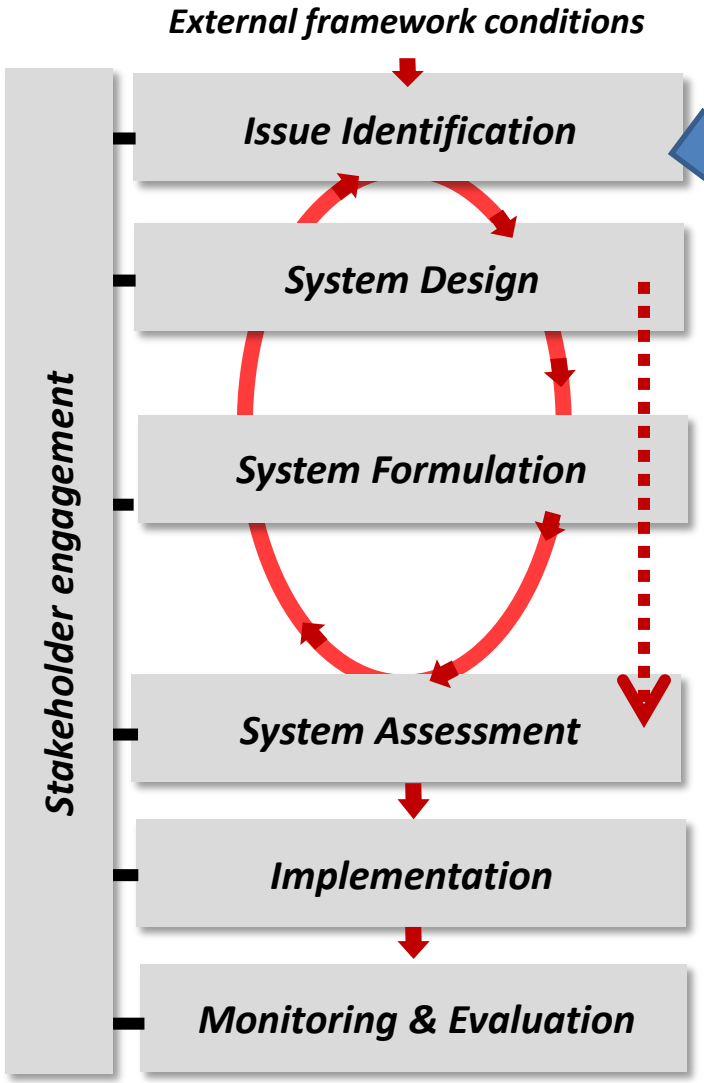
- What is the problem?

Once you have identified the problem you have the core matter and geographic range

- Do we need a SAF – ESE assessment?

The public can be engaged at varying depending on the complexity of the issue(s), the level of the technical evidence-based risk (hazard), and community perspectives and perceptions (outrage) (Sandman 1987; Robinson 2002)

SAF - Issue Identification



- list human activities;
- map institutions and stakeholders;
- list Ecosystem Services;
- engage stakeholders (SH) and conduct consultations;
- map SH preferences;
- prioritise and ID/select issues;
- identify relevant social, economic, environmental components and dependencies (DPSIR, CATWOE).
- history of previous consultation or development

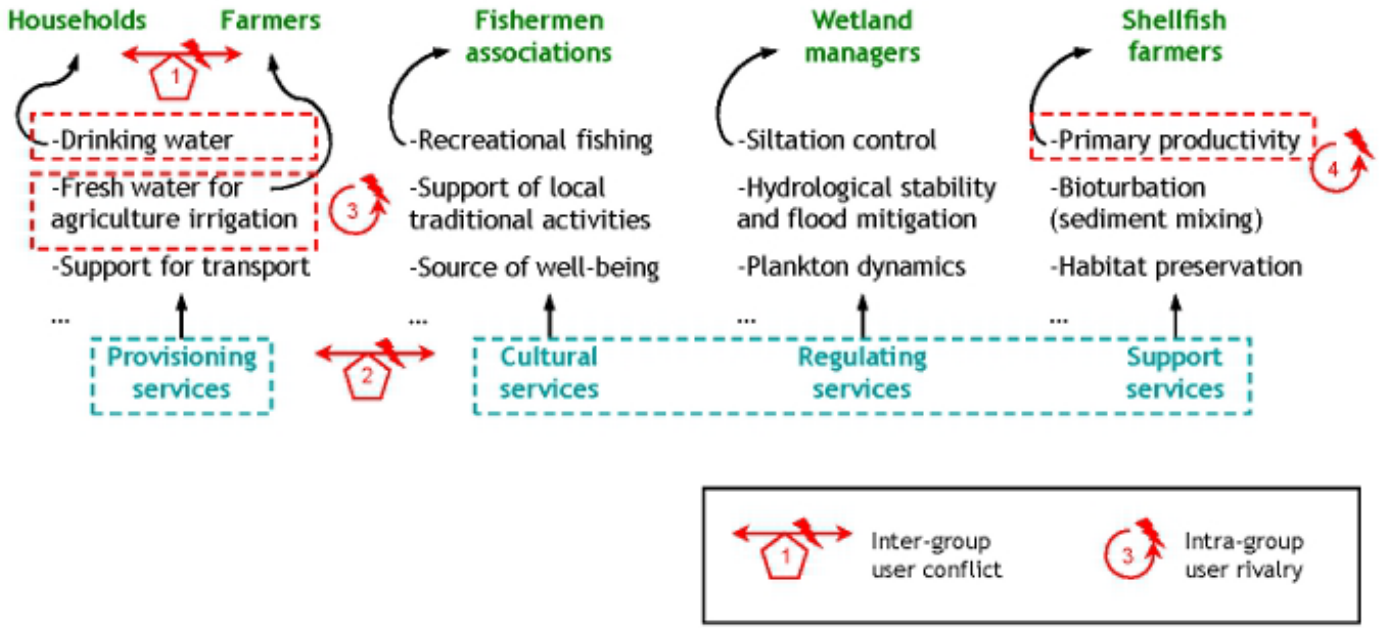
SAF - Issue Identification

- ***List of human activities***

Take a broader perspective – you may narrow it down later in the process, omitting certain activities may lead to omission of important stakeholders.

This can be a list or a diagram.

Example: Activities and potential conflicts for water use (Mongruel et al. 2011)



SAF - Issue Identification

- ***Map institutions and stakeholders***

Institutional mapping:

Explore institutional links (McFadden et al. 2010):

- Identify important features; here, the organizations who are players.
- show the relationships between those organizations – location with respect to each other, social relationships, rules, power.
- Functional and geographical boundaries for each institution.

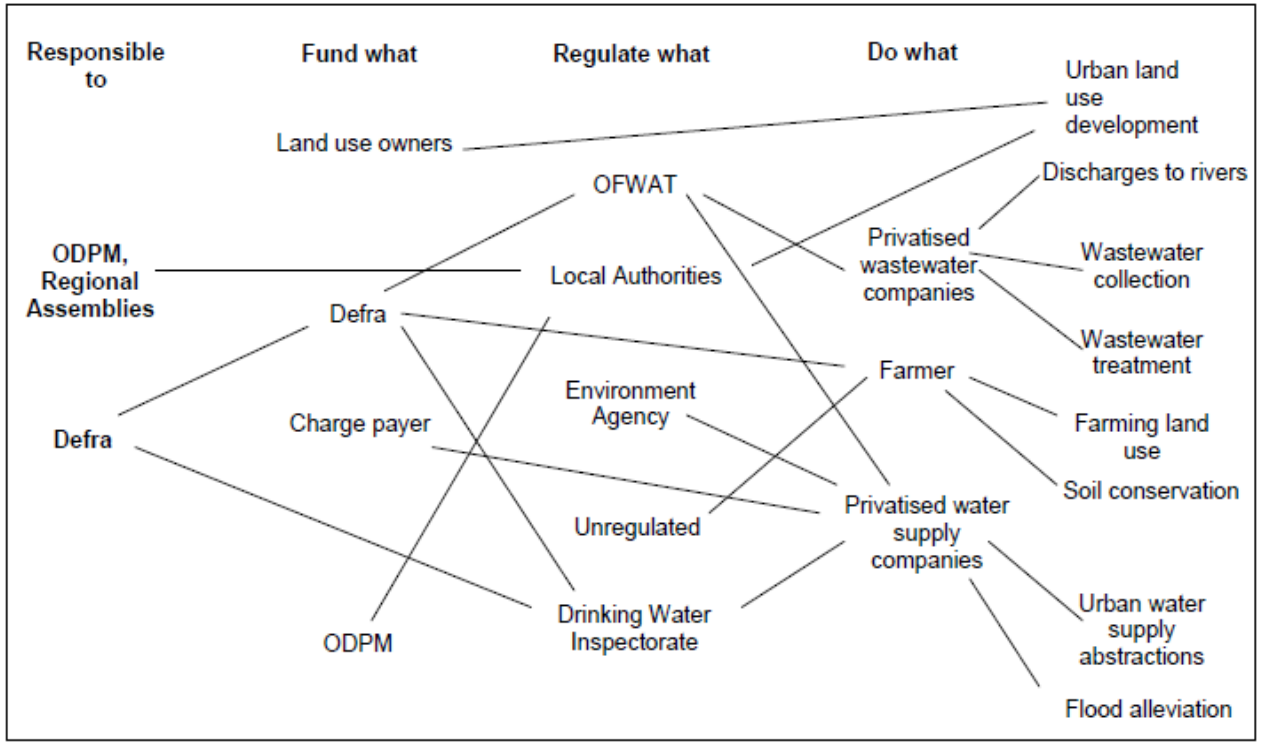


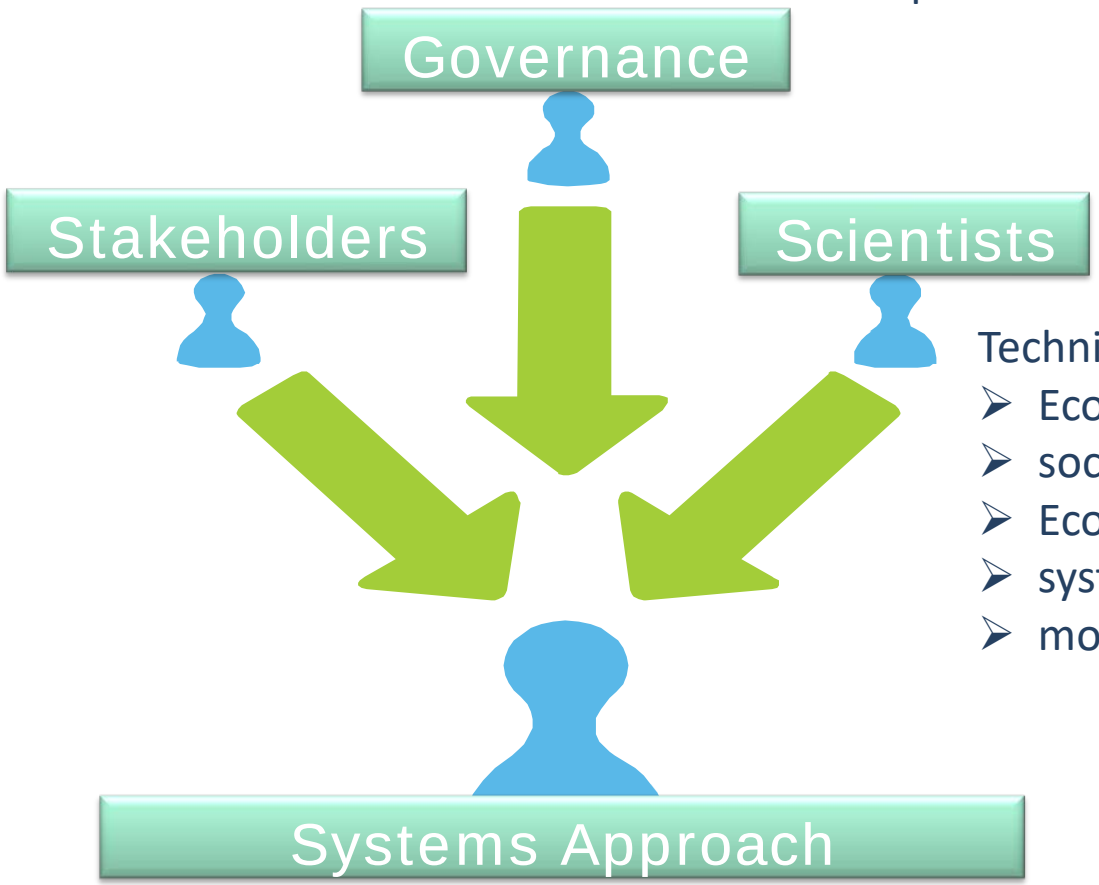
Figure 1 Green (2007)

SAF - Issue Identification

Stakeholder mapping

- make laws or policy
- implement laws or policy

- cause of problem
- affected by problem
- affected by solution
- affected by doing nothing



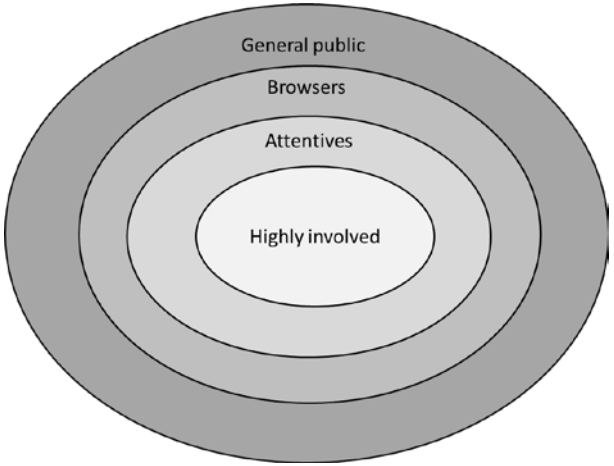
Technical experts:

- Ecologists
- social scientists
- Economists
- system analysts
- modellers

SAF - Issue Identification

Stakeholder mapping also includes exploring:

- their interests, conflict points
- previous participation experience
- minority viewpoints
- influence and networks
- level of participation



Engaging stakeholders

- map their preferences – more on this topic w. J. Schumacher (Stakeholder involvement and tool application)
- Prioritize and agree on Issue
- Agree on goals and objectives for the Issue – success criteria
- Indicators for progress - more on this topic w/D. Karnauskaite (Sustainability indicators and tool application)

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List Ecosystem services

More on this topic w/ M. Inacio (Ecosystem services and tool application)

Table 3.1. Ecosystem Goods and Services

Category	Goods and Services
Provisioning services	1. Food provision
	2. Raw materials
	3. Genetic, medical and ornamental resources
	4. Fresh water
Regulation services	5. Gas and climate regulation
	6. Water regulation
	7. Disturbance prevention (Erosion control)
	8. Bioremediation of waste
Cultural services	9. Cultural heritage and identity
	10. Leisure and recreation
	11. Cognitive benefits
	12. Feel-good (non-use benefit)
	13. Future unknown and speculative
Option-use value	14. Primary production
	15. Habitat provision
Supporting services	16. Nutrient cycling
	17. Soil formation and retention
	18. Resilience and resistance

SAF - Issue Identification

Identify relevant environmental, social and economic components relevant to the Issue

- Use DPSIR and CATWOE

SAF - Issue Identification

The DPSIR framework. Drivers, Pressures, State, Impact, Responses

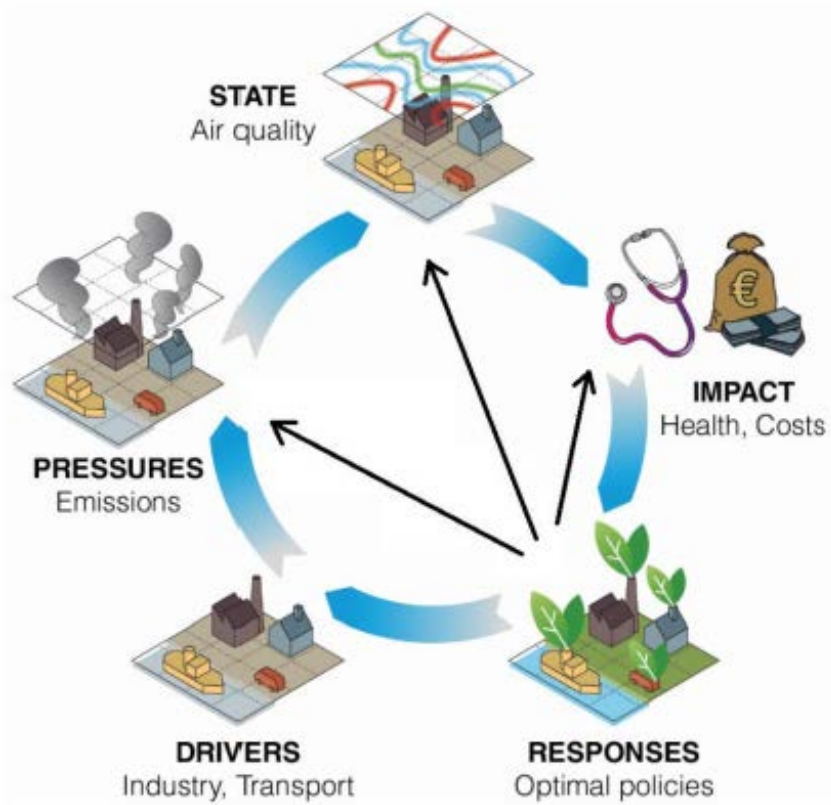

Figure 2 The DPSIR framework in its original form as in Smeets & Weterings (1999)

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DPSIR
Driver: Needs of human society (**food,** water, fuel, shelter, etc.) This often relates to a HA (food= agriculture) *giving rise to.....*
Pressure: HA that stress the environment (increasing loading with nutrients), *resulting in a shift in the …..*
State: The situation at a specific time and the forced rate of change in the ecosystem (increasing nutrients, phytoplankton, primary production, shift from fish to mussels, change of makro vegetation –regime shifts) *which may be diagnosed as an …..*
Impact: the 'undesirable disturbance' (e.g. harmful algal blooms, water quality/clarity). End results of a cause-effect chain *causing a …..*
Response: response of society to losses of Ecosystem services - measures to mitigate the Driver and Pressure eg. WFD targets for nutrient reductions= often leading to a Policy change.

SAF - Issue Identification

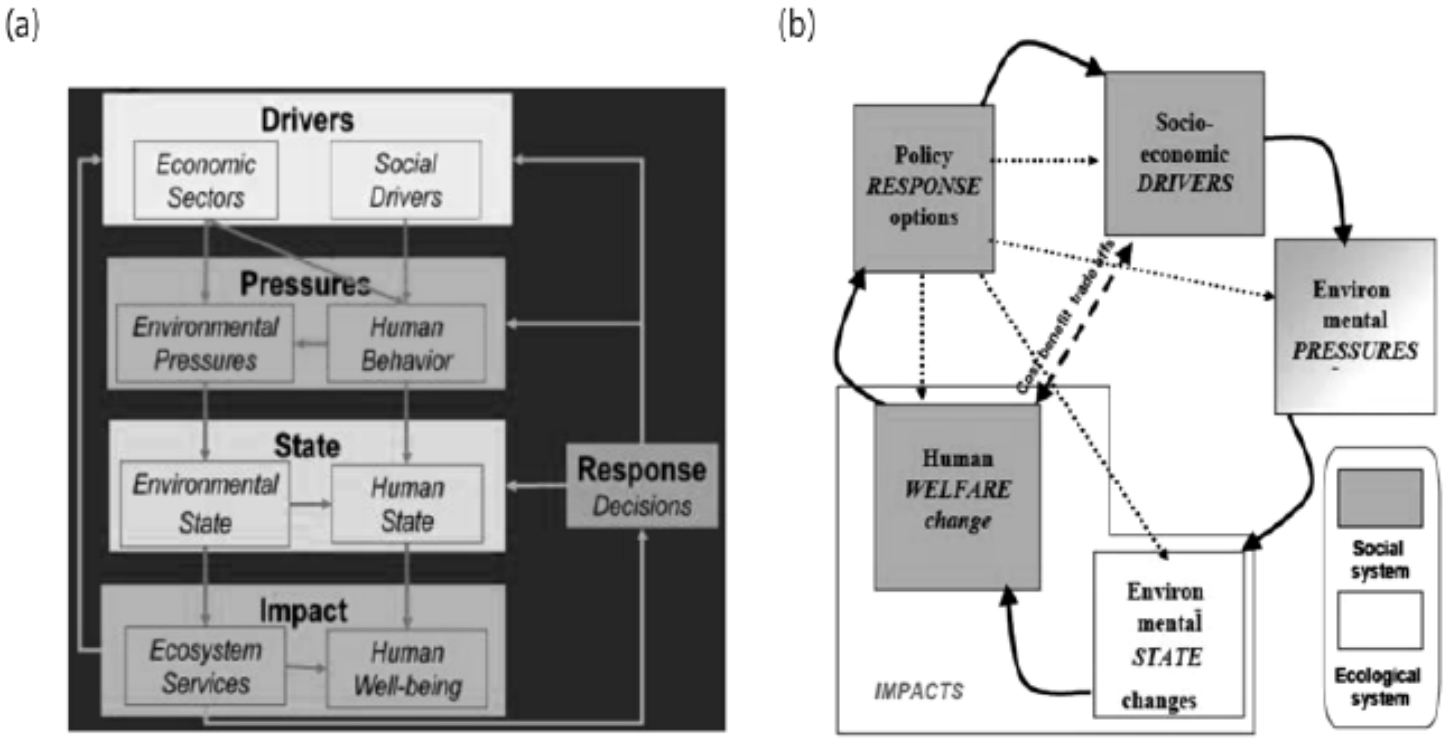

Figure 3 Two different adaptations of the DPSIR framework that aim at an improved consideration of the social component. In (a) a parallel pathway is added to consider human health. In (b) the term *Impact* is replaced by *Welfare*, separating changes in the environmental and social dimensions. The frameworks are taken from EPA (2012) and O' Higgins et al. (2011)

SAF - Issue Identification

The CATWOE

- Customers, beneficiaries/victims:
- Actors:
- Transformation:
- Worldview:
- Owners:
- Environment:

SAF - Issue Identification

CATWOE- Customers, beneficiaries/victims:

- Who is on the receiving end?
- What problem do they have now?
- How will they react to new management options?
- Who are the winners and losers?

SAF - Issue Identification

CATWOE - Actors:

- Who are affected directly?

SAF - Issue Identification

CATWOE - Transformation:

- What are the inputs and where do they come from?
- What are the outputs and where do they go to?
- What are the steps in between?

Eg. Public demand for water clarity, for high quality food, etc.

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CATWOE - Worldview:

- What is the bigger picture into which the situation fits (may differ among stakeholders)
- What is the real problem for each stakeholder
- What is the wider impact of any solution?

Example: Mussel production is an important income source in the area. Mussel dredging is harmful to the environment impoverishing the fjord.

SAF - Issue Identification

CATWOE - Owners:

- Who can help or stop you?
- What will cause them to get in your way?
- What will lead them to help?

Example: Ministry, national municipals, local councils.

SAF - Issue Identification

CATWOE - Environment:

What are the external constraints and limitations affecting the success of the solution?

What are the ethical limits, laws, financial constraints, limited resources, regulations?

How might these constrain your solutions?

How might you get around them?

Example: Agriculture or farming technology, regulating laws, improved land-use in catchment, upland assimilation, marshland/wetlands.

SAF - Issue Identification

Exercise in SAF Issue Identification:

- Group of 3-5 persons – maximum of 5 groups for the whole class.
- You have 30 min to work on this exercise
- Choose a problem or Issue among you. It should be fairly complex and high risk
- Work out the DPSIR for the Issue – draw on a sheet of paper and prepare to present to the whole class within 5-6 min
- If you still have time…. Work out the CATWOE for the same Issue – draw or write on a sheet of paper and prepare to present to the whole class within 5-6 min.

Thanks to all BaltCoast colleagues and C. Gillgren, who have contributed to the further development of the SAF

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