Coastal Zones of Yemen - limited management meets Climate Change

Institution-centered Strategic Environmental Assessment of CZM in Yemen

Uwe Zajonz[1], Edouard Lavergne[1, 2], Gamal Al-Harrani[1], Bunei Nishimura[1, 3]

[1] *Biodiversity and Climate Research Centre (BiK-F), Frankfurt am Main /* [2] *LEMAR* & [3] *AMURE, IUEM, Université de Bretagne Occidentale , Brest*

Background

Yemen is among the poorest countries in the world (133rd of 169, UNDP Human Development Index 2010). The coastline is 2,200 km long and inhabited by approx. 4 mio in 9 coastal governorates. Coastal Social-ecological Systems (SES) provide a wide range of ***Ecosystem Services*** (ESS) for human well-being (Millenium Ecosystem Assessment 2005, MA), considered a key hub for development.

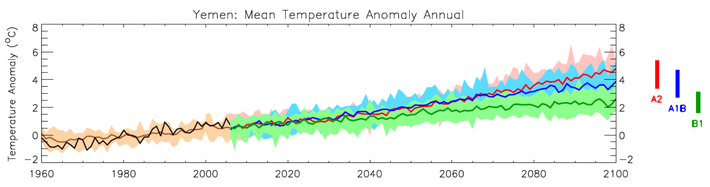

Fig. 1: Temperature trend Yemen (UNDP 2010)

Climate is expected to change substantially, with temperatures rising by ~2.5° C until 2080. Yemen ranks among the most vulnerable countries concerning impacts on their fisheries economy (Allison et al 2009).

Coastal Zone Management is not well mainstreamed in Yemen. Pressures are severe and aggravated by the looming effects of climate change, calling for adaptive management.

Strategic Environmental Assessment (SEA) is piloted as a tool to influence the process of policy formation and institutional adjustment towards climate-adapted CZM.

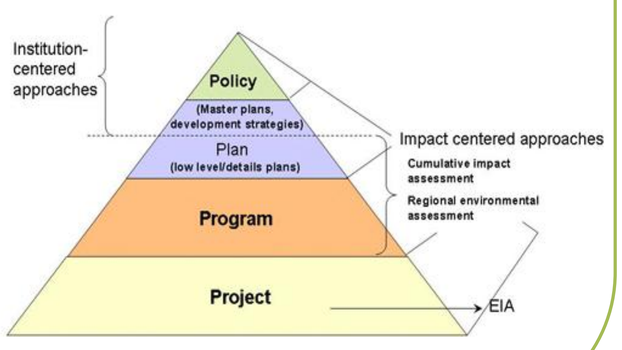

Fig. 2: Levels of Environmental Assessment

Take home

Vulnerability of Yemen: is very high.

Coastal ESS: negative prospect expected for the majority, threatening food security and development targets.

Policy/Institutional frameworks: need reform towards climate-adaptive CZM.

Methods

Data collecting and structuring

- Reconnaissance surveys
- Rapid Environmental Project Screening (REPS)
- Workshops and SWOT-analysis
- Baseline assessment (existing data)
- Screening of Change Drivers and explorative Vulnerability Assessment
- Stakeholder analysis and political economy
- Training needs assessment
- Institutional assessment and gap analysis
- Case studies (Fig. 3)

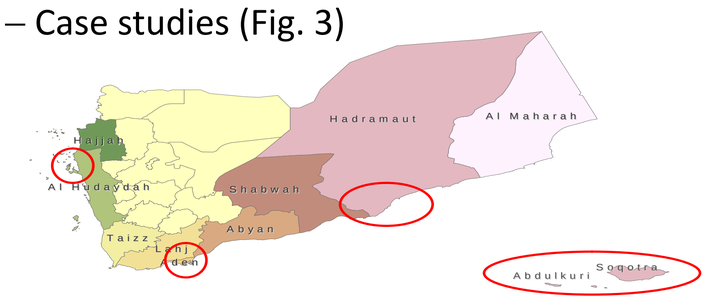

Fig. 3: Case study areas (W-E: Hodeidah, Aden, Mukallah, Socotra)

Institution-centered SEA

The study approach was modified from World Bank methods (World Bank 2010).

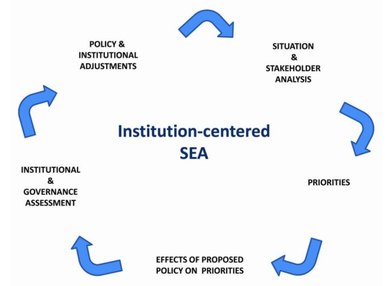

Fig. 4: I-SEA s a non-linear, iterative process for main- and up-streaming environmental and social issues into *Policies, Plans & Programmes* (World Bank 2010)

Results

Analytical framework

Specifically developed, 4 key steps (Fig. 5):

1. Coastal situation analysis
2. Strategic Management Priorities
3. Benchmarking governance
4. Scope for action

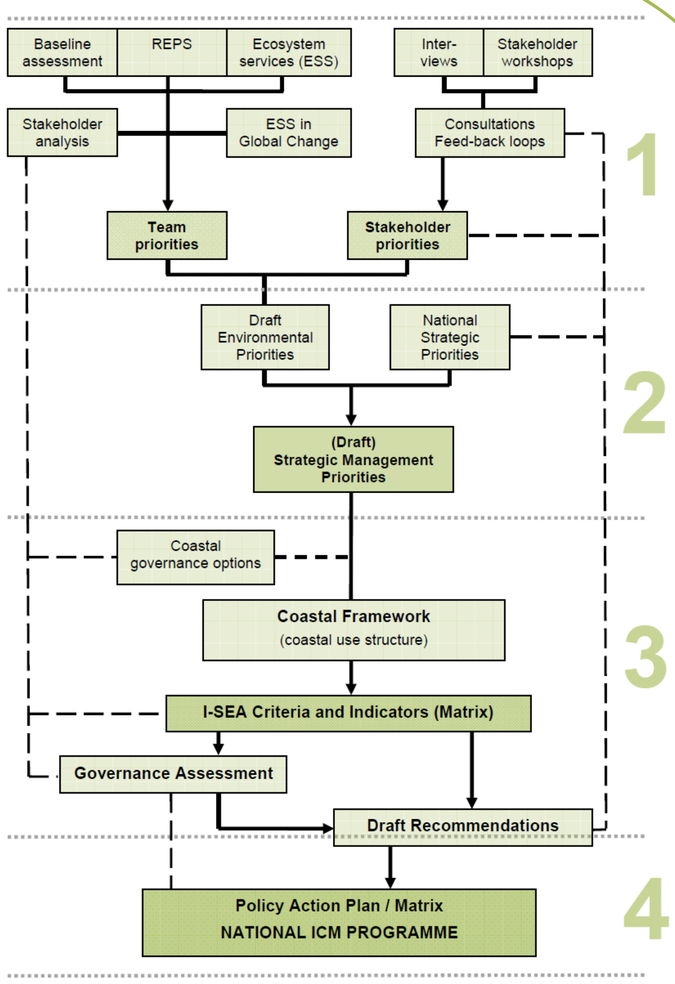

Fig. 5: Analytical framework developed for the pilot I-SEA, allowing iterative improvement of results and participatory feed-back loops according to the continuing I-SEA process cycle (Fig. 4)

Coastal situation analysis

19 coastal ecosystem types in 7 categories exist, related to 25 rated ESS.

Negative trends for a majority of coastal ESS are revealed by a screening of general change.

Climate change is the most powerful driver of change, followed by *Harvest and resource consumption* and *Land use and habitat change*.

Provisioning services appear most susceptible, especially "*Food*" and "*Freshwater*".

Wetlands, mangroves, coral "reefs" and island systems are most concerned ecosystem types.

17 ESS are highly vulnerable to CC specifically.

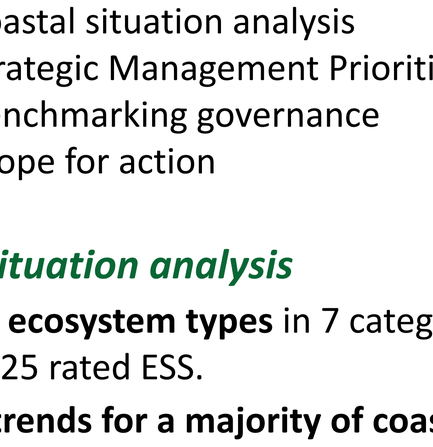

Fig. 6: 25 Coastal ESS ranked according to a Vulnerability Assessment

Strategic Management Priorities

1.Coastal Planning and Management
2.Sustainable (Socio-) Economic Development
3.Biodiversity Conservation and Ecosystem Management
4.Climate Adaptation Management
5.Fisheries Management
6.Water and Watershed management

Governance and scope for action

The legal and institutional frameworks governing coastal management are insufficient. Technically, capacities are lacking at all levels. A ***National Integrated Coastal Management Strategy*** is proposed and a detailed ***Policy Action Plan*** provided.

References

Allison et al. (2009). Vulnerability of national economies to the impacts of climate change on fisheries. Fish & Fisheries 10(2): 176-192

IPCC (2007). Climate Change 2007: Working Group II Contributions.

Millennium Ecosystem Assessment (2005). Synthesis Report.

UNDP (2006-2010). UNDP CC Country Profiles. (websource)

World Bank (2010). WB Toolkit. Institution-centered SEA. (websource)

Zajonz et al. (2010). Final Synthesis Report. Yemen SEA of CZM. Report to the World Bank and the EPA Yemen. GOPA and BiK-F, i-viii + I-IX + 129 pp. + 10 Annexes.

The study was conducted for the Ministry of Water and Environment and the Environment Protection Authority of Yemen, funded by the World Bank and the Bank-Netherlands Partnership Programme and prepared from 2009 to 2010 at the BiK-F, Frankfurt a.M. in conjunction with GOPA Consulting, Bad Homburg.

LOEWE – Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz