AQUACROSS Lessons and Recommendations

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Lessons from applying ecosystem-based management in the AQUACROSS Case Studies

OVERALL, HOW USEFUL IS ECOSYSTEM-BASED MANAGEMENT FOR PROTECTING AQUATIC BIODIVERSITY?

The eight AQUACROSS case studies are evidence that ecosystem-based management is practically doable and can be used to design more effective, efficient, and equitable management measures and policies for protecting biodiversity.

At the same time, ecosystem-based management is not revolutionary. Nevertheless, ecosystem-based management does have unique strengths. Here, we use the principles of ecosystem-based management to identify strengths of ecosystem-based management, as demonstrated by experience in the case studies.

WHAT ARE THE BENEFITS OF ECOSYSTEM-BASED MANAGEMENT, AND HOW WERE THESE ILLUSTRATED IN THE CASE STUDIES?

1 EBM Principle 1: EBM considers ecological integrity, biodiversity, resilience and ecosystem services

Ecosystem-based management focuses on multiple ecosystem services and aims to maximise their joint value, whilst at the same time considering the dynamic relationships within ecosystems.

Examples from the AQUACROSS Case Studies

- The Intercontinental Biosphere Reserve of the Mediterranean case study (see Case Study: Spain/Morocco) considered multiple ecosystem-services (including provision of food, recreational activities, water supply, and cultural/spiritual value) to select protected area sites that delivered broader benefits than just biodiversity protection.

Further reading:
Deliverable 3.2

- The Swedish case study (see Case Study: Lake Ringsjön, Sweden) considered dynamic social relationships overtime to better understand how the timing of sewage discharge regulations would affect lake water quality.

Further reading:
Deliverable 7.2

2 EBM Principle 2: EBM is carried out at appropriate spatial scales

Ecosystem-based management considers ecosystem rather than jurisdictional boundaries to reach decisions and take actions at the appropriate level, and as a result can require transboundary cooperation.

Examples from the AQUACROSS Case Studies

- The Danube case study (see Case Study: Danube) considered the whole of the Danube river catchment to select sites for efficient and effective river restoration, rather than making choices at the national level. This may lead to better overall biodiversity outcomes at lower costs. The interdisciplinary and transboundary data generated was stored on the Information Platform (see Information Platform).

Further reading:

Deliverable 2.1
Deliverable 3.2
Deliverable 7.3

- The Lough Erne case study (see Case Study: Lough Erne, Ireland) considers the lake as part of linked social-ecological system that crosses the Northern Ireland/Republic of Ireland border. By considering policies and drivers and pressures from the whole system in their evaluation of potential management measures, they better identify the need for cooperation.

3 EBM Principle 3: EBM develops and uses multi-disciplinary knowledge

EBM emphasises the importance of understanding the social-ecological system, which requires detailed multi-disciplinary expertise, drawing on scientific as well as local and traditional knowledge.

Examples from the AQUACROSS Case Studies

- The North Sea case study (see Case Study: North Sea) used the AQUACROSS Linkage Framework (see Information Platform) to develop a semi-quantitative description of the social-ecological system. When combined with stakeholder input, this allowed them to identify important drivers and pressures to focus management measures on, which they then assessed in detail using data.

Further reading:

AQUACROSS Linkage Framework
AquaLinks tool

- The Ria de Aveiro case study (see Case Study: Ria de Aveiro, Portugal) combined stakeholder valuations of the local ecosystem with information from the AQUACROSS Linkage Framework (see Information Platform). The combined information helped identify how and where to restore seagrasses and saltmarshes to meet diverse societal goals.

Further reading:

Modelling approaches

- The Swiss Case Study (see Case Study: Swiss Plateau), the Intercontinental Biosphere Reserve of the Mediterranean case study (see Case Study: Spain/Morocco), and the Danube case study (see Case Study: Danube) used spatial ecological and economic data to map the most cost effective location to meet their biodiversity goals. Multi-disciplinary data and modelling support efficient and effective management of complex, cross-boundary, and integrative issues like aquatic biodiversity.

4 EBM Principle 4: EBM builds on social–ecological interactions, stakeholder participation and transparency

Ecosystem-based management acknowledges social–ecological interactions and considers synergies and trade-offs between benefits and beneficiaries. To balance these issues, it gives preference to transparent and inclusive decision making, seeking to build consensus on a shared vision for the future, and build in stakeholder participation at every stage of planning, evaluation, implementation, and adaptation.

Examples from the AQUACROSS Case Studies

- The Azores case study (see Case Study: Azores) drew on stakeholder interviews and two workshops to understand stakeholder priorities for managing the local marine protected area. Their insight, data, and feedback ensured an accurate understanding of the social-ecological system, and helped to identify consensus actions that would effectively and efficiently protect local sustainability.

Further reading:

Mobilising Stakeholders

- The Lough Erne case study (see Case Study: Lough Erne, Ireland) and the Ria de Aveiro case study (see Case Study: Ria de Aveiro, Portugal) developed semi-quantitative models with stakeholder input. This increased scientific knowledge and also built stakeholder understanding and consensus.

Further reading:

Modelling approaches

5 EBM Principle 5: EBM supports policy coordination

Ecosystem-based management facilitates cooperation and collective action across different stakeholder and policy domains to share the array of ecosystem services obtained. As such, a key strength is that it creates new opportunities to pursue different policy objectives simultaneously.

Examples from the AQUACROSS Case Studies

- The Ria de Aveiro case study (see Case Study: Ria de Aveiro, Portugal) covers a river, transitional estuary, and coastal area, and as such, had to consider freshwater, marine, and biodiversity targets. Considering these objectives together – and cooperating across policy domains – identified the opportunity of aligning biodiversity and Water Framework Directive indicator monitoring and evaluation, to save money and increase knowledge.

Further reading:

Developing relevant indicators
Deliverable 2.1
Deliverable 5.1

- The Azores case study (see Case Study: Azores) identified that five institutions had a role managing the local marine protected area – including two environmental directorates, the fisheries directorate, and the marine affairs directorate. At the same time, local stakeholders complained that overlapping policies were unclear. The resulting EBM plan proposed policy coordination group to align policies to increase effectiveness and ambition.

Further reading:

Integrative environmental objectives

6 EBM Principle 6: EBM incorporates adaptive management

Ecosystem-based management aims to increase adaptive capacity by restoring critical ecosystems and strengthening social capacities to respond to a range of possible future scenarios. Central is the question of weighing short-term management options against long-term benefits of alternative intervention, and monitoring impact and regularly revisiting management and policies.

Examples from the AQUACROSS Case Studies

- The Swiss case study (see Case Study: Swiss Plateau) and the North Sea case study (see Case Study: North Sea) developed scenarios that incorporated projections of population and economic growth. These long-term drivers increase the likely future pressures on ecosystems, and including them in management planning and evaluation makes for better informed decisions.

Further reading:

Developing relevant indicators
Deliverable 2.1
Deliverable 5.1

- The Swedish case study (see Case Study: Lake Ringsjön, Sweden) and the Azores case study (see Case Study: Azores) placed special focus on understanding and strengthening social capacity to adapt to uncertain futures. Both case studies concluded that participatory management with diverse stakeholders supports sustainable social and ecological systems.

FROM A PRACTITIONER'S PERSPECTIVE, WHAT ARE THE KEY STRENGTHS AND CHALLENGES OF ECOSYSTEM-BASED MANAGEMENT?

We asked the AQUACROSS case study leads of our case studies and the local policymakers that collaborated in the case studies to identify key strengths and challenges of the ecosystem-based management approach.

Strengths

1. Ecosystem-based management supports **integration** of objectives and **policy coordination.**
2. Ecosystem-based management **develops** and **uses** quantitative, qualitative, and spatial **science**.
3. Ecosystem-based management places **stakeholders** at the centre of biodiversity management, recognising beneficiaries beyond biodiversity for its own sake.
4. Ecosystem-based management considers **long-term** and **transboundary** impacts.
5. Ecosystem-based management prioritises **evaluation** and ongoing **adaptive management**.

Challenges

1. Ecosystem-based management is **not revolutionary** - but it is useful.
2. Ecosystem-based management can **appear theoretically** difficult to practitioners and stakeholders.
3. Ecosystem-based management's requires **long-term** monitoring and evaluation.
4. Considering **transboundary** issues is a key strength of Ecosystem-based management, but is challenging in practice.

← Go to Brief #31: EBM and Nature-Based Solutions	www.aquacross.eu/results	Go to Brief #33: Information Platform: Lessons →

Further information

This is one of 38 short briefs summarising the key results of the AQUACROSS Project. For more detailed information on the topics covered in this brief, see the following:

- AQUACROSS Case Studies
- Gomez et al. (2016) Developing the AQUACROSS Assessment Framework. Deliverable 3.2, European Union's Horizon 2020 Framework Programme for Research and Innovation grant agreement No. 642317. (Deliverable and Executive Summary)

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