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Managing Aquatic Biodiversity: The AQUACROSS Case Studies

Introducing eight practical applications of ecosystem-based management to protect biodiversity in Europe's lakes, rivers, coasts and oceans

Case Study 1 Trade-offs in ecosystem-based management in the North Sea aimed at achieving Biodiversity Strategy targets

Case Study 2 Analysis of transboundary water ecosystems, Green and Blue Infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean (IBRM): Andalusia (Spain) – Morocco

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Case Study 1

Trade-offs in ecosystem-based management in the North Sea aimed at achieving Biodiversity Strategy targets

Balancing fish, wind power, and biodiversity:

There is a need for a more integrated perspective for managing the many activities in the North Sea that impact biodiversity and hence compromise the achievement of societal goals. Management decisions are often taken without adequate knowledge of the associated risks. Our aim: to determine what scientific knowledge is needed in the North Sea to guide decision-making toward the (balanced) achievement of societal goals, whilst involving important societal actors, including (national) government, fishing industry, the offshore wind energy sector, and Non-Governmental Organisations.

Where and what are the challenges?

The North Sea is one of the busiest seas with many (often growing or newly emerging) sectors laying claim to a limited amount of space. The main human activities include fishing, shipping, oil and gas extraction, and newly emerging activities such as the renewable energy sector. These combined human activities and their associated pressures on the environment and biodiversity have hindered the achievement of the environmental goals for the North Sea. Management of often multiple competing interests is complex and requires novel, more integrated approaches such as Maritime Spatial Planning or Ecosystem-based Management, which come with additional requirements for the scientific knowledge base.

What was done?

In collaboration with stakeholders,

• we assessed the current state of the North Sea ecosystem using a risk-based approach and the AQUACROSS linkage framework;

• to provide further guidance to decision-makers, we developed an integrated risk-based approach that linked the impacts on biodiversity to the supply of ecosystem services;

• we identified a number of likely ecosystem-based management measures for the North Sea;

• we evaluated the effectiveness of these EBM measures to contribute to the conservation of biodiversity, i.e. achievement of the "healthy marine ecosystem" societal goal, while also considering potential management initiatives toward achieving other societal goals, i.e. a "sustainable food supply" and "clean energy".

Local results:

We show that integrated ecosystem-based scientific advice can provide a new and complementary perspective to the conventional science advice, which can often remain confined within institutional silos. We need considerably more scientific knowledge about the North Sea to support integrated management. We show that risk-based approaches are promising for integrated assessments of cumulative effects and management of biodiversity.

General lessons learned for managing biodiversity:

This work represents a first attempt to provide a more integrated, ecosystem-based approach that considers diverse societal goals, includes several sectors, and considers their impacts on the ecosystem and all relevant components. A risk assessment was applied to assess the effectiveness of a suite of management measures.

Local impact:

"What I have found really inspiring about the AQUACROSS project is the way it demonstrates how ecosystem based approaches can provide new and important insights for decision makers… (and) that ecosystem based management has moved beyond being a scientific concept to become a powerful management tool for decision makers." - Finlay Bennet, Marine Scotland.

Learn more about Case Study 1 at aquacross.eu or the AQUACROSS Information Platform

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Realm: Freshwater, Coast, Marine | **Biodiversity threat:** Water abstraction; Change to morphology
Stakeholders/sectors: Environment, agriculture, fishing, tourism | **Highlights:** Ecosystem-service maps; Indicators; Information Platform; Modelling; Green and Blue Infrastructure

Case Study 2

Analysis of transboundary water ecosystems, Green and Blue Infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean (IBRM): Andalusia (Spain) – Morocco

Protecting areas to protect biodiversity:

The IBRM is home to several remarkable protected sites, high biodiversity richness and an important cultural heritage. However, pressures from human activities in the area are threatening these distinct values. Our aim is to use diverse data plus stakeholder input to understand the social and ecological system and design a multifunctional network of areas – that allow conservation, exploitation and restoration - and identify ideal sites for restoring degraded freshwater, coastal and marine ecosystems.

Where and what are the challenges?

The case study encompasses the IBRM in Andalusia (Spain) – Morocco and its area of influence. The reserve spans over two continents, Europe and Africa, and the marine area of the Strait of Gibraltar, and includes river basins, coastal, and marine areas. Agriculture, livestock, fisheries, and tourism drive the local economy, all of which are highly dependent on terrestrial and aquatic resources. The aquatic ecosystems provide a vital range of provisioning goods (such as fish), regulation and maintenance services that sustain human well-being, as well as important cultural sites.

What was done?

In collaboration with regional and local governments of Andalusia (Spain) and Kingdom of Morocco, we applied the AQUACROSS Assessment Framework to identify the most effective and efficient network of multi-purpose protected areas (also known as Green and Blue Infrastructure). This included:

• Using satellite and local data to analyse regional activities, pressures, ecosystem condition, biodiversity, and key aquatic ecosystem services;
• Understanding stakeholder objectives (including economic objectives) for the IBRM to identify synergies, conflicts, and opportunities for improvement;
• Using models to identify the best location for protected and semi-protected areas, i.e where biodiversity is high or can be cheaply restored, whilst still allowing human activities (such as

fishing or recreations) in neighbouring or other areas;
• Co-creation: local stakeholders reviewed and contributed at two rounds of workshops held in Tarifa (Spain, northern section) and Tangier (Morocco, southern section)

Local recommendations:

We identified priority areas that allow conserving biodiversity, maintaining ecosystem services capacity, and restoring degraded ecosystems, while minimising costs. The results suggest that using ecosystem-based management restoration measures when designing Green and Blue Infrastructure may increase protected area coverage, while improving connections between protected areas.

General lessons learned for managing biodiversity:

Green and Blue Infrastructure combines in one single solution an ecosystem-based management outcome that balances conservation, restoration and exploitation objectives. The Green and Blue Infrastructure multi-zoning approach conserves ecosystems and biodiversity as well as human well-being, while minimising the potential conflicts between conservation and exploitation goals.

Local impact:

Local policymakers in Andalusia (REDIAM - Environmental Information Network of Andalusia, Regional Ministry of Environment and Spatial Planning of Andalusia), Spain and in Morocco (the Regional Observatory for Environment and Sustainable Development Tangier-Tetouan-Al Hoceima) highly valued the analytical cartography, the spatial data and the storytelling tool produced in AQUACROSS. Indeed, REDIAM report that they will deploy the methodology, *"to estimate ecosystem condition of habitats and a network of multifunctional and interconnected areas (Green and Blue Infrastructure) not only in the case study area but in other areas in Andalusia".*

Learn more about Case Study 2 at ibrm.aquacross.eu or the AQUACROSS Information Platform

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Realm: Freshwater | **Biodiversity threat:** Changes to hydrology; Change to morphology; Nutrient pollution
Key stakeholders/sectors: Environment, Transport, Renewable energy, Agriculture | **Strengths:** Integrative policy objectives; Modelling; Evaluation; Scenarios

Case Study 3
Danube River Basin - Harmonising inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets

Restoring river-floodplains to protect biodiversity:

The Danube's river biodiversity is threatened by changes to hydrology and geomorphology (so-called hydro-morphological alterations), such as disconnection of floodplains. Multiple human activities, including the construction of hydropower plants, expansion of agriculture, and large-scale river regulation measures to increase navigation and flood protection are resulting in an ongoing loss of habitat and biodiversity. Our aim: In this Case Study, we apply the AQUACROSS Assessment Framework to identify how management of river-floodplain systems along the Danube can be supported to jointly conserve and restore biodiversity and maximise the value that these ecosystems provide to human well-being.

What is the challenge?

Throughout the basin, hydro-morphological restoration of river-floodplain systems is important to conserve biodiversity and ensure that river stretches achieve "good status" according EU Water Framework Directive. Restoration also support other societal and policy objectives: flood protection, reducing pollution reaching the Black Sea marine environment, and climate adaptation. However, the complexity and variety of the environmental problems, lack of data, strong differences in socio-economic conditions, as well as heterogeneity in national interests along the Danube significantly hampers planning of restoration sites. Only a few countries of the Danube region have already implemented or planned restoration activities, which are due by 2021.

What was done?

We prioritised sections of the river-floodplain systems for restoration and conservation, using a novel integrative modelling approach that considered multiple targets, including biodiversity protection as well as economic and human well-being. Unlike the current situation, where each country selects their own restoration sites based on national criteria, our method prioritizes sites along the length of the Danube independent from jurisdictional, administrative and political borders.

Local recommendations:

We identified ideal sites for restoration along the Danube partially supporting sites already designated as with high restoration potential. Others were identified in areas where no sites are yet designated. Our evaluation suggests that our ecosystem-based management approach can be more cost-effective than the current approach. Additionally, the methodology is transparent and flexible, so can balance the different objectives related to floodplain restoration.

General lessons learned for managing biodiversity:

Systematically linking social and ecological data and knowledge within one analysis helps decision-makers to pursue different objectives simultaneously, enabling "integrated planning". Independently considering the whole Danube River as one ecosystem supports coordination and cooperation across countries and therefore has potential to foster consensus on a shared vision for the future.

Local impact:

The proposed ecosystem-based management approach supports the joint selection of restoration sites including prioritisation of protected areas, and site selection for the next River Basin Management Plans or Flood Management Plans. Follow-up actions of the project will focus on the take-off of the project results, with the International Commission for the Protection of the Danube River (ICPDR) inviting the case study to present potential for take-off at their 21st Ordinary Meeting.

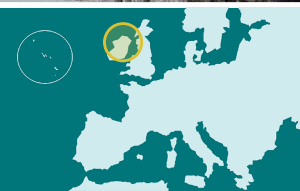**Find out more about Case Study 3 on the AQUACROSS Information Platform and aquacross.eu**

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Realm: Freshwater | **Biodiversity threat:** Nutrient pollution; Invasive Species; Change to morphology
Stakeholders/sectors: Agriculture, tourism, fishing, renewable energy | **Strengths:** Identifying EBM responses; Evaluation; Stakeholder processes; Semi-quantitative modelling

Case Study 4

Management and impact of Invasive Alien Species in Lough Erne in Ireland

Managing Invasive Alien Species and Nutrient Pollution:

The goal of this study was to examine the implications of the regulation on Invasive Alien Species (IAS) (i.e. non-native plants and animals harming the local ecosystem) for practical management in Lough Erne, Northern Ireland, in the context of existing environmental commitments under EU legislation.

Where and what are the challenges?

Lough Erne sustains multiple competing activities, each with different demands from the system in terms of ecosystem services and physical resources. Lough Erne is a heavily modified water body, containing a range of non-native species following a long history of introducing new fish and other plants and animals. In recent times there has been an invasion and proliferation of the Nutall's Pond Weed (Elodea nutalli), which is listed as an Invasive Alien Species of Union Concern. This new arrival is able to colonise deeper areas of the Lough and has clogged many areas of the lake, interfering with popular recreational activities, in particular boating. Managing Elodea while meeting the needs of competing users requires consensus on ecosystem boundaries and effective cross border cooperation.

What was done?

The case study brought together a range of stakeholders from public service and NGOs, both north and south of the Northern Irish/Republic of Ireland border in a series of workshops. Mental models called "Fuzzy Cognitive Maps" of the Erne system were developed based on stakeholder inputs and were used to infer how the social and ecological systems behave. The models predict a likely decline in future water quality related to agricultural activities in the catchment. Models were used to map the impacts of altering lake levels on agricultural production in areas adjacent to the lake.

Local recommendations:

Stakeholder views, combined with model outputs were used to identify a range of possible management options. One set of measures involved altering the lake levels to enable recreational boating, but also leading to a potential loss to agriculture in terms of inundated land, which we evaluated and costed. Agricultural nutrient management measures to reduce proliferation of the weed were also evaluated. The potential costs of conducting these measures were assessed and presented to stakeholders for feedback and comparison.

General lessons learned for managing biodiversity:

The case study revealed the importance of considering the interconnections between policies. Potential solutions to the problem of Invasive Alien Species in Lough Erne will affect achievement of Water Framework Directive goals, as well as obligations under the regulation on Invasive Alien Species. At the same time, these goals cannot be considered in isolation from the overall driver of the Common Agricultural Policy.

Local impact:

"Ecosystem-based management is a valuable tool for communicating the value of water and how we all benefit from that resource"
– Kerry Anderson, Northern Ireland Department for Agriculture, Environment and Rural Affairs. Local regulators especially valued how ecosystem-based management considered invasive alien species within the context of how agriculture and other human activities have environmental consequences for water and biodiversity.

Find out more about Case Study 4 on the AQUACROSS Information Platform and aquacross.eu

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Realm: Freshwater, Coast, Marine **|** **Biodiversity threat:** Changes to hydromorphology
Stakeholders/sectors: Environment, tourism, shipping, agriculture **|** **Strengths:** Linkage framework; Maps; Stakeholder processes; Modelling; AquaLinks tool

Case Study 5

Improving integrated management of Natura 2000 sites in the Ria de Aveiro Natura 2000 site, from catchment to coast, Portugal

Minimising the impacts of dredging and flood bank extension:

In 2018/2019, in the Ria de Aveiro two management interventions will have negative unintended impacts on biodiversity: 1) a dredging programme to manage water flow and navigability in Ria de Aveiro coastal lagoon, and 2) the extension of a flood bank to stop surface saltwater intruding onto local farmland. The goal of this study is to apply adaptive management and minimise foreseen but unintended management challenges in a Natura 2000 protected area, which crosses fresh and marine waters, in the context of EU water and nature-related Directives.

Where and what are the challenges?

The Ria de Aveiro area is rich in biodiversity and supports a variety of economic, cultural and recreational activities. The region is subject to a complex variety of land and water uses and potential conflicts, and a number of human activities place pressures that affect the hydromorphological conditions of the lagoon and the adjacent freshwater section of the Vouga River, the Baixo Vouga Lagunar, such as dredging and the flood bank. The region is also vulnerable to ocean storm surges and coastal erosion, and to torrential rain and flood events, meaning that it often requires human intervention to protect or to enable economic activities.

What was done?

We assessed the overarching policy plans, programmes, and objectives that manage biodiversity within the case study, as well as the key governance institutions. Stakeholders were engaged at different steps, contributing data, information, and their views so that we could understand the current and future situation, and how it might change under new management. Here, we used: i) models that assessed the risk to habitats caused by human activities; ii) stakeholder knowledge on the current state and trends of the environment and human activities in the Ria de Aveiro; and iii) the results of maps and modelling of the different ways stakeholders value the ecosystem and the goods and services it provides.

Local recommendations:

Recommendations were made for two scales, the entire Natura 2000 site and the Baixo Vouga Lagunar. We propose a plan to restore saltmarshes and seagrasses, harmonise monitoring across EU Directives, and incorporate stakeholders and integrate territorial management instruments to mitigate the expected, unintended impacts of the flood bank extension and dredging in the Ria de Aveiro Natura 2000 site. The restoration measures should be framed in the Sectoral Plan for Natura 2000 Network, which is the territorial management tool to implement Portuguese policy for conserving biological diversity.

General lessons learned for managing biodiversity

Ecosystem-based management plans should be co-created with input from local stakeholders and policy-makers. To protect biodiversity, managers should consider climate change projections. For the successful implementation of the identified water and nature policies in places like the Ria de Aveiro Natura 2000 site, any actions need to ensure the involvement of users and landowners.
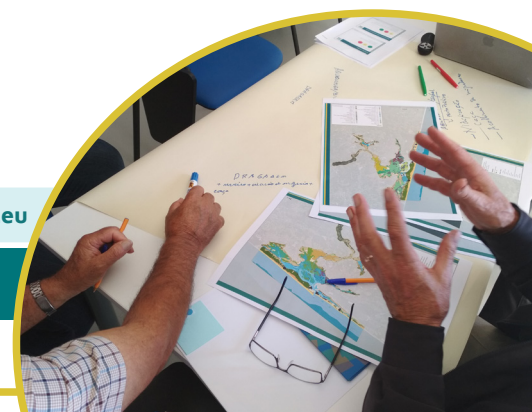
Local impact:

The Ecosystem-based management plan is foreseen to support the development of the Vouga estuary management plan, as well as actions for a more comprehensive understanding of the social-economic implications of ecosystem services provided by these aquatic habitats. Local stakeholders were supportive of the approach, *"ecosystem-based management allows for a 'correction' of less good results"* and appreciate that it is *"concerned with beneficiaries, as well as biodiversity".*

Find out more about Case Study 5 on the AQUACROSS Information Platform and aquacross.eu

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Realm: Freshwater **|** **Biodiversity threat:** Nutrient pollution **|** **Stakeholders/sectors:** Agriculture, fishing, tourism
Strengths: Policy coordination, Stakeholder processes, Resilience

Case Study 6

Understanding eutrophication processes and restoring good water quality in Lake Ringsjön – Rönne å Catchment in Kattegat, Sweden

Nutrient pollution affecting lake biodiversity:

Due to nutrients from agriculture and household sewage, Lake Ringsjön experiences eutrophication, which has made it a target for restoration efforts by local municipalities. Situated in an agricultural landscape with a growing human population, the lakes provide multiple ecosystem services (including fish and recreational opportunities) that are valued by different stakeholders. These ecosystem services increase – along with biodiversity - when the water is clear. We investigated how the local society and ecosystems co-produce these ecosystem services. We also investigated the interactions between the social and ecological aspects of the lake system together with stakeholders to suggest how water governance might be improved.

Where and what are the challenges?

The Rönne å catchment is located in Southern Sweden in a landscape that is witnessing a transition from an agricultural to a multi-functional landscape. The main pressures affecting freshwater quality are agricultural activities and insufficient sewage treatment. Swedish regulations are implemented at different levels: from river basin to county to municipality. Water councils, a group of stakeholders including municipalities and water users, have developed their own bottom-up solutions in the past, and are increasingly involved in the governance system through the Water Framework Directive.

What was done?

Our research was co-designed with stakeholders, decision makers, civil servants and practitioners in three workshops and eight follow-up interviews, and complemented stylised social-ecological modelling. We used the AQUCROSS Assessment Framework alongside insights from resilience thinking to focus on the social aspects of policymaking and implementation – particularly the governance-related resilience principles and processes of change. We used these to develop future scenarios that explore two perspectives along which decision making in water governance could develop differently from the expected baseline: a) by changing the time horizon of restoration effects, and b) by changing the geographical space and institutions involved in collaboration on managing the lake.

Local recommendations:

We qualitatively evaluated the scenarios using the resilience principles and a stylised social-ecological model that simulates social time lags and their effect on lake restoration and resulting ecosystem services. Our analysis shows: 1) consideration of the time lags between management actions and an improvement in the ecosystem can lead to stronger reinforcing feedbacks and larger improvements; and 2) an increase in the geographical and institutional scale of management allows more collaboration between water councils and across different sectors, though the final outcome would depend on which ecosystem service trade-offs are explicitly considered.

General lessons learned for managing biodiversity:

Resilience thinking helps to identify feedback processes and interactions between society and the ecosystem that determine long-term outcomes of lake restoration. There is a need to consider time lags and different dynamics within the system, as well as how the social aspects interact with the ecological aspects. Collaboration is necessary between different levels of water governance, and across different sectors and geographical regions in order to reach the full potential for managing eutrophication in the catchment.

Local impact:

The stakeholder process motivated an improved collaboration between practitioners and decision-makers in local freshwater management to take more ecosystem service interactions into account - *"it's about physically sitting down at a table with all these actors and discussing a common interest"* (civil servant municipality of Höör and member of Ringsjön's water council).

Find out more about Case Study 6 on the AQUACROSS Information Platform and aquacross.eu

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Case Study 7

Biodiversity management for rivers in the Swiss Plateau

Prioritising ecosystem restoration:

Freshwater ecosystems in the Swiss plateau are threatened by multiple stressors that deteriorate water quality and hydromorphology. This is the result of channelization, dams, wastewater, and agriculture, among other causes. To restore these ecosystems and stop the biodiversity decline, multiple management measures will be implemented over the next decades. We propose methods for prioritising the location and timing of restoration measures to maximise their effectiveness, considering many sectors and multiple societal objectives.

Where and what were the challenges?

Case Study 7 is based in the Swiss Plateau, a relatively flat and densely populated area that facilitates agricultural production and urban development. Switzerland decided to fund the morphological restoration (i.e. river widening and removing artificial obstructions in the river) of one quarter of all morphologically degraded rivers over the next 80 years, to upgrade the 100 most important wastewater treatment plants to remove micropollutants, and to reduce pollution agriculture. Cantonal authorities were asked to provide a strategic plan for the morphological restoration of rivers over the next two decades, which will be updated every 12 years and is intended to increase the effectiveness of restoration measures

What was done?

Using the concepts underlying the AQUACROSS Assessment Framework, we developed a procedure to prioritise restoration measures by maximising the ecological state of a catchment under a given budget constraint, while considering other societal needs and other sources of impairment:

• In close collaboration with stakeholders from federal and cantonal authorities and environmental consulting companies, we integrated procedures for chemical, physical and biological assessment at the river reach scale and proposed a spatially explicit ecological assessment at the catchment scale.
• We applied the catchment scale assessment to search for

management strategies that optimise the overall ecological state of catchments, while increasing or not significantly decreasing services (e.g. recreation) demanded by society.

What did we find?

We developed a methodology that supports environmental managers in the integrative assessment of restoration measures at the catchment scale. This methodology is based on ecological principles, such as maximising resilience and fish migration potential and minimising fragmentation. An optimisation procedure provides a set of near-optimal combinations of measures to reach the highest ecological state for a given budget. This list of potential measures can support the development of a cantonal planning, which also requires stakeholder involvement.

General lessons learned for managing biodiversity:

Location matters: to prioritise river restoration, managers need to consider location and also consider broad descriptors of ecosystem health. The consideration of different types of impairments, such as hydromorphological degradation and chemical pollution, is important to increase effectiveness.

Local impact:

Given that Swiss environment policy is planned over decades, local impact will occur over time. Already, though, Yael Schindler Wildhaber and Bänz Lundsgaard-Hansen (Federal Office for the Environment Switzerland), and Irene Wittmer and Christiane Ilg (Swiss Water Association) report that they will use case study 7's models to *"adapt or develop"* indicators of specific human impacts on biodiversity. Additionally, regarding the case study's method and results for prioritising where to restore ecosystems, local policy stakeholders believe this could be useful for *"better coordination of the different management measures in a catchment"* and that it *"has potential for use for the selection of new monitoring sites"* and *"future collaboration"*.

Find out more about Case Study 7 on the AQUACROSS Information Platform and aquacross.eu

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Realm: Coast, Marine | **Biodiversity threat:** Fishing | **Stakeholders/sectors:** Fishing, tourism, environment | **Highlights:** Stakeholder processes; Integrative policy objectives; Identifying EBM responses; Monitoring

Case Study 8

Ecosystem-based solutions to solve sectoral conflicts on the path to sustainable development in the Faial-Pico Channel, Azores

Collaborating to halt declining biodiversity:

Despite designation as a Marine Protected Area, biodiversity in the Faial-Pico Channel is falling. Our aim: to collaborate with local stakeholders and policy-makers and apply the AQUACROSS Assessment Framework to understand social and ecological aspects of the Channel, and identify actions to efficiently and equitably ensure the Channel's long-run sustainability, balancing the objectives of commercial and recreational fishers, tourism operators, and other local stakeholders.

Where and what are the challenges?

The Faial-Pico Channel is a richly biodiverse Marine Protected Area (MPA), covering 240km² of North Atlantic coast and ocean in the Azores, an EU Outermost Region. Recreational and commercial fishing place pressure on local biodiversity, while swiftly growing tourism (5.1% p.a.) fuels local economic growth but increases competition for use of the Channel, driving future pressure on biodiversity. While local commercial and recreational fishers, tourism operators, and others all value the Channel's biodiversity, they have different objectives and priorities. In 2016, local policymakers increased protection for some high biodiversity areas in the Channel, and have consulted with stakeholders on management. However, Channel management is complicated by multi-level and overlapping responsibilities, with policy development and implementation split across five institutions.

What was done?

In close collaboration with local stakeholders and policymakers, we applied the AQUACROSS Assessment Framework to develop and evaluate ways to more efficiently and equitably manage the Channel and protect biodiversity. This included:

• Analysing local biodiversity, tourism, and fishing policies and stakeholder objectives to identify synergies, conflicts, and opportunities for improvement

• Characterising the Channel's social-ecological system to understand links between drivers, pressures, the ecosystem and its biodiversity, and ecosystem services
• Identifying and evaluating an ecosystem-based management plan for the Channel
• Co-creation with local stakeholders: throughout, we collaborated with local stakeholders, including at two day-long workshops with recreational and commercial fishers, diving operators, NGOs, scientists, and local policy representatives.

Local recommendations:

We identified and evaluated a plan of five local policy solutions: (1) increased scientific monitoring, (2) increased stakeholder participation through a Stakeholder Advisory Group, (3) integrating and coordinating management of the Channel, (4) clearly communicating and enforcing fishing and biodiversity rules, and (5) sharing costs through a sustainability tax or diving fee. We found that, as well as protecting biodiversity, this plan supports the sustainability of the Faial-Pico Channel – increasing stakeholder engagement, knowledge, and policy coordination enables adaptive management, reduces conflict, and can improve effectiveness and efficiency.

General lessons learned for managing biodiversity:

Stakeholder engagement and participation supports effective and equitable management of Marine Protected Areas. Stakeholders – such as recreational and commercial fishers and diving operators - can clearly identify challenges and priorities, co-create innovative solutions, provide low-cost knowledge and expertise, and support ongoing monitoring, enforcement, and evaluation.

Local impact:

"The AQUACROSS work is being used directly in the creation of Marine Protected Area Management for the Azores, along with other sources" – Gilberto Carreira, Azores Regional Directorate for Sea Affairs (DRAM)

Learn more about Case Study 8 on the AQUACROSS Information Platform and aquacross.eu

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