

Biodiversity strategy and AQUACROSS

The AQUACROSS project aimed to support the implementation of the EU Biodiversity Strategy in regards to aquatic biodiversity conservation. Methods and tools developed within the project can practically contribute to the achievement of the Biodiversity Strategy’s targets. The AQUACROSS Linkage Framework investigated links between different human activities, pressures, ecosystem components and biota, and consequently ecosystem services (see Linkage Framework). This allows for a unique possibility to consider equally biodiversity conservation and the uses of aquatic ecosystems. This gives valuable information for future management decisions and the integrative approach can support better balanced policy development and decision making. The AQUACROSS project is potentially contributing to all EU Biodiversity Strategy targets below.

	6 TARGETS	SELECTED ACTIONS
STRUCTURE OF THE EU 2020 BIODIVERSITY STRATEGY	1. Implement nature legislation	1: Complete the Natura 2000 network and ensure its good management 2: Make sure Natura 2000 sites get sufficient funding 4.1: Make the monitoring and reporting of the EU nature law more consistent, relevant and up-to-date; 4.2: provide a suitable ICT tool for Biodiversity
	2. Restore ecosystems and establish Green Infrastructure	5: Map and assess the state and economic value of ecosystems and their services in the entire EU territory 6: Restore ecosystems, maintain their services and promote the use of green infrastructure 7: Assess the impact of EU funds on biodiversity
	3. Sustainable Agriculture & Forestry	8.3: consider including the Water Framework in cross-compliance standards
	4. Sustainable Fisheries	14.2: make sure the Marine Strategy Framework Directive is consistently carried out with further marine protected areas
	5. Combat Alien Invasive Species	16: Provide a legal framework to fight invasive alien species
	6. Averting global biodiversity loss	

Below, we introduce some reflections stemming from the AQUACROSS consortium on the relevant actions for which we believe our work be of help to inform others about practical elements of implementation. We provide evidence based on case study work and links to further information.

TARGET 1 – FULLY IMPLEMENT THE BIRDS AND HABITATS DIRECTIVE

The first target of the EU Biodiversity Strategy to 2020 aims to halt deterioration of all species and habitats covered by the EU Nature Directives as well as achieve status improvement linked to 100% more habitat assessments as well as 50% more species assessments with secure or improved status under both directives.

AQUACROSS contribution to Target 1

- Development of a habitat-suitability-based multi-species distribution model for macroinvertebrates in freshwater ecosystems, which supports identification of the relevance of multiple stressors. This can inform decision-makers about the sensitivity of species to different stressors and can help improve the assessment and management of riverine habitats.
- Assessment of impacts risks of human activities on European aquatic ecosystems allows for the identification of habitats and species most at risk and in need of protection.

Further reading:

[Modelling approaches supporting EBM](#)
[Deliverable 7.1](#)

Further reading:

[Linkage framework](#)

Action 1: Complete the Natura 2000 Network and ensure its good management

- The modelling approach of AQUACROSS systematically prioritises aquatic systems for conservation, supporting the completion and management of the Natura 2000 Network.

Further reading:

[Modelling approaches supporting EBM](#)
[Deliverable 7.1](#)

Action 2: Make sure Natura 2000 sites get sufficient funding

- The modelling approach of AQUACROSS systematically prioritises aquatic systems for restoration, based on multiple criteria related to biodiversity, ecosystem services and socio-economic benefits, with an aim at optimising the restoration of ecosystems multifunctionality.

Further reading:

[Modelling approaches supporting EBM](#)
[Deliverable 7.1](#)

Action 4.1: Make the monitoring and reporting of the EU nature law more consistent, relevant and up-to-date

- The AQUACROSS proposition of a catchment scale ecological assessment method helps to integrate the different aspects of the currently existing river reach-scale assessments of different ecosystem components into a spatial explicit and multifunctional assessment of the whole catchment.

Further reading:

[Modelling approaches supporting EBM](#)
[Deliverable 7.1](#)
[Case Study: Swiss Plateau](#)
[Case Study: Danube](#)

Action 4.2: Provide a suitable ICT tool for biodiversity

- The AQUACROSS Information Platform helps mobilise a variety of data across aquatic ecosystems (often not yet accessible) and makes them easy to find and reusable for others.

Further reading:

[Information Plattform](#)
[Deliverable 6.3](#)

TARGET 2 – MAINTAIN AND RESTORE ECOSYSTEMS AND THEIR SERVICES

The EU Biodiversity Strategy's second target aims to restore at least 15% of degraded ecosystems as well as maintain and enhance ecosystems and their services as a whole by establishing green infrastructure in the shape of the Natura 2000 Network.

AQUACROSS contribution to Target 2

- AQUACROSS provides a method for spatial and temporal prioritisation of restoration (and conservation) strategies by optimising the ecological state of the whole catchment.
- The project evaluates changes in ecosystem services caused by management responses according to different criteria (effectiveness, efficiency and equity). The maintenance of ecosystem services and the consideration of trade-offs requires their identification and valuation.
- AQUACROSS investigates trade-offs between ecosystem services and biodiversity conservation. It is argued that a more differentiating policy language is needed to take into account how only specific parts of society are benefitting of ecosystem services.

Further reading:

[Modelling approaches supporting EBM](#)
[Deliverable 7.1](#)

Further reading:

[Deliverable 8.2](#)
[Case Study: Spain/Morocco](#)
[Case Study: Danube](#)

Further reading:

[Deliverable 8.2](#)
[Case Study: Spain/Morocco](#)

Action 5: Map and assess the state and economic value of ecosystems and their services in the entire EU territory

- Assessing the service supply potential of aquatic ecosystems at different scales across Europe allows for the identification (and prioritisation) of areas for biodiversity protection.

Further reading:

[Deliverable 5.2](#)
[Case Study: Spain/Morocco](#)
[Case Study: Ria de Aveiro, Portugal](#)

Action 6: Restore ecosystems, maintain their services and promote the use of green infrastructure

- AQUACROSS details how the collaboration across different sectors connected to aquatic biodiversity protection can be facilitated. Thus, promoting the multiple benefits of restoration measures to broader society.
- The AQUACROSS Assessment Framework allows for the semi-quantitative testing of a large suite of possible management measures to identify those, which are most likely to yield to desired outcomes (i.e. environmental risk based management – cumulative effect assessment).

Further reading:

[Case Study Lake Ringsjön, Sweden](#)

Further reading:

[Deliverable 3.2](#)
[Deliverable 8.2](#)
[Case Study: North Sea](#)

- The modelling tools developed in AQUACROSS spatially prioritise biodiversity and ecosystem services to come up with areas or distinct management zones for biodiversity protection, also taking into account social equity and fairness to specify which countries / areas could have the “financial flexibility” to carry out the envisaged zones. The modelling framework specifies strict conservation zones without limiting ESS demand, so by protecting all species the ESS demand can still be reached.

Further reading:

[Modelling approaches supporting EBM](#)

[Deliverable 7.1](#)

[Case Study: Spain/Morocco](#)

Action 7: Assess the impact of EU funds on biodiversity

- Within AQUACROSS, EU funding schemes were assessed in terms of their effect on EU and local level biodiversity protection. The project offers guidance towards making funding more effective in the future.

Further reading:

[Deliverable 2.1](#)

[Deliverable 2.3](#)

[Rouillard et al. \(2017\)](#)

TARGET 3 – INCREASE THE CONTRIBUTION OF AGRICULTURE AND FORESTRY TO MAINTAINING AND ENHANCING BIODIVERSITY

The EU Biodiversity Strategy’s third target is split between the sectors agriculture and forestry, aiming to increase sustainability within each. Agricultural activities especially may have negative effects on aquatic biodiversity through nutrient pollution ([see Current trends and threats to biodiversity in Europe](#)).

AQUACROSS contribution to Target 3

Action 8.3: Consider including the Water Framework in cross-compliance standards

- The Water Framework Directive is of central importance to the freshwater and coastal case studies of AQUACROSS. The project has considered cross-compliance requirements in several of these case studies.

Further reading:

[Case Study: Danube](#)

[Case Study: Lough Erne, Ireland](#)

[Case Study: Ria de Aveiro, Portugal](#)

TARGET 4 – MAKE FISHING MORE SUSTAINABLE AND SEAS HEALTHIER

The fourth target of the EU Biodiversity Strategy to 2020 aims to ensure that the management plans of the Common Fisheries Policy are based on scientific advice and sustainability principles to restore and maintain fish stocks to sustainable levels, to reduce the impact of fisheries by gradually getting rid of discards and avoiding by-catch. In addition it aims for the consistent implementation of marine protected areas under the Marine Strategy Framework Directive and that fishing activities are adapted and that the fishing sector gets involved in alternative activities such as eco-tourism, the monitoring of marine biodiversity, and the fight against marine litter.

AQUACROSS contribution to Target 4

Action 14.2: Make sure the Marine Strategy Framework Directive is consistently carried out with further marine protected areas

- By including coastal and marine realms in its assessment and focussing in some cases on fisheries management, the AQUACROSS project can contribute to support sustainable fisheries and hence healthier seas in the future. Conventional fisheries management should develop into more ecosystem-based fisheries management which also considers the fishing impacts on the wider ecosystem, e.g. bycatch, disturbance of the seafloor.
- The North Sea and Azores Case Studies particularly addressed fisheries management and proposed EBM plans with sustainable fisheries measures.
- Marine protected areas are seen as a key tool for healthier seas in the future. The interaction between MPAs and fisheries management was addressed in the North Sea and Azores Case Studies. In the North Sea Case Study, we studied how fisheries management and MPAs can help to improve the integrity of seabed habitats and the ecosystem functions they supply.

Further reading:

[How is the linkage framework useful for the Strategy Framework Directive \(MSFD\)](#)

[AQUACROSS Recommendations for fisheries in relation to aquatic ecosystem management](#)

Further reading:

[Case Study: North Sea](#)
[Case Study: Azores](#)

Further reading:

[Case Study: North Sea](#)
[Case Study: Azores](#)

TARGET 5 – COMBAT INVASIVE ALIEN SPECIES

The fifth target of the EU Biodiversity Strategy to 2020 aims to ensure that the EU Plant and Animal Health legislation includes a greater concern for biodiversity and to provide a legal framework to fight invasive alien species.

AQUACROSS contribution to Target 5 (action 16)

- The AQUACROSS assessment framework considers invasive alien species as one of the main pressures to aquatic biodiversity. Therefore, the assessment framework can help environmental managers and policy makers to develop management decisions for invasive, alien species management.
- The Case Study 4 of AQUACROSS, located in Lough Erne, Ireland focused primarily on the pressure of invasive alien species. The case study reviewed material, which is relevant for the management of invasive species. The analytical process and stakeholder input for this case study has supported regional authorities to develop new management measures to tackle invasive alien species locally.
- Even though AQUACROSS did not provide the legal framework for invasive alien species, the project assessed the existing policy framework and identified issues, which could be a vital first step towards developing a comprehensive legal framework.

Further reading:

[Current trends and threats to biodiversity in Europe](#)

[Deliverable 3.2](#)

Further reading:

[Case Study: Lough Erne, Ireland](#)

Further reading:

[Implementing EU Policy at the local level: lessons and challenges](#)

[Deliverable 2.3](#)

TARGET 6 – HELP STOP THE LOSS OF GLOBAL BIODIVERSITY

The sixth target of the EU Biodiversity Strategy to 2020 aims to reduce the impacts of EU consumption patterns on biodiversity and make sure that the EU initiative on resource efficiency, our trade negotiations and market signals all reflect this objective. In addition, it targets more EU funding towards global biodiversity and make this funding more effective. It aims to systematically screen EU action for development cooperation to reduce any negative impacts on biodiversity and to ensure that the benefits of nature's genetic resources are shared fairly and equitably.

AQUACROSS contribution to Target 6

- The project's EBM Assessment Framework, including the proposed Linkage Framework, allow for different management options to be tested in eight case studies through translation into scenarios to be used in models. The framework can in principle be transferred and applied at any scale and could thus support general aims to stop loss of biodiversity globally. The Intercontinental Biosphere of the Mediterranean case study demonstrates how international cooperation between the EU and other countries (here, Morocco), can result in effective biodiversity management.
- The Azores case study demonstrates how stakeholder and ecosystem-based management support effective and efficient management of marine protected areas, which are a key tool for global biodiversity protection.

Further reading:

[Linkage framework](#)

[Current trends and threats to biodiversity in Europe](#)

[Case Study: Spain/Morocco](#)

[Case Study: Azores](#)

Go to Brief #22: Case Study: Azores ←	www.aquacross.eu/results	Go to Brief #24: AQUACROSS Linkage Framework: Freshwater →
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Further information

This is one of 38 short briefs summarising the key results of the AQUACROSS Project.



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