

The challenge of climate change – partnering with nature

# NATURE-BASED APPROACHES FOR CLIMATE CHANGE MITIGATION AND ADAPTATION

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Creation of ‚Wilderness areas in the front yard‘ (Project: Dynamic islands within the cultural landscape)

## The challenge of climate change – partnering with nature

Global climate change is not an abstract future risk; it is already underway. Serious consideration thus needs to be taken of climate change mitigation and adaptation action. This applies not only to agriculture, forestry, and water management, but also to other areas such as healthcare, city planning, transport, and tourism. These fields are under increasing pressure to adapt to changes in the climate as well as to contribute to climate change mitigation through appropriate measures.

Ecosystems play an important role in this process, as they provide the basis for life through their multifaceted functions (water and climate regulation, air pollution regulation, food production, provision of recreation space, etc). Yet ecosystems also have to adapt to long-term changing temperature and rainfall patterns, which is only possible if they remain intact and stable.

Degraded ecosystems are not capable of providing many services which are crucial for human life. The maintenance, restoration, and sustainable use of ecosystems therefore form the basis of “nature-based approaches” to climate change mitigation and adaptation.



In **nature-based climate change mitigation**, ecosystem services are used to reduce greenhouse gas emissions and to conserve and expand carbon sinks.

In **nature-based climate adaptation**, the goal is to preserve ecosystem services that are necessary for human life in the face of climate change and to reduce the impact of anticipated negative effects of climate change (eg. more intense rainfall, more frequent floods as well as heat waves and droughts).

Both approaches seek to increase the resilience of ecosystems and thereby to stabilize the provisioning of important services. An important requirement for this is the stabilisation and strengthening of the functional relationships within the ecosystem and between species to increase their resilience. This can be achieved through various measures, eg. with sustainable use alongside the protection and regeneration of ecosystems.

Nature-based approaches are also known as “**ecosystem-based approaches**”.

It is possible with nature-based approaches to combine climate change mitigation, adaptation, disaster risk reduction, biodiversity conservation, and sustainable resource management. Nature-based approaches are often called “no-regret” options, meaning that the measures are useful even if the effects of climate change do not materialize as predicted. Such approaches are often cost-efficient and allow for flexibility in dealing with a constantly changing climate and its associated risks. Additionally, multiple goals are pursued in parallel with nature-based approaches. They can therefore effectively complement existing technical approaches and – in some cases – even replace them (eg. in the case of coastal protection or in the fight against urban heat island effects).

## Achieving climate change mitigation and adaptation through functioning ecosystems

In Europe and especially in German-speaking regions, there are already many projects that follow a nature-based approach to climate change mitigation and adaptation. Such initiatives can already be found in many different sectors. But which concrete measures fall into the category of a “nature-based approach” to climate change?

Of special interest in **nature-based climate change mitigation** are the greenhouse gases that are stored in vegetation and soils. The goal in this approach is to prevent the release of carbon or other greenhouse gases in the long-term (eg. through the conservation of forests, intact peatlands, and permanent grasslands).

Atmospheric carbon can also be sequestered by planting native vegetation and trees or establishing urban green spaces. Many measures which reduce greenhouse gas emissions from land use or land use change are also considered to be nature-based

Ecosystems can effectively mitigate climate change.

Tour of the project area to develop a regional peatland development concept (ReMoKo-Project)



approaches. This includes both direct measures (eg. through the restoration of peatlands formerly used for agriculture, climate friendly tillage, and the application of green manure in agriculture) and indirect measures (eg. the expansion of bicycle routes for local transportation and ecotourism, which reduce car use).

Through such measures, not only are greenhouse gas emissions reduced, but animal and plant species are protected and the health and recreation functions of our landscape are improved. For certain sectors such as tourism, conservation management, and agriculture and forestry, a nature-based approach can create new income opportunities.

### Climate impacts from the degradation of ecosystems

The degradation of natural ecosystems can have negative impacts on the climate. Degraded carbon-rich soils (especially peatlands being used for agriculture) emit, for example, up to 41 megatonnes of CO<sub>2</sub>-eq. per year. This is equivalent to 39% of all agricultural emissions and 4.3% of Germany's annual total emissions (1). As these soils only comprise about 8% of the agricultural land in Germany, large amounts of greenhouse gases could be inexpensively reduced through appropriate measures. Through the plowing of permanent grasslands for conversion to cropland, 11.8 tonnes of CO<sub>2</sub>-eq. per hectare of converted extensively used grasslands on mire are emitted annually (2).

Activities in **nature-based climate adaptation** seek to prepare ecosystems for climate change so that they can continue to provide humans with required services, as well as buffer the negative impacts of climate change. Typical measures in this approach are, for example: the renaturation of rivers and other water bodies, the relocation of dikes to recreate natural floodplains to react to increased flood risks, the use of drought-resistant varieties in agriculture, and

the establishment of urban green spaces, green roofs and surfaces. With measures such as these, especially in water management and coastal protection but also in city and regional planning, new jobs can be created. In addition, shifts in forestry from monocultures to mixed forests, which are less susceptible to the impacts of climate change, can also be nature-based adaptation approaches.

## Benefits of nature-based approaches – synergies and multiple beneficiaries



Nature-based approaches to climate change mitigation and adaptation can complement each other very well. Often, a single measure such as the renaturation of rivers reduces greenhouse gas emissions as well as increases the adaptive capacity of ecosystems and ability to protect against damages from floods. Restored peatlands, for example, not only create habitats for endangered species and improve the water balances of entire landscapes, but also significantly contribute to greenhouse gas emission reductions and therefore to the achievement of national and European climate goals. Nature-based approaches therefore have multifaceted and cross-sectoral benefits.

With the help of nature-based approaches, different political goals can be pursued simultaneously and often at lower cost. Of particular relevance are the European goals of the Habitats and Bird Directives, the EU Biodiversity Strategy, the Water Framework Directive, the European Adaptation Strategy, as well as commitments to greenhouse gas reductions which must be implemented as national regulations, programmes, and action plans. Until now, nature-based solutions have only been indirectly mentioned and integrated in Germany. In the following boxes, several political goals are listed that highlight the meaning and potential of nature-based solutions.

Reactivated river stretches support native animal and plant life and can absorb floods better (Riparian zones project in the Spreewald)

### Selected examples of German national policy objectives that can be implemented in synergy with nature-based approaches:

**Climate change mitigation goal:** 40% reduction of CO<sub>2</sub> Emissions by 2020 compared to 1990

**Forest Strategy 2020:** forests should be preserved as CO<sub>2</sub> sinks

**National Biodiversity Strategy:**

- All natural raised bogs currently in existence enjoy protection and by 2020, significant portions of mires which are currently subject to intensive use have been intensified and confined to grassland use
- By 2020, the majority of watercourses should have more natural flood plains again
- Vision for urban landscapes: A diverse range of plants improves the air quality and urban climate. It offers a wide range of recreational, play and nature experience opportunities for young and old alike and provides a habitat for many species of flora and fauna, including rare and endangered species

**National adaptation strategy:**

- Establishment of well managed and sufficiently large protected areas to ensuring that species which suffer from climate-induced stress factors are protected and thereby improving their chances of survival
- Creation of unobstructed fresh air corridors and extensive green spaces as “cold islands” to guarantee the supply of fresh air (particularly in urban agglomerations)
- Support for sustainable tourism in coastal and central upland regions

In many cases, the goal of simultaneously contributing to the achievement of several political objectives led to the decision to implement nature-based approaches, as was the case in the renaturation of watercourses in Arnsberg and the WWF project “Growing with the sea”, see page 13).

In this context, it is also clear that water management, coastal protection, flood control, forestry, agriculture, fisheries, tourism, nature conservation and urban and regional planning pursue many shared objectives. The wide range of benefits generated from nature-based approaches thus has the potential to bring a range of actors together from different fields.

With nature-based approaches, synergies are created between different sectors and a range of political objectives can be reached simultaneously.

The concerns of the local population are also important for decision making. Local communities largely favored adaptation measures that simultaneously created healthy and green surroundings. New urban green spaces are thus met with greater acceptance than technical measures for improved irrigation and drainage. This demonstrates the necessity of taking the interests of the local population seriously in adaptation measures and finding appropriate solutions. Nature-based projects also create a greater level of awareness about the negative consequences of climate change and the appropriate courses of action, if they are well communicated to the public.





Protection and restoration of alkaline fens in Brandenburg (LIFE+ Project)

Maintenance and restoration of Nardus grasslands in the project area Nohfelden (LIFE+ Project)

## Nature-based approaches as a cost-efficient solution

Nature-based approaches are helpful not only in achieving sectoral and political goals, but also offer many additional benefits for the environment, economy, and society, especially at the local and regional levels.

The many advantages of nature-based projects are often not immediately apparent, but instead accumulate over a longer period. Furthermore, such benefits are often not directly quantitatively measurable. However, despite some difficulties in quantifying the value of nature-based approaches, there are already reference values from implemented projects which can be used as a reference for some ecosystems and measures.

For example, tidal flats that are intact or are recreated via the relocation of dikes can sequester up to 2.2t CO<sub>2</sub>/hectare. Through the restoration of peatlands, emissions of 10–20t CO<sub>2</sub>/hectare can be reduced (3). The reduction of greenhouse gas emissions through peatland restoration can be up to 14 times cheaper than achieving the same reductions through technical carbon capture and storage (CCS). Furthermore, urban green spaces can generate economic values of up to €600/hectare per year due to the cooling energy that they save, which would otherwise have to be technically produced (4).

Nature-based approaches are often more cost-effective in the long term than purely technical approaches and can produce important additional socio-economic benefits for the environment, citizens, and the local economy.

The building and operation costs for a water treatment plant can also be significantly higher than the costs of preserving or restoring wetlands, which naturally regulate water quality and supply. Through the preservation and expansion of natural water basins such as these, drinking water can not only be provided at a lower cost, but the increasing water scarcity in certain areas due to climate change can be addressed.

In contrast to purely technical solutions, nature-based approaches often create (additional) recreation opportunities for locals and tourists and can therefore contribute to long-term gains in employment and income.

These comparisons demonstrate that nature-based approaches can potentially be more economically sound investments than conventional approaches. When considering the multiple benefits that can be generated through floodplain restoration, for example, the River Elbe and its tributaries have a total economic benefit of €1.2 billion and a cost-benefit ratio of 1:3 (5). Amongst others, the benefits include protection from flood damage, improved living conditions for wild species, re-flooding of carbon-rich soils, reduction of nutrient loads, and landscape improvements.

An additional advantage is the flexibility of these approaches to react to the constantly changing climate and the resultant impacts. Through dike relocation, for example, it is easier to react to rising sea levels than with a permanent, solid dike. Through dike relocation on the North Sea, salt marshes could be naturally generated through succession, which absorb wave energy and simultaneously act as valuable conservation areas. By allowing the natural dynamic of the Baltic Sea coast to bring about cliff collapses that deliver sand material for coastal beaches, the efforts and investments required for coastal protection can be reduced. A dynamic coastline together with multifunctional use is therefore a sensible option. Sustainable use concepts can be identified together with the affected land users. For example, coastal protection can be combined with sustainable tourism and use as extensive grassland.

In addition to public funds at the EU, national, and regional levels, foundations and private actors can be brought on board as partners.

## Project financing

In German-speaking regions and at the EU level, there are not yet any funds specifically targeting projects that follow a nature-based approach. Due to the large spectrum of goals, however, projects may qualify for many different funding sources, such as EU funds (LIFE, INTERREG, or the European Framework Programme for Research and Technological Development), or national funds for rural development. Depending on the project's focus or activities, funding can be

acquired not only from climate and conservation funds, but also in areas such as education and culture. In German-speaking regions, nature-based projects are currently financed predominantly through national and regional funding sources. However, private investors and foundations are playing an increasingly important role in funding and implementing nature-based solutions. A good example is the German Peatland Protection Fund (“Deutsche Moorschutzfonds”), founded by the German Nature And Biodiversity Conservation Union (NABU) and Volkswagen Leasing. MoorFutures, the Forest Stocks Project (“Waldaktie”) and the German Forest Climate Fund (“Deutscher Waldklimafonds”) also represent innovative financing instruments.

### Examples of innovative funding for nature-based approaches



**Forest Climate Fund:** the forest climate fund is a part of the Energy and Climate Fund Special Assets of the German Federal Government and was established under the joint leadership of the Federal Ministry for Agriculture and the Federal Ministry for the Environment. With this fund, measures are supported which help maximize the CO<sub>2</sub> reduction, energy, and substitution potential of forests and wood as well as the adaptation of German forests to climate change. <http://www.waldklimafonds.de/>



**MoorFutures:** Under the brand “MoorFutures”, the federal states of Brandenburg and Mecklenburg-Western Pomerania in Germany offer carbon certificates on the voluntary carbon market. The income generated by the sale of MoorFutures certificates are used to finance the restoration of peatlands. A MoorFuture certificate represents 1 tonne of CO<sub>2</sub>-eq of greenhouse gas reduction. Potential investors are companies or individuals who want to reduce their climate balance on a voluntary basis. MoorFutures does not only take climate protection into account, but also considers biodiversity, nature conservation, and water quality aspects. <http://www.moorfutures.de/>



**Zukunft Wald foundation:** in the project “Zukunftswald” (“Future Forest”), the Foundation “Zukunft Wald” brings owners of unforested land together with schoolchildren. The landowners offer their land to the schoolchildren free of charge so that they can plant, maintain, and use a school-run forest. A 30-year-long use contract enables reliable, sustainable environmental and conservation work to be carried out by many generations of pupils. In their “own” forest, pupils learn how they can personally become active in the areas of environmental and climate protection. <http://zukunftswald.de/projekte/schulwalder-gegen-klimawandel/>

## Exemplary projects

In the following pages, several promising projects are presented that have implemented a nature-based approach in different sectors and German-speaking regions.

### Climate Corridor Kamen

As a consequence of climate change, effects such as heat waves, and more intense rainfall episodes endanger cities and their residents. The “green-blue corridor” in the city of Kamen provides an example of measures that drive forth sustainable development independent of climate change (so-called “no-regret” measures).

The project was developed by the German Water Association Lippe as part of the “Future Cities Project” to improve the urban climate and restore the natural water supply, therewith reducing the risk of flooding.

In conjunction with ecological improvement and the restoration of the “Heerener Mühlbach” stream, rainwater was decoupled from the sewage system. Pressure on the mixed canalization system and thus the risk that properties would be flooded were thereby significantly reduced during severe rainfall periods. In parallel, water bodies are maintained during the warm summer months. With the diversion of rainwater into the naturally designed stream, the natural water supply and balances are restored. Where possible, space was made for water bodies to take a natural course so that along their banks, both valuable biotopes and attractive recreational areas were created.

Residents were involved in the early stages of the project and were responsible in some cases for the implementation of individual adaptation measures on their own properties (eg. rainwater harvesting). In this way, residents could actively practice climate adaptation – a possibility that as of yet has still enjoyed little attention in conjunction with climate change.

With the help of land-based financial support (per decoupled m<sup>2</sup>) and thorough communication campaigns and efforts, a high acceptance of the project could be

#### Project overview

**Field:** Climate adaptation

**Location:** City of Kamen, North Rhein-Wetphalia, Germany

**Measure:** Redesign of sewage infrastructure, restoration of water bodies

**Ecosystems:** Farmland, City, Rivers

**Sectors:** Agriculture, City and Regional Planning, Water Management

**Benefits:** Improved water quality, infrastructure adaptation, improved ecosystem resilience, microclimate improvement, habitat restoration, flood protection

**Timespan:** 7 years

**Responsible actor:** Water Association Lippe





Construction site of the Lippeverband – Building the Climate Corridor Kamen Baustelle

reached amongst citizens. In addition, experiences from other cities in implementing nature-based projects could be integrated into the planning and implementation processes. With a budget of about €1.4 million, the project achieved not only a long-term and cost-effective adaptation of the local water infrastructure, but also created notable benefits for the targeted habitats and a general improvement in the attractiveness and utility of the area for residents. The project was supported by the EU INTERREG IV B NWE programme.

Further information: <http://www.future-cities.eu/index.php?id=25>

## Peatland revegetation in the region “Inneres Salzkammergut”

Intact peatlands serve as important carbon sinks. Peatlands that are degraded through draining or as a result of climatic changes lose this functionality and actually become notable sources of greenhouse gas emissions. In Inner Salzkammergut, the project MoorClim aims to restore degraded peatlands. The project is one step in the fight against the negative consequences of peatlands degradation on biodiversity and the climate. The project encompasses a total of 77 peatlands. Through measurements and research activities, peatlands were identified which are particularly at risk of the negative effects of climate change regarding water supply. Revegetation measures (eg. wood embankments in drainage ditches) slow rainwater drainage in order to adapt to climate change and protect or restore the peatlands’ functions as carbon sinks. The project budget of about €800K was financed through funding from the EU (regional development) and the federal state of Upper Austria.

### Project overview

**Field:** Climate change adaptation and mitigation

**Location:** Salzkammergut, Austria

**Measure:** Peatland restoration, development of a national moor protection concept

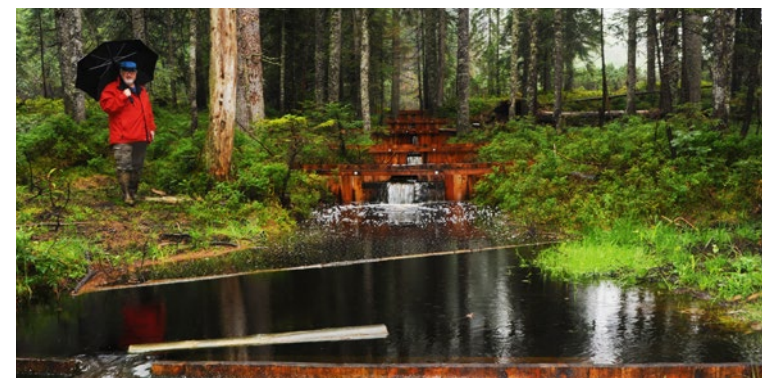
**Ecosystem:** Peatland

**Sectors:** Forestry, Agriculture

**Benefits:** Improved CO<sub>2</sub> sink, improved water supply, species and habitat conservation

**Timespan:** 4 years

**Responsible actor:** Austrian Bundesforste



Peatland revegetation in Inner Salzkammergut

The project was accompanied by scientists, and the results significantly contributed to the Austrian national peatland protection concept. In addition, a high value was placed on targeting potentially affected citizens and informing them about the project.

Further information: <http://www.oebf.at/index.php?id=990>

## „Growing with the sea“ – the timely adaptation of the Wadden Sea to sea level rise

One of the most discussed consequences of climate change is sea level rise and its impact on coastal regions. The Wadden Sea on the North Sea coast of Germany is a unique habitat of about 10.000 km<sup>2</sup> mud flats, shallow pools, dunes and salt marshes and is even recognized as a UNESCO world natural heritage site. It is distinguished by its high biodiversity of endemic plants, birds, and marine wildlife (i.e. species which only exist in this habitat). Furthermore, it forms a natural form of protection for dikes on the mainland. This unique ecosystem is, however, seriously threatened in the long term by climate change-induced sea level rise, as valuable habitats in the transitional area between land and sea – and eventually even entire islands – could be lost.

### Project overview

**Field:** Climate change adaptation

**Ort:** Wadden Sea on the North Sea coast, Germany (with some areas also in Denmark and the Netherlands)

**Measure:** Restoration, natural coastal protection, support for natural sedimentation processes

**Ecosystems:** Coast, wetlands, sea

**Sectors:** Regional and landscape planning, tourism, nature conservation, coastal protection

**Benefits:** Improved ecosystem resilience, reduced flood risk, species and habitat conservation, resilient infrastructure

**Timespan:** since 2013, still in progress

**Responsible actor:** World Wildlife Fund (WWF) Germany



In Westerhaver, a salt marsh is created due to the natural sediment dynamics and grows slowly upwards over time

The projects that fall under the umbrella of “Growing with the Sea“ aim to protect the Wadden Sea from destruction by sea level rise and thereby to protect the integrity of this world heritage site in its entirety. With this goal in mind, WWF has initiated projects, case studies, and pilot measures. The stated goal can only be achieved in cooperation with coastal protection, since measures must be sought that combine the protection of human settlements from storm surges with the conservation of the Wadden Sea; only in this way can the Wadden Sea (with its mud flats and salt marshes) “grow with” the rising sea level. To this end, the natural sediment dynamic is preserved and supported. By creating synergies between coastal protection concerns and nature conservation, the necessary measures become more cost-efficient and more sustainable.

Currently, WWF is collaborating on the development of a Wadden Sea Strategy 2100 with the federal state of Schleswig-Holstein. In cooperation with the Schleswig-Holstein Ministry for Energy Transition, Agriculture, Environment, and Rural Areas, WWF is developing an international overview of options and opportunities for environmentally sustainable adaptation to climate change in the Wadden Sea. Pilot projects are being prepared in which adaptation options for the mainland as well as on islands and holms are explored together with affected communities.

Further information: <http://www.wwf.de/watt/klima>

## Oberallmig Climate Change Mitigation Project

Intact forests perform an important function as carbon sinks. While logging and deforestation release stored carbon in the form of CO<sub>2</sub>, sustainable forest use and increasing the amount of timber in a forest can serve to significantly increase carbon storage capacity. The “Oberallmig Climate Change Mitigation Project” aims to increase the targeted forest’s function as a carbon sink for around 245.000t CO<sub>2</sub> through sustainable forest management. In addition, the amount of timber is being moderately increased from 281 to 300 cubic meters per hectare; this means

that less timber is being removed from the forest than is growing. At the same time, all of the traditional functions of the forest (protection from natural disasters, wood production, biodiversity, recreation, provision of drinking water, etc.) are being preserved. The restructuring of the forest is financed through the sale of CO<sub>2</sub> certificates for voluntary compensation measures.

The forestry operation is certified through FSC and PEFC, so it already fulfills ecological and social sustainability requirements. The project was initiated and is implemented by the Oberallmeindkorporation (OAK). The OAK owns a total of 24.000 hectares, 7.379 of which are part of this project.

The most important driver for this project was – in addition to OAK’s desire to make a concrete contribution to climate change mitigation – the desire expressed by local companies to be able to compensate for their emissions in local projects. Due to the reduced timber harvesting, the income from timber sales is lower within the project. However, the opportunity costs of climate friendly and sustainable forestry are balanced out by the sale of certificates.

Further information: <http://www.oak-schwyz.ch/index.php?s=forstwirtschaft-co2-zertifikate>

### Project overview

**Field:** Climate protection

**Location:** Schwyz, Switzerland

**Measure:** Sustainable forestry and increase of the CO<sub>2</sub> sink function

**Ecosystem:** Forest

**Sector:** Forestry

**Benefits:** increase CO<sub>2</sub> storage capacity, species and habitat conservation

**Timespan:** 30 years

**Responsible actor:**

Oberallmeindkorporation Schwyz

Urmiberg Panorama, Oberallmig Project





## The MA 48's Climate Façade

Climate change can cause overheating in city centers, especially through the “heat island effect”. City residents and city administration are therefore facing new challenges in public health and infrastructure. The goal of this project was to “green” the façade of a building of the Vienna Magistrate (“MA48”), thereby creating ecological niches and habitats for many kinds of insects and birds, and having positive effects on the surrounding indoor and outdoor climates. With this measure, a technical solution (eg. air conditioning) can be avoided, keeping energy consumption in check and avoiding greenhouse gas emissions.

The construction of the 850m<sup>2</sup> large façade was accompanied by scientists at the University for Soil Science. Research on the effects of the façade is ongoing. Special areas of interest include temperature and humidity measurements, as well as radiation measurements and vegetation surveys.

The first measurements have shown that the building’s heat loss in winter was reduced by up to 50%. The summer cooling through the “green skin” was equivalent to that of about 45 air conditioning units (with 3000 watts and 8 hours of operation each) or four 100-year-old beech trees, which would require the entire area of the building.

The project is part of the city planning strategy in Vienna and was financed by the city as a pilot project. The façade is intended to be more than a singular project for climate adaptation; it should serve as an example for other buildings to duplicate. It and the other projects it inspires create “green jobs” resulting from the care and

maintenance of the façade, which do not cost more than the cost of cleaning of glass façades that would be otherwise necessary.

The project was deemed a great success on multiple political levels and functions as a gateway for the implementation of additional measures. Several additional public and private façade greening projects have been initiated or are being planned since implementing the MA48 façade, thereby further contributing to climate change mitigation and adaptation and also improving the quality of life in the respective areas. In addition, a practical guide for façade greening was developed (see: <http://www.wien.gv.at/umweltschutz/raum/fassadenbegruenung.html>).

Further information: [http://www.gruenwand.at/files/188\\_Seite\\_28\\_Fachzeitschrift\\_fuer\\_Architekten\\_04.2012x.pdf](http://www.gruenwand.at/files/188_Seite_28_Fachzeitschrift_fuer_Architekten_04.2012x.pdf)



Klimaschutzfassade MA48

## Implementing projects successfully

From the planning to conception and through the implementation and maintenance phases, various factors can play a determining role in a project’s degree of success. Project managers and experts with work experience in the field of nature-based projects have identified several success factors which are relevant to such projects, namely: building a strong network of actors, carrying out regular and sufficient levels public relations work targeting stakeholder groups, being transparent and building trust, and being open to new ideas and approaches.

Additionally, establishing a framework which supports open dialogues as well as intensive consensus building on a bilateral level have been proven to be helpful in dealing constructively with the frequently divergent interests and opinions among actors involved in projects (eg. interest groups, landowners, and the local population). Openness to compromise in the various planning and implementation phases can also help guarantee a project’s success. The role of adequate and flexible temporal planning should also not be overlooked, especially when measures cannot be implemented as originally planned and have to be postponed or replaced by suitable alternatives.

### Project overview

**Field:** Climate change mitigation and adaptation

**Location:** Vienna, Austria

**Measure:** Greening of a building façade

**Ecosystem:** City

**Sectors:** City and landscape planning, architecture

**Benefits:** Climate regulation in the immediate area, carbon storage, habitat creation and networking, improved quality of life

**Timespan:** 3 months (construction)

**Responsible actor:** Vienna Magistrate (“MA 48”)

Community responsibility for the project can contribute to its long-term continuation. When local municipalities carry the responsibility for a given project and its coordination, the community has more of a stake in successfully implementing the plan and guaranteeing its benefits in the long term.

Not all of the success factors detailed below are relevant for every project, but they provide insights and ideas for successful project realization.

### Success factors in planning, conception, and implementation phases of nature-based projects

#### Planning process

- Involve the project in relevant political strategies and processes
- Secure political support in the area where the project is implemented
- Involve key actors and the local population
- Investigate the availability of land and secure access
- Build a positive public perception and high level of awareness amongst the relevant stakeholders

#### Project conception

- Communicate project benefits
- Select actors and project partners appropriately
- Create appropriate and efficient communication mechanisms
- Link affected sectors with one another and demonstrate synergies
- Identify contacts and supporters in the local area
- Develop a targeted problem-solving approach with actors in the area
- Secure a solid scientific knowledge basis and supporting data
- Ensure sufficient and flexible funding

#### Project implementation

- Remain open to and accept other viewpoints
- Hold discussions in person
- Ensure actors are adequately involved in decision-making processes
- Engage an experienced project manager or expert for project implementation
- Actively involve children and youth
- Cultivate a sense of ownership amongst relevant actors
- Build an emotional connection to the project
- Involve volunteers
- Good project management and teamwork with project partners
- Deeply engaged partners and actors



Restoration of semi-natural meadows with extensive floodplains – „Russheimer Altrhein“ (LIFE project area „Rheinauen bei Karlsruhe“)

## Seize the opportunities in nature-based climate change mitigation and adaptation

You can advocate for nature-based solutions in your organisation, administration, or region. Strategies for climate adaptation as well as for climate change mitigation that are developed on a local level can provide a good starting point. Nature-based approaches should be explicitly mentioned in strategies as possible adaptation and/or climate change mitigation measures. As soon as the strategies are implemented or action plans and types of measures are developed, the fit of a nature-based approach as an alternative or complementary approach should be investigated. Criteria for sustainability, cost-efficiency, economic added value, and natural aesthetics should be applied.

Furthermore, you should clearly communicate the socioeconomic benefits that such projects can have for the community and the region and the potential to address not only climate issues, but also the ideas and needs of the local population. Projects which have already been successfully implemented can serve as useful examples. Visiting existing projects or organizing exchanges of experience and knowledge with other projects and regions can be helpful to sort through different possibilities for action and to improve the understanding of nature-based approaches.

Nature-based approaches must be integrated into all relevant political strategies and action plans and be carefully weighed against alternative technological approaches.



## Identify allies and develop shared cross-sectoral forms of cooperation

For nature-based approaches, there are potentially many supporters and interested parties which should be identified. Solutions to challenges in the environmental and climate field can be discussed and developed together. This does not only apply in terms of reacting to existing problems (such as floods and heat waves), but also to employing preventative measures to reduce future acute needs for action and the associated costs.

Administrations and relevant contacts differ between states and sectors. In the area of flood protection and the development of cultural landscape plans and measures, for example, water and soil associations are very active as cross-sectoral actors. Measures for natural relocation of dikes and diversion of rivers also fall into their area of expertise, as well as the protection of properties from storm surges and floods. Local governments, on the other hand, are responsible for water supply, sanitation, and drainage and are significantly involved in the implementation of management plans and programmes of measures according to the European Water Framework Directive.

In the tourism sector, strategic development is strongly influenced by private actors and institutions as well as tourism agencies and marketing organisations who determine the design and support for programmes and quality management at the state, regional, and local levels. Chambers of commerce and trade associations also play a role on the national level.

The diversity of relevant actors demonstrates not only the need for a cross-sectoral approach, but also offers opportunities for new forms of cooperation and financing, eg. in the form of public-private partnerships.

Optimization of the connection between the Lippe River and its floodplain (LIFE+ Project „Lippeaue“)



## Further Information

### You can find helpful information, project ideas and examples here:

→ **Pro Natur and Klima Database** (Project database of the BfN for nature-based approaches, in German): [http://www.bfn.de/0307\\_klima.html](http://www.bfn.de/0307_klima.html)

You can also add your own project here!

→ **Climate and Biodiversity**: [http://www.bfn.de/0307\\_veroeffentlichungen.html](http://www.bfn.de/0307_veroeffentlichungen.html)

→ **Naturkapital Deutschland - TEEB DE**: <http://www.naturkapital-teeb.de/en/>

→ **KomPass "Tatenbank" (in German)**: <http://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/werkzeuge-der-anpassung/tatenbank>  
(Projects and measures for climate adaptation)

→ **Klimzug-Projects in Germany**: <http://www.klimzug.de>

### Opportunities for project support and funding:

#### EU-level:

→ LIFE Programme: <http://ec.europa.eu/environment/life/funding/lifeplus.htm>

→ INTERREG Programme: <http://www.interreg.de>

→ EU Framework Programme for Research and Innovation 2020:  
<http://ec.europa.eu/programmes/horizon2020/>

→ European Regional Development Fund (Support for measures in climate adaptation and risk prevention, differs by area)

#### National level (Germany):

→ National Climate Initiative (NCI) – Municipal Directive for Climate Protection:  
Climate mitigation projects in social, cultural and public institutions:

<http://www.klimaschutz.de/de/programm/kommunalrichtlinie>

→ Programme: Climate change adaptation: <http://www.ptj.de/folgen-klimawandel>

→ FONA – Research for Sustainable Development: <http://www.fona.de/>

→ Foundations: <http://www.stiftungen.org/index.php?id=1092>

→ Forest Climate Fund: <http://www.waldklimafonds.de/>

→ The joint task "improvement of the agrarian structures and coastal protection" (GAK)

The following funding database provides a general overview of support measures and financial assistance at EU, national and federal state level (in German): <http://www.foerderdatenbank.de/>

## Literature

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### Authors:

Sandra Naumann, Timo Kaphengst, Keighley McFarland (Ecologic Institute)  
Jutta Stadler (BfN)

### Contact:

Jutta Stadler, Dr. Horst Korn  
German Federal Agency for Nature Conservation  
Biodiversity Unit (II 5.1),  
Head office: Competence centre – Biodiversity and Climate  
Branch Office Isle of Vilm, Germany  
E-Mail: [jutta.stadler@bfn-vilm.de](mailto:jutta.stadler@bfn-vilm.de), [horst.korn@bfn-vilm.de](mailto:horst.korn@bfn-vilm.de)

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