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Commission for the Environment, Climate Change and Energy

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GDGL Campaign: Handbook

Green Deal Going Local

July 2023

What is the Green Deal Going Local Handbook?

Giving LRAs Guidance for the Green Transition

The Green Deal is the **new growth strategy for the EU**, aiming to move Europe towards a more sustainable and resilient way of life. In essence, it is a roadmap launched by the European Commission to meet the EU's obligations to tackle climate change and other environmental issues.

Relevant targets and objectives:

- integrate the 2050 **climate neutrality** objective into the EU Climate Law;
- reduce **greenhouse gas emissions** to at least 55% below 1990 levels by 2030;
- stimulate the creation of **green jobs** and maintain the EU's record for cutting greenhouse gas emissions while **growing its economy**;
- ensure that the transition is **fair and leaves no-one behind**;
- protect the **health and well-being** of citizens from environment-related risks.

This **Handbook** gives local and regional authorities (LRAs) guidance in **implementing the Green Deal on a local and regional level**. It provides assistance in **finding the right measures** to deal with the hazards of climate change. It offers guidance regarding **case studies, financial aid** and **technical assistance** in the fields of **adaptation, renovation wave** and **biodiversity.**

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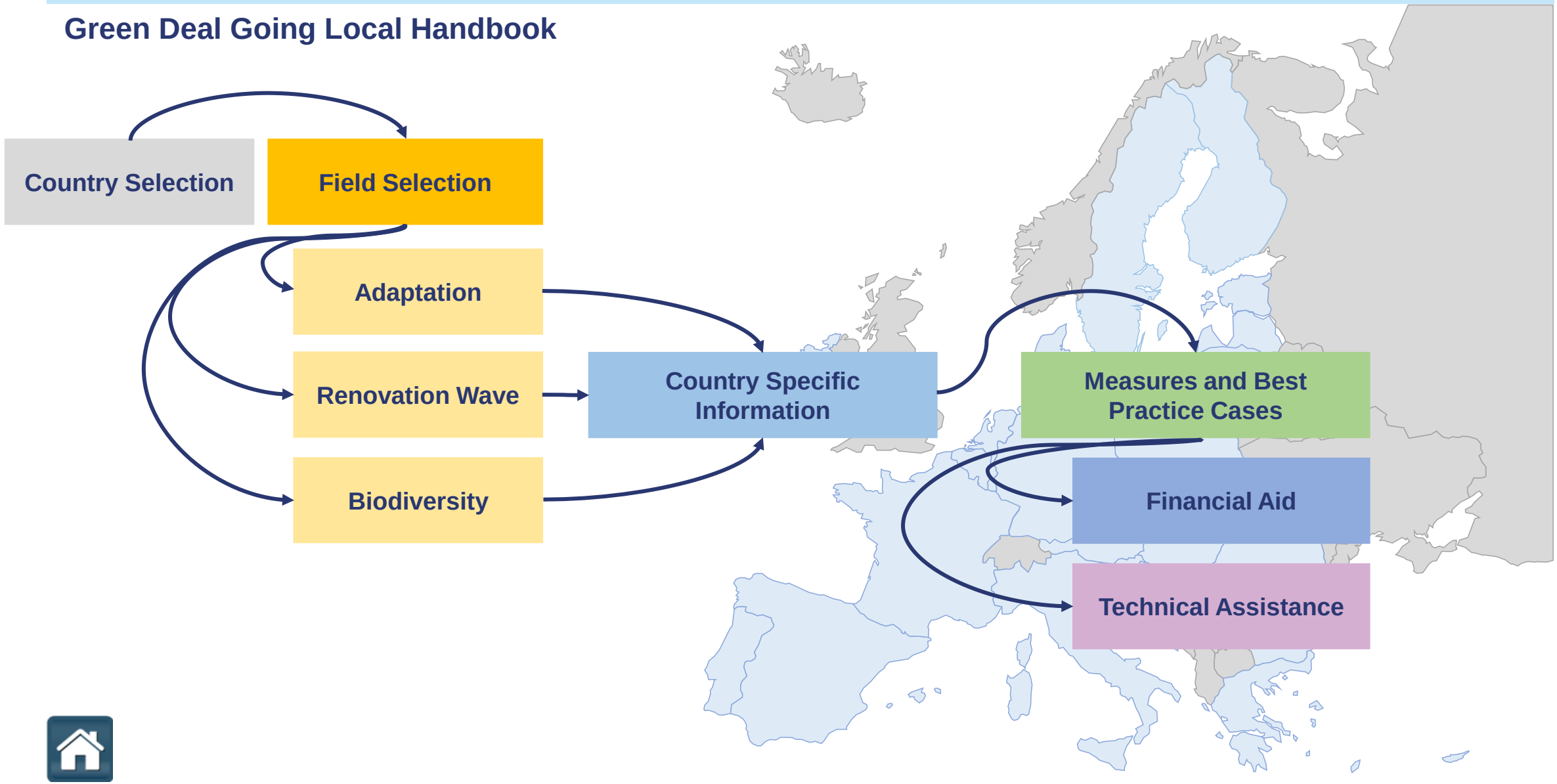
How it Works: Clicking through the Handbook

Green Deal Going Local Handbook



Greece

Do you want to become more resilient? Discover Adaptation and various measures applicable for your climate area.

Do you want to learn more about how to renovate your buildings? Discover measures of the Renovation Wave!

Do you want to learn more about how to protect biodiversity? Discover Biodiversity measures appropriate for each ecosystem.

Greece

The Importance of Adaptation for LRAs

Adaptation is…

… the process of **adjustment to actual or expected climate extremes** and their effects.

… applicable to natural and urban environments, implemented by human intervention.

… important for minimising harm.

… seeking to **find a solution for living with possible changes to climate.**

… different from mitigation, which intends to slow the harm caused by climate change.

It is important for **LRAs**, since…

… physical impacts and the associated socio-economic effects of climate change differ significantly on a regional level.

… there is **no one-size-fits-all solution: adaptation is context-dependent!**

LRAs should opt **for tailor-made adaptation measures**, since…

… the impacts of climate change can already be felt, on a global, national and regional level.

… national measures might not be perfectly applicable for local and regional circumstances.

Regional policy makers are requested to develop tailor-made adaptation measures that **fit the particular needs of their communities**. They can choose between **grey, green and soft measures**, which belong to either…

… **incremental adaptation**, which maintains the essence of a system; or

… **transformational adaptation**, which changes the fundamental attributes of a socioecological system.

Find out about adaptation measures and best practices in Greece!

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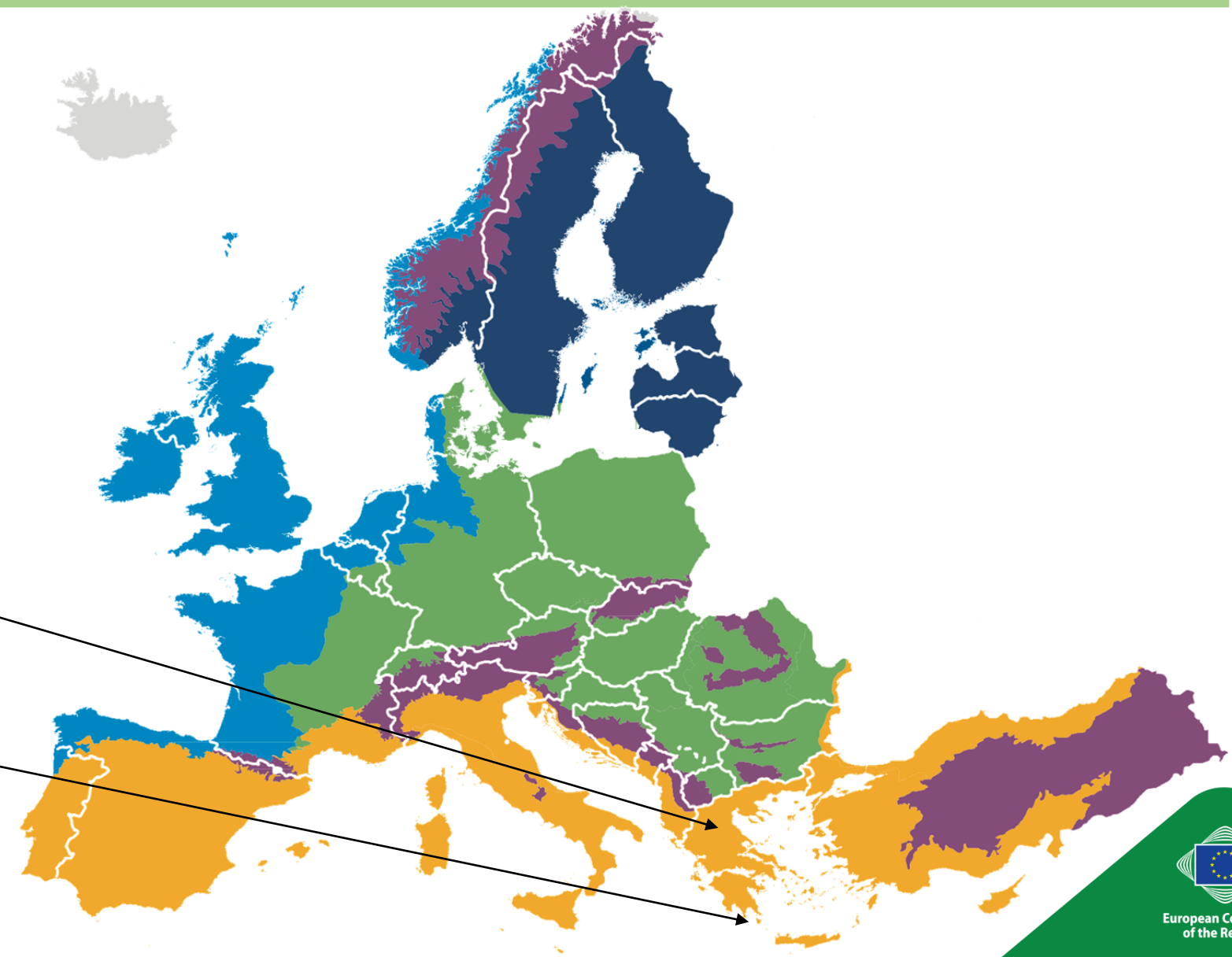
Greece – Choose a Climate Area



Mediterranean

Coastal Zones

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Coastal Zones and Regional Seas

Discover how to…

… protect coasts

Due to the melting of ice and snow coverage, higher sea levels are expected to occur, which will most likely affect coastal zones and regional seas through sea level rise, coastal flooding and an increase in sea surface temperatures.

… combat diseases

Higher temperatures are most likely to affect ocean acidity and change phytoplankton communities. On top, water-borne diseases might harm biodiversity and lead to health issues.

… manage fishery potential

Climatic effects might lead to a northward migration of marine species, leading not only to opportunities for fisheries, but also to an increasing number of marine dead zones.

Mediterranean Region

Discover how to…

… manage higher temperatures

Especially in the Mediterranean region, temperatures are expected to become much higher than the European average, resulting in, for example, an increased demand for cooling and medical assistance for those affected by heat stress, dehydration and heat strokes. Also, summer tourism might decrease, however other seasons might benefit positively.

… manage water supply

Higher temperatures accompanied by a decrease in summer precipitation can result in droughts and eventually lead to extreme heat and to competition for water resources between different users, such as private households, industry and the agricultural sector.

… protect forests

Especially in areas with many trees or grass/bushes in the countryside, forest fires can spread quickly. This can result in a decrease in the economic value of forests and neighbouring industries.

… protect biodiversity

The spread of non-native species, which threaten ecosystems, habitats or other species, is most likely a result of rising temperatures. This also results in an upward shift of plant and animal species and an increased risk of biodiversity loss.

… combat diseases

Higher temperatures are most likely to affect the expansion of habitats for southern disease vectors, which can result in poor health and reduced labour productivity as well as in higher food prices.

Discover How to Manage Higher Temperatures

- Improving thermal insulation
- Vertical greenery
- Increasing shaded areas
- Green / reflecting roofs and areas
- Improve irrigation systems in agriculture
- Increasing and revitalising green areas
- Parks and fountains in cities
- Vulnerability Assessment
- Heat-wave action plans

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Discover How to Protect Coasts

- Artificial dunes & dune rehabilitation
- Seawalls
- Beach nourishment
- Flood barriers
- Relocation of infrastructure to higher altitudes
- Floodplain restoration and maintenance
- Wetland restoration and maintenance
- Assessment / mapping of future erosion
- Vulnerability assessments
- Include rising sea levels in future urban planning
- (Mountain) cliff stabilisation
- (Mountain) cliff strengthening

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Discover How to Manage Water Supply

- Improve irrigation systems in Agriculture
- Water retention spaces
- Increase green areas in cities
- Early-warning systems
- Awareness raising on water consumption

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Discover How to Protect Forests

- Agroforestry
- Vulnerability assessments
- Early-warning systems

Discover How to Protect Biodiversity

- Underwater suction devices
- Crop rotation
- Introduction of natural predators
- Identify the most problematic species and track their movements

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Discover How to Combat Diseases

- Identify the most problematic vectors and pathogens and track their movements
- Early-warning systems
- Awareness campaigns for behavioural change

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Discover How to Manage Fishery Potential

- Underwater suction devices
- Introduction of natural predators
- Identify the most problematic species and track their movements
- Early-warning systems
- Risk-based zoning

Improving Thermal Insulation

Grey Measures

Adaptation

Improving thermal insulation

There are several options to implement climate-proofing of buildings with respect to excessively high temperatures. These options relate to building design – including the use of IT technologies to optimise thermal comfort – and building envelopes. Thermal insulation is an important technology to reduce energy consumption in buildings by preventing heat gain and loss through the building envelope.

Best practice:

- Living in a tree house in Torino: combining adaptation and mitigation measures to improve comfort (Italy)
- Climate proofing of buildings against excessive heat

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Vertical Greenery

Grey Measures

Adaptation

Vertical greenery

With the increase of urban density and the decrease in the availability of land, vertical greenery has intensified in order to foster the use of vegetation in urban areas. Vertical greenery has various positive implications: it can be used for cooling, water management and also for securing food supply.

Best practice:

- Berlin Biotope Area Factor (Germany)

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Increasing Shaded Areas

Green and Grey Measures

Adaptation

Increasing shaded areas

Increasing the amount of shaded area is regarded as one of the most efficient strategies to improve thermal comfort in summer. Urban design strategies can be used to create better thermal comfort for pedestrian areas in a city during the summer months. Some of these strategies include installing sun shelters on buildings, planting trees and increasing shade in order to combat the heat island effect.

Best practices:

- Social vulnerability to heatwaves – from assessment to implementation of adaptation measures in Košice and Trnava (Slovakia)
- Barcelona trees tempering the Mediterranean city climate (Spain)

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Green / Reflecting Roofs and Areas

Grey / Green Measures

Adaptation

Green / reflecting roofs

A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly-sloped roof. Green roofs are also known as vegetative or eco-roofs. They help to control storm water run-off and retention, absorb excess water, reduce the urban heat island effect, improve air quality and insulate buildings.

Best practice:

- Green Roofs in Basel: Combining Adaptation and Mitigation Measures
- Four pillars to Hamburg's Green Roof Strategy: financial incentive, dialogue, regulation and science

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Increasing and Revitalising Green Areas

Green Measures

Adaptation

Increasing and revitalising green areas

Green spaces in cities mitigate the effects of pollution and can reduce a phenomenon known as the urban heat island effect, which is heat trapped in urban areas. This effect appears in towns and cities as a result of human activity. Urban green spaces, such as parks, playgrounds and residential greenery, can promote mental and physical health and reduce morbidity and mortality in urban residential areas by providing psychological relaxation and stress alleviation. Greening the living environment benefits more than just health and well-being. It also facilitates water management and promotes biodiversity in built-up areas, and can help reduce the effects of noise pollution.

Best practice:

- Environment-friendly urban street design for decentralized ecological rainwater management in Ober-Grafendorf (Austria)

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Parks and Fountains in Cities

Green Measures

Adaptation

Parks and fountains in cities

Parks and fountains as recreational spaces are important aspects in reducing the heat island effect. Repairing historic drinking fountains and installing new ones can help people experiencing the negative effects of heat in the city as they can use the water to cool down or for drinking. Open water can decrease the air temperature by evaporation, absorption of heat and transport of heat since the cooling effect of flowing water is greater than that of water that is standing still. Water spray from a fountain has an even greater cooling effect because of the large contact surface between the water and the air, which stimulates evaporation. Wetting the streets also has a cooling effect. This is best done in the morning and afternoon in direct sunlight. Fountains can decrease surrounding air temperatures by 3°C and its cooling effect can be felt up to 35 meters away. Fountains also have a social impact, since they can be used by children as playgrounds and they can serve as meeting places in parks and squares.

Best practice:

- Stuttgart: combating the heat island effect and poor air quality with ventilation corridors and green-blue infrastructure (Germany)

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Heat-Wave Action Plans

Soft Measures

Adaptation

Heat-wave action plans

In order to improve the public health response to extreme temperatures and heatwaves, the EuroHEAT project has quantified the health effects of heat in cities in the European Region and has identified options for improving the preparedness of health systems and their responses to protect health. The key message of the project is that heat threatens health and climate change is increasing the occurrence of heatwaves. The health effects of hot weather can be prevented and public health strategies and measures can be adopted. Prevention requires a portfolio of actions at different levels, including: meteorological early warning systems; medical advice; health services targeted to particularly vulnerable groups; toll-free information and assistance numbers; meal delivery and home care.

Best practices:

- Operation of the Portuguese Contingency Heatwaves Plan
- Heat-Wave Action Plan for England
- Austrian Heat Protection Plan

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Sustainable Drainage Systems

Grey Measures

Adaptation

Sustainable drainage systems

Sustainable drainage systems provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses. They are especially good for reducing flooding, enhancing water quality, reducing pollution and providing habitats for wildlife.

Best practices:

- Urban stormwater management in Augustenborg, Malmö (Sweden)
- Storm water management in Växjö – the Linnaeus canal and Växjö lake lagoons (Sweden)

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Dikes and Dams

Grey Measures

Adaptation

Dikes and dams

Dikes and dams need regular maintenance and strengthening to keep their protection capacities and meet safety requirements. In addition, climate scenarios for sea level rise and extreme weather conditions can lead to new safety requirements and building new protections on identified weak points or heightening and strengthening existing ones. Reinforcing dikes and dams can increase their stability and resistance against dike breaching, e.g. by strengthening the inner core of the dike, or by improving characteristics of the dike's surface that contribute to the overall stability of the dike. Find out more about dikes and dams here.

Best practices:

- Implementation of the integrated Master Plan for Coastal Safety in Flanders (Belgium)
- Regional flood management by combining soft and hard engineering solutions, the Norfolk Broadlands (United Kingdom)

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Widen Roadside Ditches

Grey Measures

Adaptation

Widen roadside ditches

One of the purposes of a roadway drainage ditch is to prevent unsafe accumulations of rain water on the roadway surface. An open ditch allows water to move fully away from a road surface. It also continuously intercepts rain water flowing toward the roadway from adjacent land. For these reasons, a roadway drainage ditch is less likely to allow the accumulation of water on or near a roadway surface. Widening these ditches helps to accumulate the water.

Best practice:

- Mainstreaming adaptation in water management for flood protection in Isola Vicentina (Italy)

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Reduce and Open Sealed Surfaces

Grey Measures

Adaptation

Reduce and open sealed surfaces

Sealed surfaces, such as artificial, impenetrable surfaces like tar, may cause local water nuisance if more frequent extreme rain events occur. A distinction is hereby made between water nuisance from sewers after extreme summer precipitation and water nuisance from waterways after extended precipitation, a phenomenon more typical in winter months. Opening already existing sealed surfaces and reducing the existence of these sealed surfaces can prevent from city flooding and help absorb water.

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Improve Irrigation Systems in Agriculture

Grey Measures

Adaptation

Improve irrigation systems in agriculture

In areas where rainfall is not regular or frequent enough, there is a need for agricultural technology innovations such as additional irrigation to keep crops healthy. An irrigation system is the artificial and systematic way of applying water to the soil through various networks of tubes, pumps and sprays. There are various methods of irrigation in agriculture, encompassing drip irrigation systems, sprinkler irrigation, centre pivot irrigation, furrow irrigation systems and terraced irrigation. Improving irrigation systems in order to use water more effectively and sustainably is crucial in saving water. More information can be found here.

Best practice:

- Improving soil structure of an arable crop farm in the district of Heilbronn (Germany)

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Maintenance and Restoration of Mountain Cliffs

Grey Measures

Adaptation

Maintenance and restoration of mountain cliffs

Mountain cliffs are mostly hard, made of limestone, sandstone, granite and other rocks. Rocky cliffs are characterised by rockslides or block fall. Cliff erosion is almost always the result of structural erosion, resulting in a gradual retreat of the coastline because the amount of sediment that gets eroded (rocks, cobbles or sand) exceeds the amount of deposited sediment. To reduce cliff erosion and its consequences – landslide, collapse, falling of rocks – cliff strengthening techniques aim to increase the strength and overall stability of the slope by minimising landside pressures. Some techniques also protect the foot of the cliff against marine erosion, a key factor in strengthening cliffs. Techniques include cliff reshaping, cliff drainage, rock bolting or reinforced geogrids and pinned nets.

Best practice:

- Addressing coastal erosion in Marche region (Italy)

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Permafrost and Glacier Monitoring

Soft Measures

Adaptation

Permafrost and glacier monitoring

The overall objective of monitoring permafrost and glaciers is to contribute to the mitigation of natural hazards that result from climate change impacts on alpine permafrost and glaciers. Through the creation of monitoring and by developing a common strategy for dealing with permafrost-related hazards, monitoring can contribute to sustainable development and the implementation of good governance practices. The results can provide decision-makers and responsible authorities with the necessary decision bases and strategies to deal with permafrost-related hazards.

Best practice:

- Climate adaptation strategy for the Grimsel area in the Swiss Alps (Switzerland)
- Permafrost Long-Term Monitoring Network (PermaNET)

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Car-Free Tourism / Sustainable Tourism

Soft Measures

Adaptation

Car-free tourism / sustainable tourism

Sustainable tourism refers to sustainable practices in and by the tourism industry. It aims to minimise the negative impacts, such as economic leakage, damage to the natural environment and overcrowding, and maximize the positive ones, e.g. job creation, cultural heritage preservation and interpretation, wildlife preservation and landscape restoration. The UN Environment Programme and the UN World Tourism Organization define sustainable tourism as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities.”

Best practices:

- Sustainable tourism planning and climate change adaptation in the Alps: a case study of winter tourism in mountain communities in the Dolomites (see also here)
- Promoting co-evolution of human activities and natural system for the development of sustainable coastal and maritime tourism (CO-EVOLVE)

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Artificial Dunes & Dune Rehabilitation

Grey Measures

Adaptation

Artificial dunes & dune rehabilitation

Artificial dunes are engineered structures reproducing the form of natural dunes, often in a chain-like manner. They are built with sand brought from an external source area and shaped into dunes using bulldozers, dune nourishments or other means. This is often carried out at the same time as beach nourishment.

Best practice:

- Implementation of the integrated Master Plan for Coastal Safety in Flanders (Belgium)
- Sand Motor – building with nature solution to improve coastal protection along Delfland coast (The Netherlands)

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Seawalls

Grey Measures

Adaptation

Seawalls

A seawall is a structure made of concrete, masonry or sheet piles, built parallel to the shore at the transition between the beach and the mainland or dune, to protect the inland area against wave action and prevent coastal erosion. Seawalls are usually massive structures designed to resist storm surges. The height of a seawall will at least cover the difference between the beach level and the mainland, though they are commonly built higher to protect the land against wave overtopping. They are also used to stabilise eroding cliffs and protect coastal roads and settlements. The crest of the wall often extends into a stone covered part that may be used for a road, promenade or parking area. A seawall creates a distinct separation between the beach and the mainland. Seawalls are often found in the case of narrow or steep beaches, where a typical breakwater is either too large or not economical.

Best practice:

- Timmendorfer Strand coastal flood defence strategy (Germany)

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Beach Nourishment

Grey Measures

Adaptation

Beach nourishment

Beach nourishment is the artificial placement of sand on an eroded shore to maintain the amount of sand present in the foundation of the coast. This way, natural erosion is compensated and the area protected against storm surge to a greater extent. Gravel and small pebbles may also be used, in particular for the shoreface. Beach nourishment often aims to maintain beaches for tourism and recreational purposes. The process involves dredging material such as sand and pebbles from a source area offshore or inland to feed the beach where erosion is occurring. The technique has been used in Europe since the early 1950s. It is a common practice in the Denmark, France, Germany, Italy, the Netherland, Spain and the UK. For more information on the different techniques, see here.

Best practice:

- Implementation of the integrated Master Plan for Coastal Safety in Flanders (Belgium)
- Sand Motor – building with nature solution to improve coastal protection along Delfland coast (The Netherlands)

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Flood Barriers

Grey Measures

Adaptation

Flood barriers

Flood barriers are fixed installations that allow water to pass under normal conditions and have gates or bulkheads that can be closed against storm surges or spring tides to prevent flooding. They can close the sea mouth of a river or waterway. These barriers can be major infrastructure systems and are often linked with other flood protection measures, such as dikes, seawalls and beach nourishment. They are normally used to protect urban settlements and infrastructure heavily affected by storm surges and sea flooding.

Best practices:

- Implementation of the integrated Master Plan for Coastal Safety in Flanders (Belgium)
- The Maeslantkering gate, on the Nieuwe Waterweg between Rotterdam to the North Sea, closes a shipping canal whose width is 360 meters (the gate itself consists of 2 wings, 210 m wide and 22 m high each).

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Relocation of Infrastructure to Higher Altitudes

Grey Measures

Adaptation

Relocation of infrastructure to higher altitudes

Climate change will lead to significant disruptions for businesses, which might ultimately necessitate a geographical shift of business and industrial activities away from regions highly affected by climate change. This could be due to direct disruptions through climate change impacts on business operations, for instance through floods or sea level rise, or due to disruptions in their supplier, buyer or resource base that lead to flow-on effects and adverse consequences for them. Business relocation decisions can act as adaptive responses to climate change.

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Cliff Strengthening

Grey Measures

Adaptation

Cliff strengthening

Coastal cliffs can be differentiated according to their morphology and structure: cliffs can be loose – sand, silt, clay, marl and chalk – or hard, made of limestone, sandstone, granite and other rocks. Loose cliffs are more prone to erosion and landslide than rocky cliffs and are more characterised by rockslides or block fall. Cliff erosion in coastal areas is almost always the result of structural erosion, resulting in a gradual retreat of the coastline because the amount of sediment that gets eroded (rocks, cobbles or sand) exceeds the amount of deposited sediment. To reduce cliff erosion and its consequences – landslide, collapse, falling of rocks – cliff strengthening techniques aim to increase the strength and overall stability of the slope by minimising landside pressures. Some techniques also protect the foot of the cliff against marine erosion, a key factor in strengthening cliffs. Techniques include cliff reshaping, cliff drainage, rock bolting or reinforced geogrids and pinned nets.

Best practice:

- Addressing coastal erosion in Marche region (Italy)

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Cliff Stabilisation

Green Measures

Adaptation

Cliff stabilisation

Coastal cliffs can be differentiated according to their morphology and structure: cliffs can be loose – sand, silt, clay, marl and chalk – or hard, made of limestone, sandstone, granite or other rocks. Loose cliffs are more prone to erosion and landslide than rocky cliffs and are more characterised by rockslides or block fall. Cliff erosion in coastal areas is almost always the result of structural erosion, resulting in a gradual retreat of the coastline because the amount of sediment that gets eroded (rocks, cobbles or sand) exceeds the amount of deposited sediment. Coastal cliff stabilisation techniques reduce cliff erosion and its consequences – landslide, collapse, falling of rocks. In practice, cliff stabilisation and cliff strengthening are often combined. Stabilisation techniques include methods to increase the stability of the slope and measures to reduce marine erosion at the foot of the cliffs.

Best practice:

- Addressing coastal erosion in Marche region (Italy)

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Floodplain Restoration and Maintenance

Green Measures

Adaptation

Floodplain restoration and maintenance

Floodplains cover 7% of the European continental area. However, the majority of it has been environmentally damaged. Developing strategies to preserve floodplains is essential, since restored floodplains provide an alternative to structural measures to handle the increased risk of flooding, meaning they can act as buffers. At the same time, floodplain restoration helps achieve higher quality ecosystem services like improved water quality, improved conditions for biodiversity conservation and improved recreational value.

Best practices:

- Urban river restoration: a sustainable strategy for storm-water management in Lodz (Poland)
- Lower Danube green corridor: floodplain restoration for flood protection (Bulgaria, Romania)
- Restoring the river dynamics: Room for the River Regge (Netherlands)

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Wetland Restoration and Maintenance

Green Measures

Adaptation

Wetland restoration and maintenance

Coastal wetlands are saltwater and brackish water wetlands located in coastal areas. They provide natural defences against coastal flooding and storm surges by wave energy dissipation and erosion reduction, helping to stabilise shore sediments. In some locations, coastal wetlands can be used to absorb storm surge waters, attenuating flooding. Coastal wetlands are important habitats, for example providing a nursery function for fish and shellfish and a variety of services to birdlife and can contribute to water purification. The restoration of coastal wetlands and managed realignment are increasingly considered as measures for adaptation.

Best practices:

- Habitat restoration and integrated management in the Ebro delta to improve biodiversity protection and climate resilience (Spain)
- Adaptive restoration of the former saltworks in Camargue (France)

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Include Rising Sea Levels in Future Urban Planning

Soft Measures

Adaptation

Include rising sea levels in future urban planning

Sea level rise poses major challenges to coastal land uses, and therefore to urban planning processes. In theory, urban planning can lead to responses to sea-level rise that are socially and environmentally sustainable. In practice, urban planning processes may fall short of this ideal. To be sustainable, urban planning needs to: facilitate local ownership of adaptation responses; build collective action within and between local communities and different arms and levels of government; and be fair in its application across space and over time.

Best practices:

- Climate change and spatial development: Adaptation strategies for urban and regional planning in urban coastal zone regions based on the example of the Baltic region
- Public-private partnership for a new flood proof district in Bilbao (Spain)

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Agroforestry

Green Measures

Adaptation

Agroforestry

Agroforestry systems include all land-use systems or forms of land management where woody perennials are deliberately used in the same land unit as agricultural crops and/or animals. Agroforestry exploits the complementarity between trees and crops, so that the available resources can be more effectively exploited. Efficient and modern versions of agroforestry allow the diversification of farm activity and make better use of environmental resources. Agroforestry can be implemented in both tropical and temperate regions, producing food and fibre for better nutritional security, sustaining livelihoods, alleviating poverty and promoting productive, resilient agricultural environments. Moreover, it can enhance ecosystems through carbon storage, prevention of deforestation, biodiversity conservation, cleaner water and erosion control, while enabling agricultural lands to withstand events such as floods and drought.

Best practices:

- Agroforestry: agriculture of the future? The case of Montpellier (France)
- Autonomous adaptation to droughts in an agro-silvo-pastoral system in Alentejo (Portugal)

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Water Retention Spaces

Green Measures

Adaptation

Water retention spaces

Natural water retention measures are those that aim to safeguard and enhance the water storage potential of landscapes, soil and aquifers, by restoring ecosystems, natural features and characteristics of water courses and using natural processes. They support green infrastructure by contributing to integrated goals dealing with nature and biodiversity conservation, restoration and landscaping. They use nature to regulate the flow and transport of water so as to smooth peaks and moderate extreme events, such as floods, droughts, desertification and salination. They are a better environmental option for flood risk management, since they come in the form of decentralised lakes and ponds. Water retention spaces improve water quality and are relevant both in rural and urban areas.

Best practice:

- Natural water retention measures in the Altovicentino Area (Italy)
- The Cloudburst Management Plan: The economics of managing heavy rains and stormwater in Copenhagen (Denmarl)

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Increase Green Areas in Cities

Green Measures

Adaptation

Increase green areas in cities

Green urban areas improve biodiversity and animal species dispersal within the urban landscape. If adequately designed, green areas can improve urban ventilation, allowing cooler air from outside to penetrate into the more densely built areas. Urban green areas also have positive effects for human health, they provide cooling through shading and enhanced evapotranspiration, thus reducing the heat island effect that occurs in many cities. Green areas are often threatened by expanding city structures, which have fragmented natural areas, creating small patches of green spaces in amongst buildings and roads. For example, patches of urban woodlands are generally separated from each other, which affects the ability of many woodland species to disperse, or to move among different locations with similar habitats. Ecological corridors or connections between urban woodlands, gardens or other green spaces are recognised as a way to limit the negative effects of fragmentation. The creation of green areas and corridors can be applicable in most urban areas.

Best practices:

- Barcelona trees tempering the Mediterranean city climate (Spain; see also here)
- Mainstreaming climate change adaptation into urban planning: greyfield land redevelopment in Jena (Germany)
- Stuttgart: combating the heat island effect and poor air quality with ventilation corridors and green-blue infrastructure (Germany)

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Awareness Raising on Water Consumption

Soft Measures

Awareness raising on water consumption

Adaptation

Especially in areas that are affected by heat and decreased precipitation, an adequate management of water supply for all different sectors is crucial. Drought management plans that reduce risk and economic, social, and environmental drought impacts are helpful. Water conservation plans aim to: limit water consumption; reduce loss and waste of water; improve water use efficiency; document the level of recycling and reuse of water; extend the life of current water supplies by reducing water demand. Furthermore, using existing water supplies more efficiently can diminish water demand and minimise the environmental impacts and costs associated with developing new supplies. Drought and water conservation plans include guidelines and requirements governing water conservation and drought contingency for public water suppliers but also through restrictions on water use, rationing schemes, special water tariffs or the reduction of low-value uses. The basic elements and contents of drought and water conservation plans can be found here.

Best practices:

- Zaragoza: combining awareness raising and financial measures to enhance water efficiency
- Securing future water supply on regional and local level in the River Lavant Valley, Carinthia (Austria)
- Private investment in a leakage monitoring program to cope with water scarcity in Lisbon (Portugal)

Find out more about Funding Programmes

Find out more about Technical Assistance

Underwater Suction Devices

Grey Measures

Adaptation

Underwater suction devices

Underwater suction devices can be used to absorb invasive algae. These underwater vacuum devices suck up invasive seaweed and bring new life and breathe to, for instance, suffocated coral reefs. It is not yet extensively used, however it is applied to some areas such as the Hawaiian ocean.

Find out more about Funding Programmes

Find out more about Technical Assistance

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Risk-Based Zoning

Soft Measures

Adaptation

Risk-based zoning and siting for marine aquaculture

Appropriate site selection aims to ensure that increased seafood production comes in areas and for species where there is a potential for sustainable growth. Risk-based zoning and siting can help avoid areas particularly vulnerable to climate risks and select the most suitable areas for the cultured species, considering both the current state and the challenges posed by climate change in the medium to long term. The overall process helps to minimise possible economic losses that could derive from choices that do not take into account all risks and concerns.

Best practice:

- ClimeFish: Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change

Find out more about Funding Programmes

Find out more about Technical Assistance

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Crop Rotations

Green Measures

Adaptation

Crop rotations

Crop rotation is the practice of growing a series of different types of crops in the same area across a sequence of growing seasons. It reduces reliance on one set of nutrients, pest and weed pressure, and the probability of developing resistant pests and weeds. Rotating different crops each year adds various economic and environmental benefits. It is especially aimed at revitalising soils and preventing pest infection. It is therefore helpful in long-term soil and farm management.

Best practices, both in the framework of the AgriAdapt project:

- Crop diversification and improved soil management for adaptation to climate change in Segovia (Spain)
- Improving soil structure of an arable crop farm in the district of Heilbronn (Germany)

Find out more about Funding Programmes

Find out more about Technical Assistance

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Introduction of Natural Predators

Green Measures

Adaptation

Introduction of natural predators

Natural predators or enemies are organisms that kill or decrease the reproductive potential of another species. Most of them are introduced by people to reduce the numbers of another organism and to ensure biological control, such as introducing molluscs to control algae. Natural predators should always be introduced with caution due to the potential of unwanted negative consequences.

Best practices:

- Climate change: Back to the future for marine predators
- Habitat restoration and integrated management in the Ebro delta (see also here) to improve biodiversity protection and climate resilience (Spain)

Find out more about Funding Programmes

Find out more about Technical Assistance

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Identify and Track the Most Problematic Species

Soft Measures

Adaptation

Identify the most problematic species and track their movements

Some species are highly affected by climate change, especially by higher temperatures. This can lead to species feeling the need to move and search for other natural habitats. This does not only affect the livelihood of the species itself, but also of the whole ecosystem. Identifying the species which are the most affected by climate change and tracking their movements is crucial to both saving the species and the whole ecosystem.

Best practices:

- Assessing the Vulnerability of Fish and Invertebrate Species in a Changing Climate
- Impacts of Climate Change on European Invertebrates, with reference to the vulnerability of Bern Convention species (also here)
- Global Observation Research Initiative in Alpine Environments (GLORIA)

Find out more about Funding Programmes

Find out more about Technical Assistance

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Identify and Track Problematic Vectors and Pathogens

Soft Measures

Adaptation

Identify the most problematic vectors and pathogens and track their movements

Vectors are living organisms that can transmit infectious pathogens between humans, or from animals to humans. Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later transmit it to a new host, after the pathogen has replicated. Often, once a vector becomes infectious, they are capable of transmitting the pathogen for the rest of their life during each subsequent bite / blood meal. Identifying and tracking the most problematic vectors and pathogens is crucial in order to prevent the transmission of harmful diseases.

Best practice:

- 'Reverse' identification key for mosquito species

Find out more about Funding Programmes

Find out more about Technical Assistance

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Promotion of Insurance

Soft Measures

Adaptation

Promotion of insurance

Especially for inhabitants of risk-prone areas, insurance is crucial to foster economic and social stability. Promoting insurance for individuals and small and medium-sized enterprises is important. They can act as risk management tools.

Best practice:

- Insurance company supporting adaptation action in small and medium size enterprises in Turin (Italy)

Find out more about Funding Programmes

Find out more about Technical Assistance

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Awareness Campaigns for Behavioural Change

Soft Measures

Adaptation

Awareness campaigns for behavioural change

Public awareness is important to increase enthusiasm and support and stimulate self-mobilisation and action, as well as mobilise local knowledge and resources. Awareness campaigns can address groups of people in a region affected by a particular climate threat, groups of stakeholders or the general public. Awareness raising requires strategies of effective communication to reach the desired outcome. The aim of awareness raising campaigns generally includes increasing concern, informing the targeted audience, creating a positive image, and changing behaviours. Large climate change awareness-raising campaigns are often a mixture of adaptation, mitigation, energy efficiency and sustainability measures.

Best practices:

- Zaragoza: combining awareness raising and financial measures to enhance water efficiency
- Securing future water supply on regional and local level in the River Lavant Valley, Carinthia (Austria)
- Ghent crowdfunding platform realising climate change adaptation through urban greening (Belgium)

Find out more about Funding Programmes

Find out more about Technical Assistance

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Early-Warning Systems & Vulnerability Assessments

Soft Measures

Early-warning systems & vulnerability assessments

Adaptation

Early warning systems and vulnerability assessments are key elements of climate change adaptation and disaster risk reduction. They aim to avoid and reduce the damages caused by hazards. The significance of an effective early warning system lies in the recognition of its benefits by local people. Early warning systems include detection, analysis, prediction and warning dissemination, followed by response decision-making and implementation. To be effective and complete, an early warning system needs to comprise four interacting elements: risk knowledge; monitoring and warning services; dissemination and communication; and response capability. They can be used to…

… assess vulnerability to high temperatures: EuroHEAT online heatwave forecast (EuroHEAT);
… combat forest fires: European Forest Fire Information System (EFFIS);
… assess decreases in summer precipitation and droughts: European Drought Observatory (EDO);
… predict floods: European Flood Awareness System (EFAS);
… assess melting ice coverage and permafrost reduction (PermaNET);
… assess landslides and rock falls, such as in the ProtectBio project in Switzerland;
… assess and map future erosion;
… combat diseases: European Centre for Disease Prevention and Control (ECDC) & European Aeroallergen Network (EAN).

Find out more about Funding Programmes

Find out more about Technical Assistance

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Info Section: What are Green, Grey and Soft Measures?

Grey measures…

… target physical infrastructure and rely on technological solutions to better equip people and places to the consequences of a changing climate. Grey measures include a wide range of interventions to transform the built environment. Some examples are interventions to vital infrastructure, making improvements to the infrastructure of critical buildings, as well as developing urban planning projects in a way to reduce the threats from climate events.

Green measures…

… make changes to the built environment by using nature-based solutions. These measures can be less costly to implement and can deliver other benefits, such as improved amenity or benefits for nature and biodiversity. These measures often represent “no or low-regret” solutions for improving the resilience of human systems, because they will continue to deliver benefits even if climate impacts do not occur or are less serious than anticipated. Such measures are often referred to as green infrastructure (or blue infrastructure if aquatic ecosystems are concerned) or ecosystem-based adaptation measures.

Soft measures…

… include policy, legal or administrative initiatives that aim to change behaviours, increase the adaptive capacity of people, businesses and public authorities, or build knowledge and know-how. These measures could include awareness-raising campaigns, early warning systems or providing relevant stakeholders with information tools such as climate change impact and vulnerability or risk assessments, taking insurance against damages from extreme weather events.

Funding Adaptation: Programmes

- European Structural and Investment Funds (ESIF)
  - European Regional Development Fund (ERDF)
    - Urban Innovation Action
    - European Territorial Cooperation
  - Cohesion Fund (CF)
  - European Social Fund+ (ESF+)
  - European Agricultural Fund for Rural Development (EAFRD)
  - European Maritime, Fisheries and Aquaculture Fund (EMFAF)
- LIFE programme by CINEA
- Just Transition Fund
- Invest EU
- Connecting Europe Facility
- EU Renewable Energy Financing Mechanism
- Horizon Europe
- Innovation Fund

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Funding Adaptation: ESIF

European Structural and Investment Funds

The European Structural and Investment Funds (ESIF) comprise the European Regional Development Fund, the European Social Fund, the European Agricultural Fund for rural development and the European Maritime and Fisheries Fund. Over half of the EU's funding is channelled through these funds. They focus mainly on five areas: research and innovation, digital technologies, supporting the low-carbon economy, sustainable management of natural resources, and supporting small businesses.

Funding Adaptation: ERDF

European Regional Development Fund

The European Regional Development Fund (ERDF) aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between regions. Between 2021 and 2027 it will enable investments in a smarter, greener, more connected and more social Europe that is closer to its citizens. The ERDF finances programmes in shared responsibility between the European Commission and national and regional authorities in the Member States. The Member States' administrations choose which projects to finance and take responsibility for the day-to-day management.

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Funding Adaptation: ERDF

European Regional Development Fund

Within the ERDF, there are two other initiatives: Urban Innovative Actions and European Territorial Cooperation Interreg.

Urban Innovative Actions is an initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Within the Interreg programme, the European Union promotes cooperation between regions and countries to help their economic and social development and tackle the obstacle of borders. It is organised under multiple strands, such as Interreg A for cross-border cooperation, Interreg B for transnational cooperation and Interreg C for interregional cooperation.

Funding Adaptation: CF

Cohesion Fund

The Cohesion Fund (CF) supports investments in the field of environment and in trans-European networks in the area of transport infrastructure. For the 2021-2027 period, it concerns Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. 37% of its overall financial allocation are expected to contribute to climate objectives.

Funding Adaptation: ESF+

European Social Fund Plus+

The European Social Fund Plus+ (ESF+) invests in people, with a focus on improving employment and education opportunities across the European Union. The budget for the 2021-2027 period adds up to almost EUR 100 billion. It provides an important contribution to the EU's employment, social, education and skills policies, including structural reforms in these areas. Furthermore, it also aims to improve the situation of the most vulnerable people at risk of poverty.

Funding Adaptation: EAFRD

European Agricultural Fund for Rural Development

The common agricultural policy supports the vibrancy and economic viability of rural areas. Rural development is its second pillar. It contributes to the sustainable development of rural areas by fostering competitiveness, ensuring sustainable management of natural resources and climate action, and achieving a balanced territorial development of rural economies and communities. The European Agricultural Fund for Rural Development (EAFRD) amounts to EUR 95.5 billion.

Funding Adaptation: EMFAF

European Maritime, Fisheries and Aquaculture Fund

The European Maritime, Fisheries and Aquaculture Fund (EMFAF) helps fisheries to adopt sustainable fishing practices and coastal communities to diversify their economies, improving the quality of life along European coasts. It supports the EU common fisheries policy, the EU maritime policy and the EU agenda for international ocean governance. It provides support for developing innovative projects ensuring that aquatic and maritime resources are used sustainably. This leads to food security through the supply of seafood products, growth of a sustainable blue economy and healthy, safe and sustainably managed seas and oceans.

Funding Adaptation: LIFE

EU's Funding Instrument for Environment and Climate Action

The LIFE programme by the European Climate Infrastructure and Environment Executive Agency is the EU's funding instrument for the environment and climate action. It is aimed at supporting projects in the fields of nature and biodiversity, circular economy and quality of life, climate change mitigation and adaptation, and clean energy transition. It supports applicants and provides information on awards, publications and project initiation.

The climate change mitigation and adaptation subprogramme co-funds projects supporting the operation of the European Climate Pact, sustainable finance activities, awareness raising, training and capacity building, knowledge development and stakeholder participation in climate change mitigation and adaptation areas.

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Funding Adaptation: Just Transition Fund

Just Transition Fund

The Just Transition Fund (JTF) is a financial instrument within the EU's Cohesion Policy 2021-2027, and is the first pillar of the Just Transition Mechanism in the context of the European Green Deal aiming at achieving EU climate neutrality by 2050. The fund supports the territories most affected by the transition towards climate neutrality to avoid growing regional inequalities, in line with the EU's Cohesion Policy's aim to reduce regional disparities and to address structural changes in the EU. The Commission has set up a Just Transition Platform (see Technical Assistance in this handbook) to help EU countries and regions to access the support available through the Just Transition Mechanism.

Funding Adaptation: InvestEU

InvestEU

The InvestEU Fund combines 13 centrally managed EU financial instruments and the European Fund for Strategic Investments into one instrument. It is a market-based and demand-driven instrument, with a strong emphasis on EU policy priorities. It supports projects in the fields of sustainable infrastructure, research, innovation and digitalisation, small and medium-sized businesses, and social investment and skills.

Funding Adaptation: Connecting Europe Facility

Connecting Europe Facility

The Connecting Europe Facility (CEF) supports the development of high performing, sustainable and efficiently interconnected trans-European networks in the fields of transport, energy and digital services. In addition to grants, the CEF offers financial support to projects through innovative financial instruments such as guarantees and project bonds. These instruments create significant leverage in their use of the EU budget and act as a catalyst to attract further funding from the private sector and other public sector actors.

Funding Adaptation: EU Renewable Energy Financing Mechanism

EU Renewable Energy Financing Mechanism

To better support renewable energy projects, and thereby encourage a greater uptake of renewable energy sources across the EU, the European Commission has established the Renewable Energy Financing Mechanism. Its main objective is to enable Member States to work more closely together in the take-up and promotion of renewables, so that they can more easily achieve both individual and collective renewable energy targets. The mechanism will also boost renewable projects in line with the European Green Deal. It will facilitate a more cost-effective roll-out of renewables across the EU, particularly in areas that have greater access to natural resources or are better suited for it in terms of geography.

Funding Adaptation: Horizon Europe

Horizon Europe

Horizon Europe is the EU's key funding programme for research and innovation with a budget of EUR 95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports the creating and better distribution of excellent knowledge and technologies.

It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.

Funding Adaptation: Innovation Fund

Innovation Fund

The Innovation Fund is a large funding programmes for the demonstration of innovative low-carbon technologies. Its goal is to help businesses invest in clean energy and industry to boost economic growth, create local and future-proof jobs, and reinforce European technological leadership on a global scale. This is done through calls for large and small-scale projects focusing on innovative low-carbon technologies and processes in energy-intensive industries, on carbon capture and utilisation, on the construction and operation of carbon capture and storage, on innovative renewable energy generation and on energy storage.

Technical Assistance for Adaptation

- Climate Adapt
- Urban Adaptation Support Tool
- Copernicus Climate Change Service
- Biodiversity Information System for Europe
- Water Information System for Europe
- National Adaptation Platforms, such as in Austria, Finland, Hungary, Poland, Croatia, France, Ireland, Spain, Denmark, Germany, Netherlands and Sweden.
- CCIV assessments via the EIONET library
- Transnational Exchange Platforms, such as the Climate Adaptation Platform for the Alps or the Pyrenean Climate Change Observatory
- City Networks, such as Covenant of Mayors for Climate and Energy Europe, C40 Cities, Making Cities Resilient or Resilient Cities Annual Conference
- JPI Urban Europe
- Connecting Europe Facility
- European Energy Efficiency TA
- InvestEU Advisory Hub
- Just Transition Platform

Technical Assistance for Adaptation

Climate Adapt

Climate-ADAPT is the European Climate Adaptation Platform and a partnership between the European Commission and the European Environment Agency. Climate-ADAPT aims to support Europe in adapting to climate change by helping users to access and share data and information on: expected climate change in Europe; current and future vulnerability of regions and sectors; national and transnational adaptation strategies and actions; adaptation case studies and potential adaptation options; and tools that support adaptation planning.

Climate ADAPT
SHARING ADAPTATION INFORMATION ACROSS EUROPE

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Technical Assistance for Adaptation

Urban Adaptation Support Tool

The Urban Adaptation Support Tool aims to assists cities, towns and other local authorities in developing, implementing and monitoring climate change adaptation plans. It was developed as a practical guidance tool for urban areas in recognition of their importance in the European economy. The tool outlines all the steps needed to develop and implement an adaptation strategy. It is aimed at cities starting the process as well as at those more advanced in the process.

Urban Adaptation Support Tool
Covenant of Mayors for Climate & Energy EUROPE

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Technical Assistance for Adaptation

Copernicus Climate Change Service

The Copernicus Climate Change Service aims to support adaptation and mitigation policies of the European Union by providing consistent and authoritative information about climate change. It offers free and open access to climate data and tools based on available science.

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Technical Assistance for Adaptation

Biodiversity Information System for Europe

The Biodiversity Information System for Europe is a single entry point for data and information on biodiversity in Europe. It provides detailed information on protecting biodiversity, green infrastructure, biodiversity policy and data and other fields connected to challenges and the future of biodiversity.

Technical Assistance for Adaptation

Water Information System for Europe

The Water Information System for Europe (WISE) is a partnership between the European Commission and the European Environment Agency. It was launched in 2007 providing a web-portal entry to water related information ranging from inland waters to marine. For users from EU institutions or other environmental national, regional and local administrations WISE provides input to thematic assessments in the context of EU water related policies. For water professionals and scientists WISE facilitates access to reference documents and thematic data, which can be downloaded for further analyses. For the general public, including private or public entities, WISE illustrates a wide span of water related information through interactive maps, charts and indicators.

WISE
WATER INFORMATION SYSTEM FOR EUROPE

Technical Assistance for Adaptation

Various National Adaptation Platforms, providing country-specific information

Austria Klima | Wandel | Anpassung	Finland Ilmasto-opas.fi	Hungary NATéR	Poland Klimada 2.0
Croatia PRILAGODBA KLIMATSKIM PROMJENAMA	France Wiklimat	Ireland Climate Ireland	Spain AdapteCCa.es
Denmark ClimateChangeAdaptation	Germany KLiVO DEUTSCHES KLIMAVORSORGE-PORTAL	Netherlands Kennisportaal Klimaatadaptatie	Sweden Klimatanpassning.se

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Technical Assistance for Adaptation

CCIV assessments

The European Environment Information and Observation Network (EIONET) is a partnership network of the European Environment Agency and its 38 members and cooperating countries. Together they gather and develop data, knowledge, and advice to policy-makers about Europe's environment. It also offers climate change impact and vulnerability data for further analysis.

EIONET

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Technical Assistance for Adaptation

Transnational Exchange Platforms

The Climate Adaptation Platform for the Alps (CAPA) provides knowledge about adaptation to climate change in the Alps. It is aimed at political decision makers, public administrations, municipalities, entrepreneurs, researchers and experts. It is available in German, English, French, Italian and Slovenian.

The Pyrenean Climate Change Observatory (OPCC) is a cross-border initiative of territorial cooperation of the Working Community of the Pyrenees. It aims to monitor and understand the climate change phenomenon in the Pyrenees in order to help the territory adapt to its effects.

EUSALP
EU STRATEGY FOR THE ALPINE REGION

OPCC

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Technical Assistance for Adaptation

City Networks

The Covenant of Mayors for Climate and Energy Europe is the world's largest movement for local climate and energy actions. It brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives, jointly moving towards a fairer, climate-neutral Europe for all its citizens. Among other things, it provides best practice cases, information on funding and on adaptation resources.

C40 Cities is a global network of mayors taking urgent action to confront the climate crisis and create a prosperous future. It provides information on raising climate ambition, engaging society and on scaling up climate action.

Making Cities Resilient is a cross-stakeholder initiative for improving local resilience through advocacy and establishing mutually reinforcing city-to-city learning networks. Through the delivery of a three-stage roadmap to urban resilience, providing tools, access to knowledge, and monitoring and reporting tools, this initiative will support cities on their journey to reduce risk and build resilience.

Covenant of Mayors for Climate & Energy EUROPE

MCR 2030 Making Cities Resilient

C40CITIES CLIMATE LEADERSHIP GROUP

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Technical Assistance for Adaptation

JPI Urban Europe

The Joint Programming Initiative Urban Europe is the knowledge hub for urban transitions. Its task is to connect public authorities, civil society, scientists, innovators, business, and industry to provide a fruitful environment for research and innovation to contribute to urban transformation processes. The hub was created in 2010 to address the global urban challenges of today with the ambition to develop a European research and innovation hub. Local and regional authorities can contact the hub and collaborate on long-term strategies and joint projects.

URBAN EUROPE

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Technical Assistance for Adaptation

Connecting Europe Facility

The Connecting Europe Facility (CEF) is a key EU funding instrument in delivering the European Green Deal and an important enabler towards the Union's decarbonisation objectives for 2030 and 2050. It supports the development of high performing, sustainable and efficiently interconnected trans-European networks in the fields of transport, energy and digital services. CEF investments fill the missing links in Europe's energy, transport and digital backbone. The CEF benefits people across all Member States, as it makes travel easier and more sustainable, it enhances Europe's energy security while enabling wider use of renewables, and it facilitates cross-border interaction between public administrations, businesses and citizens.

Technical Assistance for Adaptation

Europe Energy Efficiency TA

The Europe Energy Efficiency Fund Technical Assistance Facility supports public beneficiaries in developing bankable sustainable energy investment programmes. These projects relate to the energy efficiency sector, small-scale renewable energy and/or public urban transport. The facility aims to bridge the gap between sustainable energy plans and real investments by supporting all activities necessary to prepare investments in sustainable energy projects.

eeef
EUROPEAN ENERGY EFFICIENCY FUND

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Technical Assistance for Adaptation

InvestEU Advisory Hub

The InvestEU Advisory Hub complements the InvestEU Fund by supporting the identification, preparation and development of investment projects across the European Union. Managed by the European Commission and financed by the EU budget, the hub connects project promoters and intermediaries with advisory partners, who work directly together to help projects reach the financing stage. The hub is a central entry point for project promoters and intermediaries seeking advisory support and technical assistance related to centrally managed EU investment funds.

Technical Assistance for Adaptation

Just Transition Platform

The Just Transition Platform (JTP) provides a single access point to support and knowledge on Europe's transition to a sustainable, climate-neutral economy. The platform is the EU's key tool to help Member States and regions access the support available through the Just Transition Mechanism, ensuring a fair and just transition that leaves no person or region behind.

Greece

Governance Framework and Legislative Initiatives for Renovation

Renovation is…

… the act of renovating the EU's building stock with a focus on tackling energy poverty, renovating the worst-performing buildings, renovating public buildings and social infrastructure and decarbonising heating and cooling systems

… and important for **LRAs**, because…

… buildings are responsible for 40% of final energy consumption and almost 36% of all CO_2 emissions in the European Union,

… buildings present enormous potential to contribute to climate neutrality objectives mainly through improvements to their energy efficiency and use of renewable energies for heating and cooling systems.

LRAs should focus on **renovation**, because…

… the benefits of renovating buildings go beyond the cost savings, since they also improve living conditions, tackle indoor air quality, create synergies in addressing wider social issues and stimulate local economies by creating jobs,

… local and regional authorities are – because of their knowledge of local conditions – at the forefront of designing and implementing renovation projects.

In **Greece**, the national level is in charge of the design and implementation of renovation policies. There are different strategies for the energy upgrade of public, private and cultural heritage buildings. So far there have been no regional initiatives, local and regional levels are more an intermediate level for implementation.

Find out more about specific renovation measures for your urban area

Greece – Choose an Urban Area to Renovate

DISTRICT AREA

PUBLIC BUILDINGS

RESIDENTIAL BUILDINGS

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District Area

Discover How to…

… Promote Green Urban Spaces and Sustainable Habits

To reduce carbon emissions in urban settings and improve the quality of life of our communities, there are several measures that can promote a sustainable lifestyle for our citizens without depleting local ecosystems and biodiversity.

… Promote District Clean Energy Production

Buildings present enormous potential to contribute to climate neutrality objectives mainly through improvements to their energy efficiency. Using district energy systems is an efficient way to heat and cool buildings in populated areas while reducing prices and CO_2 emissions.

… Fight Energy Poverty

Increasing temperatures and other climatic changes will most probably influence the livelihoods of Indigenous peoples. An increasing loss of biodiversity is also possible.

Promote Green Urban Spaces and Sustainable Habits

Renovation Wave Measure

- Vertical Greenery & Green Roofing
- Increasing and Revitalising Green Areas
- Soft Mobility
- Pollution Reduction and Air Quality
- Blue Infrastructure
- Nature-Based Solutions/Biodiversity

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Promote District Clean Energy Production

Renovation Wave Measure

- District Energy Systems
- District Heating
- District Cooling
- One Stop Shops (OSS)
- Local Energy Communities

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Fight Energy Poverty

Renovation Wave Measure

- One Stop Shops (OSS)
- Energy Poverty Advisory Hub (EPAH)

Public Buildings

Discover How to…

… Produce Energy Within Buildings

To reduce carbon emissions in urban settings and improve the quality of life of our communities, there are several measures that can promote a sustainable lifestyle for our citizens without depleting local ecosystems and biodiversity.

… Reduce Energy Demand of Buildings and Users

Buildings present enormous potential to contribute to climate neutrality objectives mainly through improvements to their energy efficiency. Using district energy systems is an efficient way to heat and cool buildings in populated areas while reducing prices and CO_2 emissions.

… Use & Re-Use of Materials

In a context of scarce resources, the use of recycled and sustainable materials can be a solution with a low environmental impact for building renovation and construction as it makes it possible to avoid extraction of new resources, deteriorating the state of ecosystems and contributing to chemical pollution and greenhouse gas emissions.

… Promote Digital Solutions in Buildings

Digital tools make it possible to gather and analyse precise data on the energy consumption of buildings and to optimise these needs as much as possible.

Produce Energy Within Buildings

Renovation Wave Measure

- Thermal Solar Panels
- Photovoltaics
- Geothermal Energy
- Heat Pumps




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Reduce Energy Demand of Buildings and Users

Renovation Wave Measure

- Energy Efficient Heating
- Energy Efficient Cooling
- Energy Efficient Lighting
- Nearly Zero-Energy Buildings
- Deep Renovation
- Heat Pumps
- Renovating Historical Buildings
- Improving Thermal Insulation

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Use & Re-Use of Materials

Renovation Wave Measure

- Urban Mining
- Sustainable/Pre-Fabricated Components
- Recycled Materials/Circular Economy

Promote Digital Solutions in Buildings

Renovation Wave Measure

- Digital Passport
- Energy Management Systems
- Energy Efficient Cooling
- Energy Efficient Heating

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Residential Buildings

Discover How to…

… Produce Energy Within Buildings

To reduce carbon emissions in urban settings and improve the quality of life of our communities, there are several measures that can promote a sustainable lifestyle for our citizens without depleting local ecosystems and biodiversity.

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Reduce Energy Demand of Buildings and Users

Renovation Wave Measure

- Energy Efficient Heating
- Energy Efficient Cooling
- Energy Efficient Lighting
- Nearly Zero-Energy Buildings
- Heat Pumps
- Improving Thermal Insulation

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Vertical Greenery and Green Roofing

Renovation Wave Measures

Adaptation
Renovation
Biodiversity

Vertical Greenery and Green Roofing

Greening buildings can be regarded as an additional benefit alongside energy savings. In highly dense urban areas, greening buildings can reduce the urban heat island effect. At the same time, greening recognises that the urban environment should also preserve nature and ensure diverse wildlife and land quality. With the increase of urban density and the decrease in the availability of land, use of vertical greenery and green roofs have intensified in order to foster vegetation in urban areas. Vertical greenery has several positive implications: it can be used for cooling, water management and also for securing food supply. A green roof is defined as a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly sloped roof. Green roofs are also known as vegetative or eco-roofs. They help to control storm water run-off and retention, absorb excess water, reduce the urban heat island effect, improve air quality and insulate buildings. Both measures hold great potential for creating sustainable resilient cities and allow biodiversity to thrive in urban areas.

Best practices:

- Green Roofs in Basel (Switzerland): combining adaptation and mitigation measures
- Four pillars to Hamburg's (Germany) Green Roof Strategy: financial incentive, dialogue, regulation and science
- Berlin Biotope Area Factor (Germany)

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Increasing and Revitalising Green Areas

Renovation Wave Measures

Adaptation
Renovation
Biodiversity

Increasing and Revitalising Green Areas

Green spaces in cities mitigate the effects of pollution and can reduce a phenomenon known as the urban heat island effect, which is heat trapped in urban areas. This effect appears in towns and cities as a result of human activity. Urban green spaces such as parks, playgrounds and residential greenery can promote mental and physical health and reduce morbidity and mortality in urban residential areas by providing psychological relaxation and alleviating stress. Greening the living environment benefits more than just health and wellbeing. It also facilitates water management and promotes biodiversity in urban areas and can help reduce the effects of noise pollution.

Best practice:

- Environmentally friendly urban street design for decentralised ecological rainwater management in Ober-Grafendorf (Austria)

Soft Mobility

Renovation Wave Measures

Renovation

Biodiversity

Soft Mobility

The EU has launched its Smart and Sustainable Mobility Strategy, which outlines a number of goals for how people and goods will move around between our cities in the coming decades. Soft mobility is the transport of goods and people via non-motorised means. Forms of soft mobility include walking, cycling, running or roller skating. Nonetheless, in some contexts they refer to all environmentally friendly means of transportation such as e-scooters, e-bikes and electric cars. Along with the known advantages they bring in terms of health, these initiatives represent a valuable alternative to fossil fuel vehicles and reduce carbon emissions. Soft mobility can only thrive when policymakers support the creation of a suitable environment for it by building lanes and sidewalks, creating car-free areas and by setting speed limits in city centres. This measure can significantly help cities to become more sustainable and smart, benefitting both nature and the communities living within it.

Best practices:

- Copenhagen (Denmark) has outstanding urban infrastructure for bikes, recording up to 40 000 cyclists a day, and an innovative electric public bike hire system.
- The city of Gjesdal (Norway) is one of a handful of northern European cities that has begun testing autonomous public buses as part of the existing public transport system.

Pollution Reduction & Air Quality

Renovation Wave Measures

Renovation

Pollution Reduction & Air Quality

Air pollution damages human health and the environment. Despite the fact that emissions of many air pollutants have diminished over the past decades, their concentrations are nevertheless too high. A substantial proportion of Europeans live in urban areas with a high concentration of three main harmful gases: particulate matter, nitrogen dioxide and ground-level ozone. Air pollution also poses a serious threat to our environment as well. Acidification and crop damage are among the many damages that poor air quality can have on our ecosystems. The EU is committed to reducing exposure to air pollution, thereby reducing the number of premature deaths and the impact of pollution on ecosystems and biodiversity. Specifically, the European Commission launched several policies following its zero pollution vision for 2050 including measures to reduce air pollution in urban areas.

Best practices:

- The CLAIRO project in Ostrava (Czech Republic) uses targeted living vegetation to improve air quality in urban areas.
- The city of Sofia (Bulgaria) introduced 'on-demand green public transport' where new e-buses create a route map based on demand from the population to reduce traffic congestion and improve air quality.

Nature-Based Solutions/Biodiversity

Renovation Wave Measures

Renovation
Biodiversity

Nature-Based Solutions/Biodiversity

The most sustainable approach to safeguard and support biodiversity in our district areas are nature-based solutions. These are measures that are inspired and supported by nature which are able to deliver environmental, social and economic benefits and help build resilient cities and communities while being cost-effective. These solutions are designed to introduce more nature and natural features to cities with the aim to ultimately create more resource-efficient, greener and more resilient economies and societies. Nature-based solutions therefore can enhance natural capital as well as economic growth, creating jobs and improving our wellbeing.

Best practice:

- The Finnish concept of **National Urban Parks** is promoting biodiversity in nine different urban sites by creating undisturbed ecological corridors that encourage species to migrate.

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Blue Infrastructure

Renovation Wave Measures

Renovation
Biodiversity

Blue Infrastructure

Blue infrastructure typically refers to urban water elements that form blue networks such as pond systems, water basins, streams, rivers and storm-water management. The main benefits of blue infrastructure are efficient water regulation to reduce the risk of surface-level flooding, cooling effect and improving air quality. These techniques are especially useful in highly populated district areas with factories that have a substantial carbon footprint. Ultimately, besides generating a cleaner and healthier environment, these strategies incentivise stakeholders to invest in cities in a sustainable way.

Best practices:

- Urban river restoration: a sustainable strategy for storm-water management in Łódź (Poland)
- Lower Danube green corridor: floodplain restoration for flood protection (Bulgaria, Romania)

District Energy Systems

Renovation Wave Measure

District Energy Systems

Adaptation
Renovation

District energy systems are remote HEATING and COOLING systems which connect buildings of an area to a central heating or cooling system. The advantage of these systems lies in their increased energy efficiency. However, since they are rather expensive to put in place, they have mostly been installed in district areas, supplying not only public infrastructure but also private buildings. District energy systems can mostly be found in urbanised areas, since a sufficient population density is necessary for the economic infrastructure.

Best practices:

- A good example of a district energy system is the Viennese remote warming and cooling system. It supplies heating services to approximately 400 000 housing units in Vienna (Austria). The system saves around 1.5 million tonnes of CO_2 emissions annually. Two power plants and a waste incineration plant cover the warm water supply. The cooling networks are expanded to supply large buildings in the same way as the district heating network.
- The Municipality of Kranj (Slovenia) began the renovation of district heating through the construction of combined heat and power (CHP) to increase energy efficiency in the region.

District Heating Systems

Renovation Wave Measure

Adaptation

Renovation

District Heating Systems

District heating systems consist of a central plant where hot water or another source of heat is generated and then piped into buildings to provide them with heating and domestic hot water. Usually, each building has a heat exchange unit that allows individual heating control via heat metres. The implementation of heating systems is particularly favourable in areas where a sizeable amount of waste heat is found and where there is a large and steady demand for heat. These characteristics often apply to areas where domestic and non-domestic users coexist. District heating networks can operate with fossil fuel or renewable energy-based fuels such as natural gas, biomass, geothermal energy or energy from residual municipal waste plants. A major advantage of district heating networks is the possibility of changing fuel and heat sources. This flexibility of the system makes it possible to switch from carbon-intensive heat generation to low- or zero-carbon sources without affecting the consumer.

Best Practices:

- In Helsinki (Finland), the district heating network is a multi-fuel network, covering 90% of the heat demand in Finland's capital. The power plants use a mixture of fossil fuels. Electricity is also supplied and district cooling is now offered as well.
- The Municipality of Kranj (Slovenia) began the renovation of the district heating through the construction of combined heat and power (CHP) to increase the energy efficiency in the region.

District Cooling Systems

Renovation Wave Measure

Adaptation

Renovation

District Cooling Systems

District cooling systems distribute cooling capacity in the form of chilled water or any other medium from a central source to multiple buildings through a network of underground pipes for use in space and process cooling. In winter, the source for cooling can be seawater, since this is a cheaper resource than using electricity to run compressors for cooling.

Best Practice:

- Munich (Germany) established a district cooling system in 2011. The core of the system is below the Karlsplatz, drawing water from the underground Stadtrgrabenbach. The network is 24km long and supplies 16 larger organisations.

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One Stop Shops (OSS)

Renovation Wave Measure

Renovation

One Stop Shops (OSS)

The building sector plays a great role in meeting the European environmental and social targets due to their current large share of carbon emissions. Despite the implementation of financial and soft measures, there are a large number of barriers, such as the lack of knowledge among customers of energy performance and benefits, delaying the green transformation of the existing building sector. In order to tackle these problems, the EU aims to promote the creation of one-stop-shop (OSS) services in the building sector. This new approach offers a new solution to customers who would like to carry out energy renovations of their buildings by assisting them with one or more steps in the process. The OSS concept means achieving a situation where project promoters can benefit from a customer-centred service offer that creates a bridge between a divided supply side and a divided demand side. The actors involved within the OSS service are organisations, consortia, projects and even independent experts that help customers with information, technical assistance, structuring and provision of financial support.

Best Practices:

- The Province of Fryslan (Netherlands) implemented the Refurb (regional process innovations for building) to help homeowners to obtain 50-80% energy reduction through a step-by-step approach.
- The Municipality of Litoměřice (CZ) launched the Innovate project (Integrated solutions for ambitious energy refurbishment of private housing) to help homeowners achieve successful energy refurbishment.

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Local Energy Communities

Renovation Wave Measure

Renovation

Local Energy Communities

Energy communities are citizen-driven energy actions that promote a clean energy transition towards the net-zero target while fostering energy efficiency at the local level. Small businesses and local authorities can then produce, manage and consume their own energy. Moreover, by placing citizens at the forefront of energy management, energy communities can increase public acceptance of renewable energy projects, thus attracting private investments to the green and blue infrastructures. Additionally, these self-sufficient communities have the potential to bring outstanding direct benefits to citizens by lowering electricity bills and creating new employment opportunities. Energy communities represent a means to redesign the EU's energy systems to contribute to its independence and efficiency through a people-based approach.

Best Practices:

- The energy community Elektrizitätswerk Hindelang eG of Bad Hindelang (Austria) is a rural energy community able to supply hydro and solar-based energy to 3800 clients.
- The Rural Energy Community Éolienne citoyenne de Chamol (FR) consists of a single wind turbine jointly owned by the local commune and several citizen cooperatives bringing together more than 600 people of all ages.

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Energy Poverty Advisory Hub (EPAH)

Renovation Wave Measure

Renovation

Energy Poverty Advisory Hub (EPAH)

Energy poverty is a complex challenge usually defined as the inability of households to match their energy needs. Energy poverty is mostly a domestic problem as its influencing factors and impacts are particularly visible at household level. The complexity of the causes of this issue can be linked to three main indicators: low income, buildings' energy efficiency and energy prices. Low income is highly connected to individuals' inability to pay off their energy bills, however, the low energy performance of buildings also plays a dominant role. Residents of energy inefficient homes face higher bills and prices, particularly for the most vulnerable who require special needs, and are affected by unstable geopolitical contexts and natural events. Hence, as the frontline institutions for this issue, local governments must strengthen connections with citizens to effectively tackle this socio-technical priority. To overcome this challenge, the European Commission launched the Energy Poverty Advisory Hub (EPAH) initiative which provides technical assistance through tailor-made indicators based on EU-wide statistics for national and regional policymakers. Recently, the EPAH launched its own handbook with a series of practical guidebooks structured around three phases for local practitioners to tackle energy poverty locally.

Best Practices:

- The city of Gent (Belgium) has implemented a project called Dampoort Renovates with the aim to offer funds to low-income families to renew their buildings more efficiently.
- Milan (Italy) with its new initiative Energia su Misura (Measurable Energy) aims to support vulnerable families living in social housing with the reading of bills and installation of smart devices to reduce consumption and costs. This can also be used on energy management systems.

Thermal Solar Panels

Renovation Wave Measure

Renovation

Thermal Solar Panels

Solar panels, solar electric panels or photovoltaic modules are a group of photovoltaic cells. Solar panels use the photovoltaic process to produce energy from sunlight. Solar energy is energy derived from the sun, it can be used to produce electricity or heating as well as cooling. For instance, solar thermal collectors are used mainly for producing domestic hot water in residential buildings, but also in industrial applications. SolarPower Europe is the information hub for solar technology in the EU. It offers more information on the EU's solar strategy and manufacturing in the EU.

Best Practices:

- The city of Oulu (Finland) has employed solar panels in water supply production and waste treatment plants, generating energy from the plants' own consumption.
- An energy renovation has been carried out at the Vesi-Jatuli sports centre in Haukipudas in Oulu, including the installation of 300 solar panels on the roof of the building.

Photovoltaics

Renovation Wave Measure

Renovation

Photovoltaics

Technically speaking, photovoltaics (PV) is the process of converting light into electricity. PV cells generate direct electricity which can be used to charge batteries that power devices that use the energy generated. Photovoltaic electricity is the renewable energy technology with the largest scope for cost reduction and efficiency gains. The JRC offers more technical information on PV.

Best Practice:

- Eight solar powered generators comprising PV have been installed on the roofs of public buildings in Poreč (Croatia) producing a total rated power of 100kW.

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Geothermal Energy

Renovation Wave Measure

Renovation

Geothermal Energy

75% of the EU's building stock is energy inefficient, meaning that there is room to exploit new cost-efficient green technology besides photovoltaic panels and turbines to turn our energy systems toward a greener path. Geothermal energy is increasingly becoming a topic of interest for the EU due to its appealing features: easy integrability into buildings, high efficiency and versatile use as it can serve for heating, cooling and hot water simultaneously. Moreover, compared to fossil fuels, geothermal energy has minimal CO_2 or other greenhouse gas emissions and can be combined with other renewable thermal or electric energy sources at a low cost. The Commission has launched several pilot projects to upgrade this underground energy resource such as GEOTeCH. These new technologies use a 'plug and play' solution developed specifically for small buildings. Geothermal energy is well on track to play a vital role in the energy transition towards net-zero in the upcoming years.

Best Practices:

- The BTEK Museum building in Derio (Spain) uses a highly energy efficient geothermal system for climate control.
- The Holland Huys building in Hasselt (Belgium) is powered by geothermal heat pumps.

Heat Pumps

Renovation Wave Measure

Adaptation
Renovation

Heat Pumps

A heat pump is a device that can heat a building or part of it by transferring heat from the cold outside air into houses, using the refrigeration cycle. A compressor inside the device uses electricity to increase the temperature of the heat extracted. The EU has set a target for heat pump installation, aiming for 50 million heat pumps to be installed by 2030 with an annual growth of 16%. In the EU Taxonomy Compass, there is more information on installing and operating the available electric heat pumps.

Best Practices:

- Since 2015 the city of Ostrów Wielkopolski (Poland) funded the replacement of coal heating sources in people's homes with more ecological alternatives such as district heating systems (powered e.g. by biomass), gas heating, electrical heating or heat pumps.
- The campus of the Higher School of Law and Public Administration in Rzeszów has one of the largest facilities of heat pumps and photovoltaic cells in Poland.

Energy Efficient Heating

Renovation Wave Measure

Renovation

Energy Efficient Heating

Increasing the productivity of heating systems is a central aspect of renovating buildings efficiently. The EU's Heating and Cooling Strategy provides a first overview of energy consumption and sets out actions and tools to ensure that the heating sector is transformed in a sustainable manner. On top of that, increased digitalisation in heating systems has the potential to increase energy efficiency by adjusting heating cycles during the day, depending on actual usage of heated space leading to a substantial reduction in consumption.

Best practices:

- Employing thermal energy for heating infrastructure at the Higher School of Law and Public Administration in Podkarpackie Region (Poland),
- Monitoring buildings' heating: using weather forecasts to efficiently calculate the amount of energy to be supplied (Östersund, Region Jämtland Härjedalen, Sweden),
- The city of Rijeka (Croatia) renovated 21 public buildings leading to energy savings for heating of up to 65%.

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Energy Efficient Cooling

Renovation Wave Measure

Renovation

Energy Efficient Cooling

Increasing the productivity of cooling systems is a central aspect of renovating buildings efficiently. The EU's Heating and Cooling Strategy provides a first overview of energy consumption and sets out actions and tools to ensure that the cooling sector is transformed in a sustainable manner. On top of that, increased digitalisation in cooling systems has the potential to increase energy efficiency by adjusting cooling cycles during the day, depending on actual usage of cooled space.

Best practice:

- Retrofitting heat pump equipped with a system of passive-active cooling for lecture halls at the Higher School of Law and Public Administration in Podkarpackie Region (Poland)

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Energy Efficient Lighting

Renovation Wave Measure

Renovation

Energy Efficient Lighting

Energy efficient lighting is a good way to save both energy and money. Consumers can choose between an array of different options such as halogen lamps, fluorescent lamps and the much more efficient compact fluorescent lamp and the long-lasting LED lamp. Even though these lamps are a bit more expensive in the first place, they pay for themselves in the long run. Lighting accounts for almost 15% of a household's electricity, which means that switching to energy efficient lighting will lower the bill. In addition to the lamps, consumers could consider using timers and dimmers to lower light levels and switch off lights automatically. The European Commission offers a Consumer's Guide to energy efficient lighting.

Best practices:

- Lightning fixtures in offices and schools with energy saving LED lights in Locana (Italy),
- Ravkere (Estonia) is the first city in the country to use green energy for city lighting, which was updated to use LED lights.

Nearly Zero-Energy Buildings

Renovation Wave Measure

Renovation

Nearly Zero-Energy Buildings

Nearly zero-energy building (NZEB) means a building with high cost-effective energy performance, wherein the nearly zero or low amount of energy required is produced from renewable sources on-site or nearby. Currently, with its newly revised Energy Performance of Buildings Directive the Commission calls on EU Member States to ensure that all new buildings are nearly zero-energy by 2030 and 2027 for all new public buildings.

Best practices:

- The Plus energy settlement in Freiburg (DE) has achieved a zero-energy balance through rooftop integrated PV generators, district heating as well as the shadow-free position and shape of the buildings.
- The Green Lighthouse is an exciting carbon-neutral building located at the University of Copenhagen in Denmark.

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Deep Renovation

Renovation Wave Measure

Renovation

Deep Renovation

Nearly 40% of Europe's demand stems from heating, lighting and cooling buildings. About half of all European residential buildings date back to 1970, and therefore retrofitting existing homes to improve their energy efficiency is as vital as building new zero-energy homes. To respond to these needs, the EU is designing and testing new approaches on deep renovation to make renovations faster, better and more cost-effective.

Best practice:

- The region of Liguria (Italy) has deeply renovated public buildings thanks to the Pays Ecogetiques programme. As part of the project, municipalities were guided through the entire process of energy renovation starting from the choice of buildings to the application for funding and the actual implementation of the energy efficiency measures.

Improving Thermal Insulation

Renovation Wave Measures

Adaptation
Renovation

Improving Thermal Insulation

There are several options to implement climate-proofing of buildings with respect to excessively high temperatures. These options relate to building design – including the use of IT to optimise thermal comfort – and building envelopes. Thermal insulation is an important technology to reduce energy consumption in buildings by preventing heat gain and loss through the building envelope. Better insulation of our buildings can lead to exponential energy savings for consumers and makes them significantly more efficient.

Best practices:

- Living in a tree house in Torino: combining adaptation and mitigation measures to improve comfort (Italy)
- Climate proofing buildings against excessive heat
- Thermal insulation upgrade of public building envelopes in Kozani (Greece)

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Urban Mining

Renovation Wave Measures

Renovation

Urban Mining

Urban mining is the process of retrieving and reusing a city's materials to reduce urban waste. These materials may originate from buildings, infrastructure or electronics that have become outdated and need to be replaced. For instance, when a building no longer fulfils safety regulations, or a new developer decides to renew unused constructions, the materials already in place can be reused. Urban mining has been used in the automotive sector for decades, however, due to the ever-growing scale of the climate crises, the need to employ it in carbon intensive environments like buildings is vital. The most common materials available in urban environments usually come from construction and demolition. For all cities with a circular economy strategy, urban mining would keep as much value as possible from the materials that would otherwise go to waste such as wood, glass, copper pipes, aluminium facades and roof tiles. Through this approach, European cities and urban environments can rely on their own sustainable supply chain of materials, thereby reducing imports from other countries. If we can reuse materials that already exist in our cities, then fewer components need to be generated and fewer materials extracted. This will lead to great savings for consumers and construction companies while also being extremely beneficial for the environment.

Best practice:

- The Urban Mining and Recycling (UMAR) Experimental Unit in Switzerland is an incredible example of how the resources required in the construction of a building can be reused, recycled or composted.

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Recycled Materials/Circular Economy

Renovation Wave Measure

Adaptation

Renovation

Recycled Materials/Circular Economy

As part of its circular economy package, the Commission presented the construction sector with a suggested approach to circular economy principles for building design (2020). The approach focuses on circular design, durability and adaptability as well as waste reduction and high-quality waste management. The European Circular Economy Stakeholder Platform provides more information on circular economy in the construction and buildings sector. Other technical assistance can be found at the Ellen MacArthur Foundation: The foundation provides a circular buildings toolkit which will help designers and planners to create a better future in the built environment sector. The toolkit translates the principles of the circular economy into a prioritised set of strategies and actions relevant for real estate projects.

Best practice:

- The City of Espoo (Finland) is establishing itself as a world leader on circular economy through the urban transformation of an area in the middle of Helsinki's metropolitan area.

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Sustainable/Pre-Fabricated Components

Renovation Wave Measure

Adaptation

Renovation

Sustainable/Pre-fabricated components

Renovating buildings with pre-fabricated components increases resource efficiency. The use of pre-fabricated materials can on the one hand reduce a building's complexity and costs by making use of standardised sustainable components which were produced either on-site – meaning on the construction grounds with dedicated mobile production facilities – or off-site. On the other hand, one advantage of these pre-fabricated components is that they can be de- and reconstructed, saving energy and water.

Best practice:

- In the Netherlands, the Energiesprong network is known as Stroomversnelling. This association aims to support the process to make buildings net zero-energy buildings.

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Renovation Digital Passport

Renovation Wave Measure

Adaptation
Renovation

Renovation Digital Passport

A building renovation passport is defined as a digital document which stores the different planning stages of a building's renovation. Within the EU's Renovation Wave, the introduction of a single digital tool is fostered, unifying building renovation passports with digital building logbooks. This initiative is scheduled for 2023 to increase renovation incentives and improve the information available. More information on how the European Commission seeks to implement the Energy Performance Certificates (EPCs) can be found here. An older technical study on the possible introduction of optional building renovation passports can be found here.

Best practice:

- The iBRoad2EPC project launched by the Commission in six countries (Bulgaria, Greece, Poland, Portugal, Romania and Spain) supports families, public buildings and home owners with targeted advice to facilitate deep renovation.

Energy Management System

Renovation Wave Measure

Adaptation
Renovation

Energy Management System

An energy management system is defined as a system that monitors and controls a building's electrical and mechanical equipment such as lighting, power systems, heating and ventilation. Energy management systems provide real-time data which make it possible to adjust the functioning of the different systems, optimising energy performance without compromising comfort. By reducing energy consumption, energy management systems help to reduce costs and greenhouse gas emissions.

Best practices:

- Within the NEXT BUILDING project, control and monitoring devices have been installed to enable the creation of 25 400 square metres of zero-energy buildings in the district of Houthaven in Amsterdam (Netherlands).
- The EE-Highrise project in Ljubljana (Slovenia) has integrated an energy management system that controls the electric and mechanical devices in an 11-floor building with 128 apartments. This energy management system coupled with other renovation measures result in 2109 MWh/year of final energy savings.

Reducing the Impact of Historical Buildings

Renovation Wave Measure

Adaptation
Renovation

Reducing the Impact of Historical Buildings

Renovating historical buildings is, due to their cultural heritage, one of the biggest challenges of the renovation agenda. However, reducing their environmental impact is necessary in order to ensure energy efficiency and future-proof materials.

Best practice:

- The renovation of St. Cyril and Methodius school in Gabrovo (Bulgaria), first built in 1970 and therefore lacking natural gas boilers and cooling systems, led to an overall energy saving of nearly 155.4 tonnes of CO_2 emissions.

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Renovation Wave in Greece

Main funding programmes for local and regional authorities

National and Regional Funding Programmes:

- Exoikonomo kai autonomo (saving and becoming autonomous) provides funds to natural persons or home owners. The available funding is EUR 896.27 million.
- Electra is aimed at general government institutions and provides a total funding of EUR 500 million.
- Diatiro is aimed at owners of traditional houses that urgently need renovation.

EU Funding Programmes

- European Structural and Investment Funds (ESIF)
- European Regional Development Fund
- European Cohesion Fund
- European Social Fund+
- European Agricultural Fund for Rural Development
- LIFE sub-programme Clean Energy Transition
- Horizon Europe
- Renovate Europe
- InvestEU
- ELENA Facility (EIB)
- European Fund for Strategic Investments
- LIFE sub-programme Climate Change Mitigation and Adaptation
- Smart finance for Smart buildings

Find out more about Funding Programmes

Green Deal Going Local

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Renovation Wave in Greece

Main initiatives for technical assistance for local and regional authorities

National Technical Assistance

- The government offers information on how to apply for the *Exoikonomo kai autonomo* programme.
- The National energy and climate plan offers guidance.
- The National plan for increasing the number of nearly zero-energy buildings offers guidance and a framework.

EU Technical Assistance Programme

- JASPERS (Joint Assistance to Support Projects in European Regions)
- fi-compass
- URBIS
- BUILD UP
- Covenant of Mayors
- The Smart Cities Information System
- EU Building Stock Observatory
- European Energy Efficiency Fund
- Urbact
- JPI Urban Europe
- Interreg Europe
- InvestEU advisory hub and InvestEU Portal
- Smart Cities Marketplace
- EU Energy Poverty Advisory Hub

Find out more about Technical Assistance

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Funding Renovation: EU Programmes

- European Structural and Investment Funds (ESIF)
- European Regional Development Fund (ERDF)
- European Cohesion Fund
- European Social Fund+
- European Agricultural Fund for Rural Development
- LIFE sub-programme Clean Energy Transition
- LIFE sub-programme Climate Change Mitigation and Adaptation
- Urban Innovation Action
- Horizon Europe
- Renovate
- InvestEU
- ELENA Facility (EIB)
- European Fund for Strategic Investments
- Smart Finance for Smart Buildings
- Climate HIC
- European City Facility

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Funding Renovation: ESIF

European Structural and Investment Funds

European Structural and Investment Funds (ESIF) comprise the European Regional Development Fund, European Social Fund, European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund. Over half of the EU's funding is channelled through these funds. They focus mainly on five areas: research and innovation, digital technologies, supporting the low-carbon economy, sustainable management of natural resources and supporting small businesses.

Funding Renovation: ERDF

European Regional Development Fund

Within the European Regional Development Fund (ERDF), there are two other funds: Urban Innovation Action and European Territorial Cooperation Interreg.

Urban Innovation Action is an initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Within the Interreg programme, the European Union promotes cooperation between regions and countries to help their economic and social development and tackle the obstacle of borders. It is organised under multiple strands, such as Interreg A for cross-border cooperation, Interreg B for transnational cooperation and Interreg C for interregional cooperation.

Funding Renovation: CF

Cohesion Fund

The Cohesion Fund (CF) supports investments in the field of environment and trans-European networks in the area of transport infrastructure. For the 2021-2027 period, it concerns Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. 37% of its overall financial allocations are expected to contribute to climate objectives.

Funding Renovation: ESF+

European Social Fund +

The European Social Fund + (ESF+) invests in people, with a focus on improving employment and education opportunities across the European Union. The budget for the 2021-2027 period is almost EUR 100 billion. It provides an important contribution to the EU's employment, social, education and skills policies, including structural reforms in these areas. Furthermore, it also aims to improve the situation of the most vulnerable people at risk of poverty.

Funding Renovation: EAFRD

European Agricultural Fund for Rural Development

The common agricultural policy supports the vibrancy and economic viability of rural areas. Rural development is the second pillar of the common agricultural policy. It contributes to the sustainable development of rural areas through fostering competitiveness, ensuring sustainable management of natural resources and climate action and achieving balanced territorial development of rural economies and communities. The European Agricultural Fund for Rural Development (EAFRD) amounts to EUR 95.5 billion

Funding Renovation: LIFE

EU's Funding Instrument for Environment and Climate Action

The LIFE Programme by CINEA is the EU's funding instrument for the environment and climate action. It is aimed at supporting projects in the fields of nature and biodiversity, circular economy and quality of life, climate change mitigation and adaptation and clean energy transition. It supports applicants and provides information on awards, publications and project initiation.

The Climate Change Mitigation and Adaptation sub-programme supports projects that support the operation of the European Climate Pact, sustainable finance activities, awareness raising, training and capacity building, knowledge development and stakeholder participation in climate change mitigation and adaptation areas.

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Funding Renovation: InvestEU

InvestEU

The InvestEU fund combines 13 centrally managed EU financial instruments and the European Fund for Strategic Investments into one instrument. It is a market-based and demand-driven instrument, with strong emphasis on EU policy priorities. It supports projects in the fields of sustainable infrastructure, research, innovation and digitalisation, small and medium-sized companies and social investment and skills.

Funding Renovation: Horizon Europe

Horizon Europe

Horizon Europe is the EU's key funding programme for research and innovation with a budget of EUR 95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dissemination of excellent knowledge and technologies.

It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.

Funding Renovation: Renovate Europe

Renovate Europe

Renovate Europe is a political communication campaign with the ambition of reducing the energy demand of the EU's building stock by 80% by 2050 through legislation and ambitious renovation programmes. The platform offers a detailed overview of the various funding opportunities as well as guidance on how to apply for the funds.

RENOVATE EUROPE

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Funding Renovation: ELENA Facility

ELENA Facility

The European Local Energy Assistance (ELENA) Facility provides financial and technical assistance to help local and regional authorities attract funding for sustainable energy projects. ELENA plays an important role by offering these public entities specific support for implementing investment projects such as retrofitting of public and private buildings, sustainable building, energy-efficient district heating and cooling networks or environmentally friendly transport.

European Investment Bank

Green Deal Going Local

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Funding Renovation: Fund for Strategic Investments

European Fund for Strategic Investments

The European Fund for Strategic Investments aims to overcome the current investment gap in the European Union by mobilising private financing for strategic investments which the market cannot finance alone. It will support strategic investments in infrastructure as well as risk finance for small businesses. The fund will focus its financing on investments in infrastructure and innovation, as well as finance for small- and medium- sized enterprises (SMEs).

Funding Renovation: Smart Finance for Smart Buildings

Smart Finance for Smart Buildings

The Smart Finance for Smart Buildings initiative aims to make investments in energy efficiency projects in residential buildings more attractive to private investors through the intelligent use of EU grants as a guarantee.

European Investment Bank

Green Deal Going Local

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Funding Renovation: Climate HIC

Climate HIC

The Working Group on Health in Climate Change (HIC) was established in 2012 under the mandate of the European Environment and Health Task Force, which is the leading international body for the implementation and monitoring of the European Environment and Health Process (EHP).

The working group, composed of designated representatives from Member States and other partners, promotes dialogue, communication and cooperation in the WHO European Region on protecting health from the adverse effects of climate change. HIC provides a platform for sharing experiences and innovations, promoting tools, communicating evidence and showcasing good practices in climate change and health and fostering partnerships among countries and stakeholders.

Funding Renovation: European City Facility

European City Facility

The European City Facility (EUCF) is an initiative that was set up under the Horizon 2020 Framework Programme for Research and Innovation of the European Union. The EUCF supports municipalities, local authorities and groupings thereof and local public entities in Europe with tailor-made, fast and simplified financial support (in the form of EUR 60 000 lump sums) and related services to enable them to develop relevant investment concepts related to the implementation of actions identified in their climate and energy action plans.

Successful applicants to the EUCF can use the lump sum to develop their investment concepts, which represents an initial step towards a fully-fledged business and financial plan. The ultimate objective is to build a substantial pipeline of sustainable energy investment projects across local authorities and local public entities in Europe.

EUCF
European City Facility

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Technical Assistance for Renovation: EU Programmes

- JASPERS (Joint Assistance to Support Projects in European Regions)
- fi-compass
- URBIS
- BUILD UP
- Covenant of Mayors
- The Smart Cities Information System
- EU Building Stock Observatory
- EU Energy Poverty Advisory Hub
- European Energy Efficiency Platform
- Smart Cities Marketplace
- Urbact
- JPI Urban Europe
- Interreg Europe
- InvestEU advisory hub and InvestEU Portal

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JASPERS (Joint Assistance to Support Projects in European Regions)

JASPERS (Joint Assistance to Support Projects in European Regions) aims to help cities and regions absorb European funds through top-quality projects. The initiative, which is a shared project of the European Commission and the European Investment Bank, particularly advises authorities on strategic planning in a wide range of sectors, supports promoters in preparing projects in areas benefiting from EU funds so they meet all the necessary standards, improves the capacity of administrations and promoters by transferring knowledge about project preparation, environmental issues, EU legislation or any related needs they may have and speeds up the EU approval process by carrying out an independent quality review which prepares the ground for the European Commission's decision.

Jaspers
Joint Assistance to Support Projects in European Regions

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fi-compass

The fi-compass is a platform for advisory services on EU shared management financial instruments. It is provided by the European Commission in partnership with the European Investment Bank. fi-compass is designed to support ESIF managing authorities and other interested parties by providing practical know-how and learning tools on financial instruments, including 'how-to' manuals, factsheets and case study publications, as well as face-to-face training seminars, networking events and video information.

Technical Assistance for Renovation: EU Programmes

URBIS

URBIS is an advisory hub run by the European Investment Bank in coordination with the European Commission. It is a platform within the European Investment Advisory Hub (EIAH). It has been established to provide advisory support to urban authorities to facilitate, accelerate and unlock urban investment projects, programmes and platforms. URBIS aims to increase awareness in respect of existing instruments, programmes and services, offers tailor-made technical and financial advice to cities and explores innovative financing approaches for city investments.

European Investment Bank

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BUILD UP

BUILD UP is the European portal for energy efficiency in buildings. It is a platform offering guidance in best practice cases, skills development, information on news and events as well as on expert talks. The initiative supports the upskilling of building professionals across Europe, to deliver building renovations offering high-energy performance as well as new Nearly Zero-Energy Buildings.

BUILD UP
The European Portal For Energy Efficiency In Buildings

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Technical Assistance for Renovation: EU Programmes

The Smart Cities Information System

The Smart Cities Information System (SCIS) is a knowledge platform to exchange data, experience and know-how and to collaborate on the creation of smart cities, providing a high quality of life for their populations in a clean, energy efficient and climate friendly urban environment. SCIS brings together project developers, cities, research institutions, industry, experts and citizens from across Europe. Launched with support from the European Commission, SCIS encompasses data, experience and stories collected from completed, ongoing and future projects.

Technical Assistance for Renovation: EU Programmes

Smart Cities Marketplace

The Smart Cities Marketplace was created by merging the two former Commission projects *Marketplace of the European Innovation Partnership on Smart Cities and Communities* (EIP-SCC) and the *Smart Cities Information System* (SCIS) into one single platform. It is a market-changing undertaking that aims to bring cities, industries, SMEs, investors, researchers and other smart city actors together. The Smart Cities Marketplace has followers from all over Europe and beyond, many of which have signed up as members. Their common aims are to improve citizens' quality of life, increase the competitiveness of European cities and industry as well as to reach European energy and climate targets.

Technical Assistance for Renovation: EU Programmes

Covenant of Mayors

The Covenant of Mayors for Climate and Energy Europe is the world's largest movement for local climate and energy actions. It brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives, jointly moving towards a fairer, climate-neutral Europe for all its citizens. Among other things, it provides best practice cases, information on funding and on adaptation resources.

Covenant of Mayors
for Climate & Energy
EUROPE

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JPI Urban Europe

JPI Urban Europe is the knowledge hub for urban transitions. Its task is to connect public authorities, civil society, scientists, innovators, business and industry to provide a fruitful environment for research and innovation to contribute to urban transformation processes. The hub was created in 2010 to address the global urban challenges of today with the ambition to develop a European research and innovation hub. Local and regional authorities can contact JPI Urban Europe and collaborate on long-term strategies and joint projects.

URBAN EUROPE

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Urbact

Urbact helps cities develop pragmatic solutions that are new and sustainable and that integrate economic, social and environmental urban topics. URBACT's mission is to enable cities to work together and develop integrated solutions to common urban challenges, by networking, learning from one another's experiences, drawing lessons and identifying good practices to improve urban policies.

URBACT
Driving change for better cities

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Technical Assistance for Renovation: EU Programmes

Europe Energy Efficiency TA

Europe Energy Efficiency TA supports public beneficiaries in developing bankable sustainable energy investment programmes. These projects relate to the energy efficiency sector, small-scale renewable energy and/or public urban transport. The EEEF TA Facility aims to bridge the gap between sustainable energy plans and real investments by supporting all activities necessary to prepare investments in sustainable energy projects.

eeef
EUROPEAN ENERGY EFFICIENCY FUND

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Technical Assistance for Renovation: EU Programmes

InvestEU Advisory Hub

The InvestEU Advisory Hub complements the InvestEU Fund by supporting the identification, preparation and development of investment projects across the European Union. Managed by the European Commission and financed by the EU budget, the InvestEU Advisory Hub connects project promoters and intermediaries with advisory partners, who work directly together to help projects reach the financing stage. The InvestEU Advisory Hub is a central entry point for project promoters and intermediaries seeking advisory support and technical assistance related to centrally managed EU investment funds.

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EU Building Stock Observatory

The EU Building Stock Observatory aims to provide a better understanding of the energy performance of the building sector through reliable, consistent and comparable data. The Building Stock Observatory contains a database, a data mapper and factsheets for monitoring the energy performance of buildings across Europe. It covers a broad range of energy-related topics and provides information on the building stock, energy consumption, building elements and technical building systems installed, energy performance certificates, nearly zero-energy buildings and renovation rates, but also areas like energy poverty and financing aspects.

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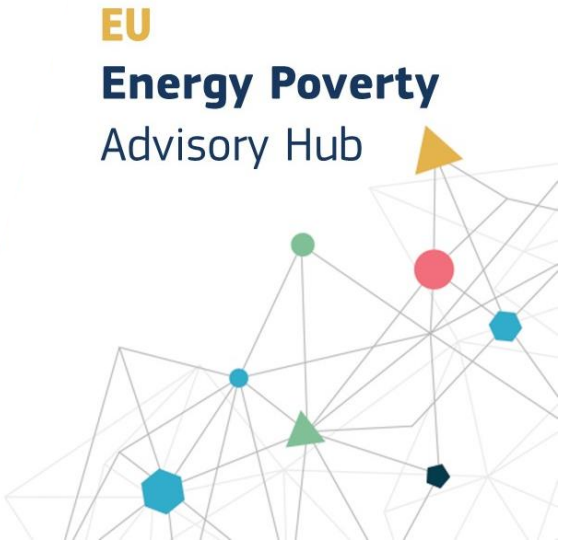
Technical Assistance for Renovation: EU Programmes

EU Energy Poverty Advisory Hub

The Energy Poverty Advisory Hub aims to eradicate energy poverty and accelerate the just energy transition of European local governments. The initiative's mission is to be the central platform of energy poverty expertise in Europe for local authorities and all stakeholders interested in taking action to combat energy poverty in Europe by providing direct support, online training and research results and by building a collaborative network of stakeholders interested in taking action to combat energy poverty in Europe.



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Technical Assistance for Renovation: EU Programmes

Interreg Europe

European Territorial Cooperation Interreg is a programme within the European Regional Development Fund. Through the Interreg Programme, the European Union promotes cooperation between regions and countries to help their economic and social development and tackle the obstacle of borders. It is organised under multiple strands, such as Interreg A for cross-border cooperation, Interreg B for transnational cooperation and Interreg C for interregional cooperation.

Interreg Europe
European Union | European Regional Development Fund

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Greece

The Importance of Biodiversity for LRAs

Biodiversity is …

… the **diversity of ecosystems, species, genes and of their interactions,**

… **essential to human survival** in terms of providing food, water and clean air, timber and recreation,

…important for **increasing resilience to threats** such as climate change impact, forest fires and disease outbreaks,

…**declining rapidly** due to pressure caused by intensive land and sea use, pollution, overexploitation, climate change and invasive alien species;

… and important for **LRAs**, as…

… biodiversity **supports many local activities** such as agriculture and tourism,

… biodiversity protection is a **cross-cutting issue** for many local policies such as food production, transport, waste management and housing ,

… LRAs are often the main actors capable of implementing international and national commitments;

LRAs should opt **for tailor-made measures**, as…

… the composition and state of biodiversity is very different from one area to another,

… there is **no one-size-fits-all solution**: biodiversity protection measures depend on the context!

Find out about biodiversity protection measures and best practices in Greece!

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Greece – Choose an Ecosystem

- Urban Ecosystem
- Rivers and Freshwater
- Rural Ecosystem
- Coastal and Marine

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Urban Ecosystem

Discover How to…

… Promote and Enhance Urban Biodiversity

Although urban environments are areas where biodiversity is particularly threatened because of strong anthropic pressure, they are also a refuge for a great variety of species. Biodiversity in urban areas is essential for human health and well-being and should be protected.

… Raise people's awareness of nature protection and Promote Good Habits

In cities, links between nature and citizens are weaker. It is however crucial to make people aware of the importance of the services provided by biodiversity in their daily life in order to encourage them to preserve it.

… Mitigate Climate Change Risks Through Biodiversity

The effects of climate change, such as urban heat islands, are one of the major causes of biodiversity decline. Nature-based solutions can reduce the impact of climate change and provide suitable habitats for urban species at the same time.

… Fight Pollution and Reduce External Pressures

The urban lifestyle is at the origin of numerous pollutions, including of air, soil and water, but also noise and light pollution. These pollutions disturb the natural way of life of the species, reducing their life expectancy and affecting their mode of reproduction.

Rural Ecosystem

Discover How to…

… Promote and Enhance Rural Biodiversity

European rural areas are home to a wide variety of species, including some endemic species. In addition to their intrinsic value, protecting them is essential to guarantee the services rendered to mankind such as the production of food or medicines.

… Protect Rural Ecosystems

European natural ecosystems are home to a wide variety of species. These rural environments are among the most threatened mainly due to urbanization and fragmentation of spaces. Rural ecosystems should be protected as habitat degradation is one of the major causes of species extinction.

… Promote Biodiversity-Friendly Agriculture

Western intensive agriculture is one of the main drivers of biodiversity loss. Larger plot sizes, land clearing, use of inputs, mechanisation and standardisation of crops and livestock are destroying habitats and wildlife.

… Raise people's awareness of nature protection and Promote Good habits

Raising awareness of the biodiversity crisis is essential to preserve biodiversity. Knowing about how species are interdependent and about the services they provide empowers people to act on these issues.

… Fight Pollution and Reduce External Pressures

Rural activities such as intensive agriculture or tourism are the cause of numerous forms of pollution, including air, soil and water pollution but also noise and light pollution. This pollution disturbs species' natural way of life, reducing their life expectancy and affecting the way they reproduce.

Rivers and Freshwater Ecosystem

Discover How to…

… Promote and Enhance Freshwater Biodiversity

Aquatic ecosystems are home to many species of fish, insects, batricians, birds and plants. Protecting these aquatic species is crucial because of the rapid fall in the number and variety of species present.

… Protect Freshwater Ecosystems

Lakes, rivers, wetlands and groundwater are essential habitats for many plant and animal species. Protecting these environments from the consequences of urbanisation and infrastructure development is essential for the survival of many species.

… Raise people's awareness of nature protection and Promote Good Habits

Raising awareness of the biodiversity crisis is essential to preserve biodiversity. Knowing about how species are interdependent and about the services they provide empowers people to act on these issues.

… Fight Pollution and Reduce External Pressures

Aquatic plant and animal species depend largely on water quality for their survival. Ensuring water quality is therefore essential, even though many European rivers are polluted, particularly due to the discharge of wastewater, industrial waste and agricultural pesticide runoff.

Coastal and Marine Ecosystem

Discover How to…

… Promote and Enhance Marine Biodiversity

The European seas are home to a wide variety of species. However, intensive fisheries and other pressure are putting marine species at risk. Protecting these marine species is crucial because of the rapid fall in the number and variety of species present.

… Protect Coastal and Marine Ecosystems

European coastal areas are undergoing significant alteration due to the growing human pressure on these increasingly attractive areas. The seabed is also affected by human activities. Protecting these areas is crucial to promote the development of marine biodiversity.

… Raise people's awareness of nature protection and Promote Good Habits

Raising awareness of the biodiversity crisis is essential to preserve biodiversity. Knowing about how species are interdependent and about the services they provide empowers people to act on these issues.

… Fight Pollution and Reduce External Pressures

Marine biodiversity is threatened by pollution from human activities both on land and in the ocean. Waste and contaminated water poison wildlife and reduce their life expectancy.

Discover How to Promote and Enhance Urban Biodiversity

Urban Ecosystem Measure

- Vertical Greenery and Green Roofing
- Increasing and Revitalising Green Areas
- Increasing the Pollinator Population
- Ensuring Ecological Continuity and Corridors
- Identify and Track the Most Problematic Species
- Restrict Use of Chemical Pesticides and Other Contaminants
- Species Protection

Discover How to Raise people's awareness of nature protection

Urban Ecosystem Measure

- Awareness Campaigns for Behavioural Change
- Urban Collective Gardens and Farms

Discover How to Mitigate Climate Change Risks Through Biodiversity

Urban Ecosystem Measure

- Ensuring Ecological Continuity and Corridors
- Increasing and Revitalising Green Areas
- Vertical Greenery and Green Roofing
- Reduce and Open Sealed Surfaces
- Sustainable Drainage Systems

Discover How to Fight Pollution and Reduce External Pressures

Urban Ecosystem Measure

- Vertical Greenery and Green Roofing
- Ensuring Ecological Continuity and Corridors
- Increasing and Revitalising Green Areas
- Soft Mobility
- Reduce and Open Sealed Surfaces
- Sustainable Drainage Systems
- Environmentally Sound Management of Waste
- Tackling Light Pollution

Discover How to Promote and Enhance Rural Biodiversity

Rural Ecosystem Measure

- Species Protection
- Identify and Track the Most Problematic Species
- Introduction of Natural Predators
- Protection of Natural Areas

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Discover How to Protect Rural Ecosystems

Rural Ecosystem Measure

- Protection of Natural Areas
- Construction of Adapted Infrastructure
- Introduction of Natural Predators
- Forest Restoration and Maintenance
- Ensuring Ecological Continuity and Corridors
- Grassland Restoration and Maintenance

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Discover How to Promote Biodiversity-Friendly Agriculture

Rural Ecosystem Measure

- Restrict Use of Chemical Pesticides and Other Contaminants
- Crop Rotations
- Agroforestry
- Increasing the Pollinator Population

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Discover How to Raise people's awareness of nature protection

Rural Ecosystem Measure

- Awareness Campaigns for Behavioural Change

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Discover How to Fight Pollution and Reduce External Pressures

Rural Ecosystem Measure

- Soft Mobility
- Environmentally Sound Management of Waste
- Tackling Light Pollution

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Discover How to Promote and Enhance Freshwater Biodiversity

Freshwater Ecosystem Measure

- Species Protection
- Identify and Track the Most Problematic Species
- Protection of Natural Areas

Discover How to Protect Freshwater Ecosystems

Freshwater Ecosystem Measure

- Ensuring Rivers and Freshwater Continuity
- Protection of Natural Areas
- River Basin Management Plans
- Stream Re-Opening
- Low Water Support
- Rivers Restoration and Maintenance
- Floodplain Restoration and Maintenance
- Improve Irrigation System in Agriculture
- Water Retention Spaces

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Discover How to Raise people's awareness of nature protection

Freshwater Ecosystem Measure

- Awareness Campaigns for Behavioural Change
- Awareness Raising on Water Consumption

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Discover How to Fight Pollution and Reduce External Pressures

Freshwater Ecosystem Measure

- Restrict Use of Chemical Pesticides and Other Contaminants
- Environmentally Sound Management of Waste
- Tackling Light Pollution

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Discover How to Promote and Enhance Marine Biodiversity

Marine Ecosystem Measure

- Species Protection
- Protection of Natural Areas
- Ecodesign of Artificial Reefs
- Identify and Track the Most Problematic Species
- Sustainable Aquaculture

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Discover How to Protect Marine Ecosystems

Marine Ecosystem Measure

- Protection of Natural Areas
- Beach Nourishment
- Integrated Coastal Zone Management
- Construction of Adapted Infrastructure
- Regulated Anchoring
- Wetland Restoration and Maintenance
- Oil Pollution Response Plan
- Ecodesign of Artificial Reefs

Discover How to Raise people's awareness of nature protection

Marine Ecosystem Measure

- Awareness Campaigns for Behavioural Change

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Discover How to Fight Pollution and Reduce External Pressures

Marine Ecosystem Measure

- Environmentally Sound Management of Waste
- Restrict Use of Chemical Pesticides and Other Contaminants
- Oil Pollution Response Plan
- Regulated Anchoring

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Vertical Greenery and Green Roofing

Adaptation
Renovation
Biodiversity

Vertical Greenery and Green Roofing

Greening buildings can be regarded as an additional benefit alongside energy savings. In highly dense urban areas, greening buildings can reduce the urban heat island effect. At the same time, greening recognizes that the urban environment should also preserve nature and ensure diverse wildlife and land quality. With the increase of urban density and the decrease in the availability of land, use of vertical greenery and green roofs have intensified in order to foster vegetation in urban areas. Vertical greenery has several positive implications: it can be used for cooling, water management and also for securing food supply. A green roof is defined as a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly sloped roof. Green roofs are also known as vegetative or eco-roofs. They help to control storm water run-off and retention, absorb excess water, reduce the urban heat island effect, improve air quality and insulate buildings. Both measures hold great potential for creating sustainable resilient cities and allow biodiversity to thrive in urban areas.

Best Practice:

- Green Roofs in Basel (Switzerland): combining adaptation and mitigation measures.
- Four pillars to Hamburg's (Germany) Green Roof Strategy: financial incentive, dialogue, regulation and science.
- Berlin Biotope Area Factor (Germany).
- The Bosco Verticale project in Milan (Italy) is transforming a neighborhood into a business-residential district implementing green solutions.

Find out more about Funding Programmes

Find out more about Technical Assistance

Find out more about Specific Technical Assistance

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Increasing and Revitalising Green Areas

Adaptation
Renovation
Biodiversity

Increasing and Revitalising Green Areas

Green spaces in cities mitigate the effects of pollution and can reduce a phenomenon known as the urban heat island effect, by providing shaded and cool areas. They also facilitate water management and help to reduce air and noise pollution. Parks, playgrounds, and residential greenery provide space for physical exercises and social interactions and can therefore help to reduce morbidity and mortality in urban residential spaces. Greening the living environment benefits more than just health and wellbeing. Green areas are crucial for the survival of small animals, birds, insects and plants, providing them habitats and food. Some green spaces like wastelands are home to a greater diversity of fauna and flora because they are less visited by humans. Strategies can thus be developed to increase the number and size of green spaces that benefit both humans and biodiversity.

Best Practice:

- Environmentally friendly urban street design for decentralised ecological rainwater management in Ober-Grafendorf (Austria).
- Greening of school playgrounds in Flemish Brabant (Belgium) allowing to cool down the space, to make room for some animal species and to avoid runoff.

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Increasing the Pollinator Population

Biodiversity

Increasing the Pollinator Population

In the EU, about 4/5 of temperate wildflowers and crops depend on insect pollination. Being essential for both nature and mankind, pollinators are however in danger due to climate change, invasive species, pesticide use and the loss of their natural habitats. To preserve them, areas can be planted with a wide variety of flowers and plants to meet the different needs of pollinators providing them pollen, nectar-rich flowers and herb-rich areas. These species should be local so that pollinators are accustomed to them and should not be mowed too often. Pesticides should also be replaced by physical control measures to allow pollinators to thrive.
Bees and other pollinators need also places to rest and reproduce. Although very varied, pollinator habitats can be favoured by the development of natural areas by not collecting dead leaves and dead wood or by the creation of artificial insect hotels.

Best Practice:

- Restoration of wild pollinators population in Lille (France), by creating shelters and nesting sites.
- Plantation of a 300 square meters flower meadow in Lublin (Poland) to feed and provide shelter to pollinators.
- The Pollinator Highway is a species-rich meadow-like natural environment, a green corridor between city districts, and a movement corridor for green mobility that passes through 6 districts in Tallinn (Estonia)

Find out more about Funding Programmes

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Ensuring Ecological Continuity and Corridors

Biodiversity

Ensuring Ecological Continuity and Corridors

The fragmentation of natural areas and therefore of species' habitats is one of the major causes of the loss of biodiversity. Hedges, roadsides, ditches or trees connecting one natural area to another are crucial to create a coherent ecological network. The corridors can also be discontinuous, composed for example of bushes or wastelands being separated by a short distance. Certain structural interventions can help connect habitats, such as the construction of road underpasses or the removal of barriers. Ecological connectivity is assessed very differently from one species to another as the needs are not the same for amphibians, mammals or birds for instance. It is therefore necessary to map and plan ecological networks by identifying the needs of the species.
Ecological networks, if composed of natural elements, also provide pollution reduction services by capturing particles from the air, providing heat reduction and flood risk reduction through porous soils.

Best Practice:

- Creation of a green bridge over the D2 freeway in Bratislava (Slovakia), allowing the passage of wildlife.
- Creation of a green corridor between two parks in Athens (Greece) through the planting of new trees and continuous natural soil.
- Wildlife crossings can act as links to reconnect fragmented habitats, such as in Noord-Holland (the Netherlands), where a 800m long passageway for animals over a motorway was built.

Find out more about Funding Programmes

Find out more about Technical Assistance

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Identify and Track the Most Problematic Species

Identify the Most Problematic Species and Track their Movements

Adaptation
Biodiversity

Some species are highly affected by climate change, especially by higher temperatures. This can lead to species feeling the need to move and search for other natural habitats. Other species are displaced by human activities, involuntarily or not. This does not only affect the livelihood of the native species, but also of the whole ecosystem. Identifying the species which are the most affected by climate change and tracking their movements is crucial to both saving the species and the whole ecosystem.

Best Practice:

- Assessing the Vulnerability of Fish and Invertebrate Species in a Changing Climate.
- Impacts of Climate Change on European Invertebrates, with reference to the vulnerability of Bern Convention species (also here).
- Removal of exotic weed species with the help of volunteers in Sintra (Portugal).

Find out more about Funding Programmes

Find out more about Technical Assistance

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Restrict use of Chemical Pesticides and Other Contaminants

Restrict use of Chemical Pesticides and Other Contaminants

Biodiversity

Although intentionally applied to control a particular species or disease, chemical pesticides spread through the soil and water, contaminating many species. These chemical pesticides then often cause immune deficiencies, disrupt the reproductive system of the species and can lead to their death. Insects are the most affected, which has an impact on the entire food web, leading to biodiversity loss. In addition, the use of pesticides reduces natural pest control and encourages organism to become resistant to pesticides. To limit these effects, chemical pesticide use should be avoided and limited. Limiting runoff from the land helps prevent chemical particles from ending up elsewhere. Alternative practices, such as mechanical management of invasive species or the use of more disease resistant crops can be developed.

Best Practice:

- The "Without pesticides campaign" (Luxembourg) has been advocating for a ban on pesticides on public green spaces by providing municipalities advices and technical assistance.
- The project Liivimaa Lihaveis (Estonia) aimed to feed beef with organic grass contributing to a sustainable management of grasslands.

Find out more about Funding Programmes

Find out more about Technical Assistance

Find out more about Specific Technical Assistance

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Awareness Campaigns for Behavioural Change

Awareness Campaigns for Behavioural Change

Adaptation
Biodiversity

Public awareness is important to increase enthusiasm and support and stimulate self-mobilisation and action, as well as mobilise local knowledge and resources. Awareness raising requires strategies of effective communication to reach the desired outcome. Awareness campaigns can address groups of people in a region affected by a particular climate or biodiversity threat, groups of stakeholders or the general public. The aim of awareness raising campaigns generally includes increasing concern, informing the targeted audience, creating a positive image, and changing behaviours. Raising awareness can also be done through action, as with participatory science, which can arouse the interest of citizens in science and biodiversity, and involve the participant throughout the scientific process.

Best Practice:

- Zaragoza (Spain): combining awareness raising and financial measures to enhance water efficiency.
- The Dolj County (Romania) uses the "Planting Month Tree" campaign to raise public awareness of the importance of forests through a series of events and actions.
- Ghent crowdfunding platform realising climate change adaptation through nature-based solution such as urban greening (Belgium).
- Through the BiodiverCities project, the city of Vilnius (Lithuania) engaged with more than 300 citizens to strengthen local biodiversity through knowledge sharing and co-creation of policies.

Find out more about Funding Programmes

Find out more about Technical Assistance

Urban Collective Gardens and Farms

Urban Collective Gardens and Farms

Biodiversity

Community gardens and farms bring people together to practice gardening for food, education or ornamental purposes. The practice of gardening allows urban citizens to reconnect with the soil, often rendered invisible in very concrete and artificialized spaces and makes them more aware of the negative impacts of urban space on nature. Through the experimentation of garden techniques, citizens are able to learn about good practices related to biodiversity such as the end of the use of phytosanitary products, the use of rainwater and of compost, the seasonality of products. These spaces are also often the place for sharing and training the general public or schoolchildren about the protection of biodiversity.
Finally, these spaces can also be refuges for biodiversity if some areas are left natural, especially for pollinators if beehives, nesting boxes or insect hotels are installed.

Best Practice:

- In the city of Helsinki (Finland), temporary urban gardens are created in abandoned spaces, making the city a better place to live.
- The rooftop of the Belvedere College in Dublin (Ireland) is used by the students to test new sustainable farming practices.

Find out more about Funding Programmes

Find out more about Technical Assistance

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Reduce and Open Sealed Surface

Reduce and Open Sealed Surface

Adaptation
Biodiversity

Sealed surfaces, such as artificial, impenetrable surfaces like tar, may cause local water nuisance if more frequent extreme rain events occur. A distinction is hereby made between water nuisance from sewers after extreme summer precipitation and water nuisance from waterways after extended precipitation, a phenomenon more typical in winter months. Opening already existing sealed surfaces and reducing the existence of these sealed surfaces can prevent from city flooding and help absorb water. It will also provide better soil quality and new habitats for wildlife.

Best Practice:

- The city of Bratislava (Slovakia) has replaced about 1ha of the Freedom square's alleys pavement with grass and flower areas, helping to improve water retention and resilience to drought.
- Barcelona (Spain) has developed a green corridor through tree planting and permeable green installation benefiting both pedestrians and biodiversity.

Find out more about Funding Programmes

Find out more about Technical Assistance

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Sustainable Drainage Systems

Sustainable Drainage Systems

Adaptation

Biodiversity

Sustainable drainage systems provide an alternative to the direct channeling of surface water through networks of pipes and sewers to nearby watercourses. They are especially good for reducing flooding, enhancing water quality, reducing pollution and providing habitats for wildlife.

Best Practice:

- Urban stormwater management in Augustenborg, Malmö (Sweden).
- Storm water management in Växjö – the Linnaeus canal and Växjö lake lagoons (Sweden).

Find out more about Funding Programmes

Find out more about Technical Assistance

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Soft Mobility

Soft Mobility

Adaptation

Biodiversity

The use of individual car intoxicates and disturbs the way of life of numerous species because of its emissions of fine particles and greenhouse gases and because of the noise generated.
Developing soft mobility is therefore essential to reduce these pollutions. For this, it is important to know the needs of citizens in order to create useful infrastructures. Creating direct and secure soft traffic routes, redesigning crossroads and creating bicycle parking near stations will help to develop the use of soft mobility. Individual polluting transport can also be made less attractive by limiting the number of parking spaces available or by ending free parking. Limiting urban sprawl can also encourage the use of soft mobility by reducing travel distances.

Best Practice:

- Ljubljana (Slovenia) has established an ecological zone in its city center, banning 100 000 m^2 to motor vehicles and making the area more attractive for pedestrians and cyclists.
- Sustainable Urban Mobility Plans such as the Helsinki Region Transport System Plan (Finland) can be developed to ensure a coherent and effective sustainable transport network (more information here).

Find out more about Funding Programmes

Find out more about Technical Assistance

Find out more about Specific Technical Assistance

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Tackling Light Pollution

Tackling Light Pollution

Biodiversity

Artificial light poses problems to wildlife, confusing migrating and nocturnal animals, causing physiological harm and altering natural patterns of plants. To ensure supportive habitats, dark infrastructure plans should be developed and adopted. These plans would identify areas where light can be reduced, creating dark corridors that will ensure the movement of wildlife. Unnecessary lights should be removed and those remaining should be directed only to where needed and should not be brighter than necessary. Colors of artificial lights, especially white and blue-rich light, is also an issue for biodiversity, as they have a stronger impact on living organisms.

Best Practice:

- Alonas and Polystipos (Cyprus) have assigned Cyprus national energy agency to evaluate the potential of the replacement of existing luminaires.
- The Métropole Nice Côte d'Azur (France) has mapped street lights and bat corridors and has implemented light pollution mitigation measures where needed.

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Environmentally Sound Management of Waste

Environmentally Sound Management of Waste

Biodiversity

When not properly managed, waste is dispersed in nature, polluting the environment, poisoning animals when ingested or causing them lesions if entangled. Even when managed, waste that is not recycled is burned or stored in landfills, causing air and soil pollution and water pollution through infiltration. To avoid this pollution, avoiding producing waste is crucial, notably by encouraging the reduction of packaging, putting an end to disposable objects, and promoting reuse and recycling. Putting an end to illegal dumping by facilitating access to waste collection centers, by promoting urban waste collection equipment that is visible and adapted to its environment and by controlling and sanctioning these deposits, is also essential to prevent waste dispersion. Removing waste from the environment can avoid some of the consequences of this pollution but does not prevent their production.

Best Practice:

- The Bundek Park of Zagreb (Croatia), which had become an informal waste disposal site, was cleaned up providing benefits both for the environment and the citizens.
- The city of Tulcea (Romania) is committed to circular economy, preventing waste production through design and consumption changes and by implementing the principle of paying as much as you throw away.

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Introduction of Natural Predators

Introduction of Natural Predators

Adaptation

Biodiversity

The introduction of natural predators can help boost biodiversity within an ecosystem. By controlling the population of specific prey species, predators prevent any one species from dominating the ecosystem. This allows other species to thrive and increases overall species diversity within the ecosystem. Prey species may also change their behavior or alter their spatial distribution in response to the presence of predators. For example, they may avoid certain areas or modify their foraging patterns to minimize the risk of predation. This, in turn, can promote the recovery and growth of plants and other organisms that were previously suppressed by excessive herbivory.
It's important to note that the introduction of natural predators should be done with careful consideration and ecological understanding. Invasive predators or inappropriate introductions can have negative consequences on native species and ecosystems.

Best Practice:

- The PIROSLIFE project (Spain) released a male brown bear in the Central Pyrenees to strengthen the population's genetic composition.
- The project LYNXCONNECT (Spain) aims to increase the overall population size and the connectivity among Iberian lynx habitats to ensure viable population through mature individual reintroduction.

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Protection of Natural Areas

Protection of Natural Areas

Biodiversity

Protected natural areas, such as national parks, wildlife reserves, and sanctuaries, play a crucial role in protecting biodiversity. They provide safe and undisturbed habitats for a wide range of plant and animal species. They offer the necessary conditions, such as suitable food, water, shelter, and breeding sites, to support the survival and reproduction of diverse species. Strict regulations and conservation efforts within these areas help control factors that endanger species, such as poaching, habitat destruction, pollution, and invasive species.
To ensure the effectiveness of protected areas in boosting biodiversity, it is crucial to have proper management and enforcement of regulations. Adequate resources, monitoring programs, scientific research, community engagement, and collaboration with local stakeholders are all essential components of successful protected area management.

Best Practice:

- The creation of a new coastal nature reserve at Dwejra (Malta) has permit to introduce marine protection measures such as removal of abandoned fish-traps and to regulate illegal structures enforced by fines.
- Management plans were prepared to protect more than 6300 hectares of central Lapland aapa mire zone (Finland), promoting both sustainable ecotourism and species conservation.

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Species Protection

Species Protection

Biodiversity

Around 63% of assessed European species have a poor or bad conservation status. Therefore, comprehensive conservation actions are needed to protect them. Scientific research is an essential prerequisite for conservation actions, as it helps identify the evolution of populations, their habitats and behavior, as well as the main threats. Each species may have specific conservation requirements, and the strategies employed may vary accordingly. Depending on the degree of protection required, regulations can be set up to prohibit or restrict activities such as hunting, capturing, and trading endangered species. These measures help prevent overexploitation and allow populations to recover.
Identifying and protecting critical nesting and breeding sites for species by establishing protected areas, implementing buffer zones, and monitoring and managing human activities in these areas also helps targeted populations to grow.

Best Practice:

- The SakerRoads project in the North-Hungarian Plain (Hungary) aims to reverse the decline of the saker falcon population by monitoring them to reveal the unknown causes of mortality and by improving availability of prey species.
- In the Natura 2000 site Poodří (Czech Republic), measures such as the mitigation of invasive species or the preservation of dead trees have been put in place to improve the status of the hermit beetle population.

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Forest Restoration and Maintenance

Forest Restoration and Maintenance

Biodiversity

Forest ecosystems harbor a rich biodiversity and play a crucial role in combating climate change by capturing large quantities of CO2. However, these ecosystems are being degraded by deforestation, pollution, invasive species and firewood cutting. Restoring these ecosystems means first and foremost eliminating or reducing these pressures so that the forests can regenerate naturally. Restoring these ecosystems can also be achieved by planting trees adapted to local conditions. To promote a healthy forest ecosystem, tree and species diversity should be encouraged, with dead wood left in place to shelter different species.

Best Practice:

- In the Vysočina Region (Czech Republic), natural regeneration of the forest is promoted through planting pioneer species and by engaging stakeholders.

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Grassland Restoration and Maintenance

Grassland Restoration and Maintenance

Biodiversity

Grasslands are under pressure from monocultures, chemical pollution and soil erosion caused by the removal of hedges and trees. Removing the sources of disturbance such as farming or eradicating invasive exotic species is crucial for the restoration of the grasslands ecosystems. To protect these ecosystems, a number of measures can be adopted, such as encouraging sustainable grazing practices to allow vegetation to regenerate. The livestock can therefore be moved from place to place to ensure good management of these grasslands. To ensure a proper restoration of the ecosystem, restoring the natural processes such as natural flood or fire regime can also be a powerful tool.

Best Practice:

- The provinces of Rome and of Potenza (Italy) have established long term approach to restore grasslands ecosystems through the implementation of grazing plans, of the installation of fences and of removal of invasive species.
- The Uitkerkse Polder (Belgium) was restored by transforming agricultural land into grasslands and changing the hydrology of the land to create bird-friendly habitats.
- The GrassLIFE project helps to restore over more than 1320 hectares of grasslands in Latvia through the sustainable management of cattle and technical assistance provided to farmers.

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Crop Rotations

Crop Rotations

Adaptation

Biodiversity

Crop rotation is the practice of growing a series of different types of crops in the same area across a sequence of growing seasons. By rotating crops farmers can disrupt the life cycle of pests and reduce their populations which reduces the need for pesticides. Different crops also have different nutrient requirements and root structures which helps prevent depletion of nutrients in the soil. Healthy soil supports a diverse community of microorganisms, promoting biodiversity. Crop rotation also provides more diverse habitats and therefore attracts more diverse species. Therefore, crop rotation is helpful in long-term soil and farm management.

Best Practice: both in the framework of the AgriAdapt project:

- Crop diversification and improved soil management for adaptation to climate change in Segovia (Spain).
- Improving soil structure of an arable crop farm in the district of Heilbronn (Germany).

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Agroforestry

Agroforestry

Adaptation
Biodiversity

Agroforestry systems include all land-use systems or forms of land management where woody perennials are deliberately used in the same land unit with agricultural crops and/or animals. Agroforestry exploits the complementarity between trees and crops, so that the available resources can be more effectively exploited. Efficient and modern versions of agroforestry allow the diversification of farm activity and make better use of environmental resources. Agroforestry can be implemented in both tropical and temperate regions, producing food and fiber for better nutritional security, sustaining livelihoods, alleviating poverty and promoting productive, resilient agricultural environments. Moreover, it can enhance ecosystems through carbon storage, prevention of deforestation, biodiversity conservation, cleaner water and erosion control, while enabling agricultural lands to withstand events such as floods and drought.

Best Practice:

- Agroforestry: agriculture of the future? The case of Montpellier (France).
- Autonomous adaptation to droughts in an agro-silvo-pastoral system in Alentejo (Portugal).

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Construction of Adapted Infrastructure

Construction of Adapted Infrastructure

Biodiversity

Integrating infrastructure development with biodiversity conservation is crucial to prevent it from destroying natural habitats and species. To do this, it is first necessary to assess the need for the infrastructure. Avoiding construction and considering alternative solutions is the best way to protect biodiversity. If the infrastructure is essential, then we need to assess its impact on biodiversity and limit it as much as possible. To achieve this, the project must be proportionate to needs and not over-dimensioned. The design of the infrastructure must also limit the impact on flora and fauna, and in particular ensures that ecological continuity is not interrupted.

Best Practice:

- Cooperation with electric companies in Northeast Bulgaria, Hungary, Romania and Slovakia to make 8916 electric pylons bird-safe to ensure the protection of the Saker falcon.
- The cities of Keratea and Derveni (Greece) have implemented early warning systems to prevent birds and bats from colliding with wind turbines.

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Ensuring Rivers and Freshwater Continuity

Ensuring Rivers and Freshwater Continuity

Biodiversity

The ecological continuity of watercourses is essential to maintaining the health and biodiversity of aquatic habitats. Ecological continuity not only enables aquatic species to move, reproduce and feed easily, but also ensures the flow of nutrients between different environments, necessary for the proper development of flora. To promote the ecological continuity of watercourses, a number of measures can be taken, such as the removal of dams, weirs and dykes that interrupt ecological continuity. If removing an obstacle is not possible, it is advisable to modify it so that aquatic fauna and flora can bypass it, as with the installation of fish passes. Maintaining healthy vegetation on the banks of watercourses also promotes ecological continuity by providing habitats for various species.

Best Practice:

- Genova (Italy) has restored the ecological continuity of the Magra and Vara rivers by removing artificial barriers.
- In the Vouga River Basin (Portugal), actions have been undertaken to ameliorate the river continuity such as the building of fish passes that mimic natural conditions.

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River Basin Management Plans

River Basin Management Plans

Biodiversity

A river basin management plan (RBMP) is a comprehensive document that outlines the strategies and measures for the sustainable management of water resources within a specific river basin. This document allows the various stakeholders to define measures to reduce water pollution, notably by controlling discharges from factories, agricultural land and urban areas. This tool also serves to prevent the risk of water shortages by identifying water demand and basin capacity. This document also promotes measures to protect ecosystems, notably by proposing measures to restore the natural flow of watercourses or creating fish passages. Having a long-term strategy for each river basin allows to better manage water resources and improve ecosystem quality.

Best Practice:

- The integrated management of the Mur river flowing through Austria, Slovenia, Hungary and Croatia has helped to restore the natural dynamic-river system.

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Stream Re-Opening

Stream Re-Opening

Biodiversity

Many rivers, often in urban areas, are buried to make way for artificial developments. Buried, channeled, and often polluted, these rivers are no longer as suitable for aquatic life which can not develop in this concrete space without light. Reopening these streams to the open air allows the water to find a more natural course and the plant and animal species to develop again. This reopening allows to improve the landscape quality and also to the residents to reconnect with nature.

Best Practice:

- The city of Århus (Denmark) has decided to resurface the Aarhus river, creating a green and blue corridor.
- The city of Oslo (Norway) is opening up several rivers that were running in underground pipes, securing biodiversity and improving water quality.

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Low Water Support

Low Water Support

Biodiversity

With climate changes and the intensification of human activities, water levels in rivers are becoming lower over longer periods of time. Low flows and water levels pose significant problems for the development of aquatic life, threatening both their habitats and their abilities to reproduce. Indeed, water level affects water temperature and quality as well as the speed and shape of the river. Low water levels can also lead to disruptions in ecological continuity. To counteract this problem, a minimum water level must be ensured: the flow of the river can be sustained by organizing water releases from reservoirs or by limiting pumping by different users.

Best Practice:

- The city of Győr (Hungary) has built flood gate and restored rivers banks in order to raise the water levels of the Moson Danube river.
- The city of Leipzig (Germany) has renaturalized and connected water bodies of various wetlands to counteract the water shortage in the floodplain forest.

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Rivers Restoration and Maintenance

Rivers Restoration and Maintenance

Biodiversity

With only 40% of European surface water being in good ecological status, developing strategies to preserve rivers is essential. The formation of rectilinear rivers by man has a significant impact on biodiversity, accelerating the flow velocity of the watercourse, increasing bank erosion and standardizing watercourse temperature. Restoring the natural flow of watercourses, in particular by encouraging the formation of meanders, creates varied habitats and promotes biodiversity. Restoring river banks using bioengineering techniques is also essential for restoring the ecological functions of watercourses, providing habitats for aquatic species, mitigating the effects of flooding and stabilizing banks.

Best Practice:

- The river Liesing in Vienna (Austria) has been transformed from a 5-kilometre concrete canal to a meandering, semi-natural river.
- The riverbanks of the river Moälven in Örnsköldsvik (Sweden) have been restored and the river bed stones that had been moved for industrial purposes have been returned to the riverbed.

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Floodplain Restoration and Maintenance

Floodplain Restoration and Maintenance

Adaptation

Biodiversity

Floodplains cover 7% of the European continental area. However, the majority of it has been environmentally damaged. Developing strategies to preserve floodplains is essential, since restored floodplains provide an alternative to structural measures to handle the increased risk of flooding, meaning they can act as buffers. At the same time, floodplain restoration helps achieve higher quality ecosystem services like improved water quality, improved conditions for biodiversity conservation and improved recreational value.

Best Practice:

- Urban river restoration: a sustainable strategy for storm-water management in Lodz (Poland).
- Lower Danube green corridor: floodplain restoration for flood protection (Bulgaria, Romania).
- Restoring the river dynamics: Room for the River Regge (Netherlands).

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Improve Irrigation Systems in Agriculture

Improve Irrigation Systems in Agriculture

Adaptation

Biodiversity

In areas where rainfall is not regular or frequent enough, there is a need for agricultural technology innovations such as additional irrigation to keep crops healthy. An irrigation system is the artificial and systematic way of applying water to the soil through various networks of tubes, pumps and sprays. There are various methods of irrigation in agriculture, encompassing drip irrigation systems, sprinkler irrigation, centre pivot irrigation, furrow irrigation systems and terraced irrigation. Improving irrigation systems in order to use water more effectively and sustainably is crucial in saving water. More information can be found here.

Best Practice:

- Improving soil structure of an arable crop farm in the district of Heilbronn (Germany).

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Water Retention Space

Water Retention Space

Adaptation

Biodiversity

Natural water retention measures are measures that aim to safeguard and enhance the water storage potential of landscape, soil, and aquifers, by restoring ecosystems, natural features and characteristics of water courses and using natural processes. They support Green Infrastructure by contributing to integrated goals dealing with nature and biodiversity conservation, restoration and landscaping. They use nature to regulate the flow and transport of water so as to smooth peaks and moderate extreme events, such as floods, droughts, desertification, salination. They are a better environmental option for flood risk management, since they come in decentralized lakes and ponds. Water retention spaces improve water quality and are relevant both in rural and urban areas.

Best Practice:

- Natural water retention measures in the Altovicentino Area (Italy).
- The Cloudburst Management Plan: The economics of managing heavy rains and stormwater in Copenhagen (Denmark).

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Awareness Raising on Water Consumption

Awareness Raising on Water Consumption

Adaptation

Biodiversity

Especially in areas that are affected of heat and a decrease in precipitation, an adequate management of water supply for all different sectors is crucial. Drought management plans that reduce risk and economic, social, and environmental drought impacts are helpful. Water conservation plans aim to limit water consumption; to reduce loss and waste of water; to improve water use efficiency; to document the level of recycling and reuse of water; to extend the life of current water supplies by reducing water demand. Furthermore, more efficiently using existing water supplies can diminish water demand, minimize environmental impacts and costs associated with developing new supplies. Drought and Water Conservation Plans include guidelines and requirements governing water conservation and drought contingency for public water suppliers but also through restrictions on water use, rationing schemes, special water tariffs or the reduction of low-value uses. Basic elements and contents of Drought and Water Conservation Plans can be found here.

Best Practice:

- Zaragoza (Spain) : combining awareness raising and financial measures to enhance water efficiency.
- Securing future water supply on regional and local level in the River Lavant Valley, Carinthia (Austria).
- Private investment in a leakage monitoring program to cope with water scarcity in Lisbon (Portugal).

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Beach Nourishment

Beach Nourishment

Biodiversity

Beach nourishment is the artificial placement of sand on an eroded shore to maintain the amount of sand present in the foundation of the coast. This way, natural erosion is compensated and the area to a greater extent protected against storm surge. The process involves dredging material such as sand and pebbles from a source area such as offshore or inland to feed the beach where erosion is occurring. Beach nourishment often aims at maintaining beaches for tourism and recreational purposes but it can also help to protect biodiversity by maintaining beach habitats that are crucial for the nesting and feeding of various species. The technique has been used in Europe since the early 1950s. Beach nourishment is a common practice in the Netherlands, Germany, Spain, France, Italy, the UK and Denmark. For more information on the different techniques, see here.

Best Practice:

- Implementation of the integrated Master Plan for Coastal Safety in Flanders (Belgium).
- Sand Motor – building with nature solution to improve coastal protection along Delfland coast (The Netherlands).

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Integrated Coastal Zone Management

Integrated Coastal Zone Management

Biodiversity

Integrated Coastal Zone Management (ICZM) is a comprehensive approach to the management of coastal areas that seeks to balance environmental, social, and economic interests while conserving and protecting biodiversity. ICZM aims to promote sustainable development and address the complex and interconnected challenges facing coastal ecosystems and communities. By considering the ecological processes, interactions, and dependencies within coastal systems, ICZM promotes actions that support biodiversity conservation and the sustainable use of coastal resources.

Best Practice:

- The island of Zakynthos (Greece), facing increasing tourism, undertook an ICZM, working with NGOs, local businesses, fisherman to better protect the environment and to encourage sustainable development.
- 7 regional administration of the Netherlands, Germany and Denmark manage the Wadden Sea according to the ICZM principles, promoting nature and recreational activities.

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Oil Pollution Response Plan

Oil Pollution Response Plan

Biodiversity

An oil pollution response plan is a comprehensive strategy designed to address and mitigate the environmental impacts of oil spills on biodiversity and ecosystems. Such plans are typically developed by governments, regulatory agencies, industry stakeholders, NGOs and local authorities to ensure a coordinated and effective response in the event of an oil spill. These plans help to protect biodiversity by creating procedures for immediate actions in order to minimize the impact on ecosystems and by organizing actions for wildlife rescue and rehabilitation.

Best Practice:

- In Ireland, the Irish Coast Guard coordinates oil spill response with local authorities, and advocate for mechanical rather than chemical methods of oil removal.
- The OIL SPILL project has helped to map the current practices in the Baltic Sea Region in order to harmonize practices and to facilitate rapid and coordinated response.

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Wetland Restoration and Maintenance

Wetland Restoration and Maintenance

Adaptation

Biodiversity

Coastal wetlands are saltwater and brackish water wetlands located in coastal areas. They provide natural defence against coastal flooding and storm surges by wave energy dissipation and erosion reduction, helping to stabilise shore sediments. Coastal wetlands are important habitats, for example providing a nursery function for fish and shellfish and a variety of services to birdlife and can contribute to water purification. The restoration of coastal wetlands and managed realignment are increasingly considered as measures for adaptation.

Best Practice:

- Habitat restoration and integrated management in the Ebro delta to improve biodiversity protection and climate resilience (Spain).
- Adaptive restoration of the former saltworks in Camargue (France).

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Ecodesign of Artificial Reef

Ecodesign of Artificial Reef

Biodiversity

Artificial reefs are man-made structures that serves as habitats for aquatic organisms. They can provide food and shelter for aquatic species and create additional substrate for coral to settle. Artificial reefs should only be implemented after a marine habitat assessment has been carried out to better identify the needs of this structure. The material of the artificial reef should be carefully chosen in order to avoid to release harmful substance in the environment and natural elements such as rocks should be preferred. The element needs to be complex, with a wide variety of shapes, sizes and heights to provide many different habitats, increasing ecological diversity. Finally, the location of the artificial reef must be carefully chosen to ensure its usefulness, taking into account various criteria such as water quality, water temperature or ecological connectivity.

Best Practice:

- Artificial reefs set at 8,5 kilometers out of the coast of Noordwijk (The Netherlands) allow to boost marine biodiversity.

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Regulated Anchoring

Regulated Anchoring

Biodiversity

Unregulated anchoring can cause significant damage to underwater ecosystems by directly impacting the environment or by indirectly affecting marine life through the disturbance of habitats. To protect these vulnerable areas, regulations may be implemented to control anchoring activities. This can include designated anchorage zones, mooring buoys, or restrictions on anchoring in certain areas altogether. By enforcing regulations on anchoring, authorities can reduce the physical damage caused by anchor chains or anchors dragging along the seabed, preventing destruction of marine habitats and preserving biodiversity.

Best Practice:

- Removal of underwater cable from old moorings and installation of 100 new environmentally friendly mooring buoys in the Natura 2000 site Arrábida-Espichel (Portugal).
- Installation of 8 Posidonia-friendly moorings in Epanomi and Aggelochori Laggons (Greece).

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Sustainable Aquaculture

Sustainable Aquaculture

Biodiversity

Aquaculture aims to provide a reliable source of seafood and helps to solve overfishing issues without negatively affecting oceans ecosystems. However, aquaculture should be properly implemented with sustainable practices to avoid negative impacts on biodiversity. Thus, maintaining good water quality is essential to minimize the release of excess nutrients, organic matter and chemical into the surrounding environment. The selection of species for aquaculture is also crucial for biodiversity conservation. The species should be native and the farm should be design in a way to limit escape of farm species in order to avoid negative impacts on wild population and sustainability.

Best Practice:

- The population of Allis shad fish in the Rhine watersheds (Germany) was improved thanks to aquaculture techniques.
- Creation of 16 aquaculture zonation plans in Ireland to implement these activities where they have the least impact on wild fauna.

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Funding Biodiversity: Programmes

- European Structural and Investment Funds (ESIF)
  - European Regional Development Fund (ERDF)
    - Urban Innovation Action
    - European Territorial Cooperation
  - Cohesion Fund (CF)
  - European Social Fund+ (ESF+)
  - European Agricultural Fund for Rural Development (EAFRD)
  - European Maritime, Fisheries and Aquaculture Fund (EMFAF)
- LIFE programme by CINEA
- Invest EU
- Horizon Europe
- Clean and Sustainable Ocean Programme

Green Deal
Going Local

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Funding Biodiversity: ESIF

European Structural and Investment Funds

European Structural and Investment Funds (ESIF) comprise the European regional development fund, European social fund, European agricultural fund for rural development and the European maritime and fisheries fund. Over half of the EU's funding is channelled through these funds. They focus mainly on five areas: research and innovation, digital technologies, supporting the low-carbon economy, sustainable management of natural resources and supporting small businesses.

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Funding Biodiversity: ERDF

European Regional Development Fund

The European Regional Development Fund (ERDF) aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between regions. In 2021-2027 it will enable investments in a smarter, greener, more connected and more social Europe that is closer to its citizens. The ERDF finances programmes in shared responsibility between the European Commission and national and regional authorities in the Member States. The Member States' administrations choose which projects to finance and take responsibility for day-to-day management.

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Funding Biodiversity: ERDF

European Regional Development Fund

Within the European Regional Development Fund, there are two other funds: the Urban Innovation Action and the European Territorial Cooperation Interreg.

The Urban Innovation Action is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Within the Interreg Programme, the European Union promotes cooperation between regions and countries to help their economic and social development and tackle the obstacle of borders. It is organised under multiple strands, such as the Interreg A for cross-border cooperation, the Interreg B for transnational cooperation and the Interreg C for interregional cooperation.

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Funding Biodiversity: CF

Cohesion Fund

The Cohesion Fund (CF) supports investments in the field of environment and trans-European networks in the area of transport infrastructure. For the 2021-2027 period, it concerns Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. 37% of its overall financial allocation are expected to contribute to climate objectives.

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Funding Biodiversity: ESF+

European Social Fund +

The European Social Fund + (ESF+) invests in people, with a focus on improving employment and education opportunities across the European Union. The budget for the 2021-2027 period sums up to almost 100€ billion. It provides an important contribution to the EU's employment, social, education and skills policies, including structural reforms in these areas. Furthermore, it also aims to improve the situation of the most vulnerable people at risk of poverty.

Funding Biodiversity: EAFRD

European Agricultural Fund for Rural Development

The common agricultural policy supports the vibrancy and economic viability of rural areas. Rural development is the second pillar of the common agricultural policy. It contributes to the sustainable development of rural areas through fostering competitiveness, ensuring sustainable management of natural resources and climate action, and achieving a balanced territorial development of rural economies and communities. The European Agricultural Fund for Rural Development (EAFRD) amounts to €95.5 billion

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Funding Biodiversity: EMFAF

European Maritime, Fisheries and Aquaculture Fund

The European Maritime, Fisheries and Aquaculture Fund (EMFAF) help fisheries to adopt sustainable fishing practices and coastal communities to diversify their economies, improving quality of life along European coasts. It supports the EU common fisheries policy, the EU maritime policy and the EU agenda for international ocean governance. It provides support for developing innovative projects ensuring that aquatic and maritime resources are used sustainably. This leads to food security through the supply of seafood products, growth of a sustainable blue economy and healthy, safe and sustainably managed seas and oceans.

Funding Biodiversity: LIFE

EU's Funding Instrument for Environment and Climate Action

The LIFE Programme by CINEA is the EU's funding instrument for the environment and climate action. It is aimed at supporting projects in the fields of nature and biodiversity, circular economy and quality of life, Climate Change Mitigation and Adaptation, and clean energy transition. It supports applicants and provides information on awards, publications and project initiation.

The Nature and Biodiversity sub-programme supports projects aiming at the protection and restoration of Europe's nature and reversing biodiversity loss, therefore supporting the implementation of the EU Birds and Habitats directives.

The Grant Scheme for Biodiversity in the Outermost Regions and the Overseas Countries and Territories (BEST Initiative) is a voluntary scheme that aims to support the conservation of biodiversity by facilitating access to EU funds.

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Funding Biodiversity: InvestEU

InvestEU

The InvestEU fund combines thirteen centrally managed EU financial instruments and the European Fund for Strategic Investments into one instrument. It is a market-based and demand-driven instrument, with strong emphasis on EU policy priorities. It supports projects in the fields of sustainable infrastructure, research, innovation and digitalisation, small and medium-sized companies and social investment and skills.

Funding Biodiversity: Horizon Europe

Horizon Europe

Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies.
It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.

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Funding Biodiversity: Clean and Sustainable Ocean Programme

Clean and Sustainable Ocean Programme

The European Investment Bank's Clean and Sustainable Ocean Programme aims at tackling ocean pollution and protect marine ecosystems. This program is divided into two parts :

- The Blue Sustainable Ocean Strategy that aims to improve the health of oceans by providing long-term loans for sustainable coastal development, sustainable seafood production, green shipping, and blue biotechnologies.
- The Clean Oceans Initiative that aims to fight plastic waste in rivers and oceans by funding public and private projects related to the collection, treatment and recycling of waste, to the development of reusable plastic or to the improvement of wastewater collection system. As of February 2023, the initiative has reached 65% of its target, with EUR 2.6 billion invested.

European Investment Bank

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Technical Assistance for Biodiversity

- Copernicus Land Monitoring Service
- Biodiversity Information System for Europe
- European Nature Information System
- Knowledge Centre For Biodiversity
- Biodiversity Data Centre
- InvestEU Advisory Hub
- Green Assist
- Jaspers
- European Environment Information and Observation Network
- City Networks, such as Green City Accord, CitiesWithNature, RegionsWithNature and European Green Capital and Leaf Award
- TAIEX-EIR PEER 2 PEER
- City Biodiversity Index
- Natura 2000 Viewer

Find out more about Specific Technical Assistance

Green Deal
Going Local

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Specific Technical Assistance for Biodiversity

- ELTIS
- EU Pollinator Information Hive
- European Alien Species Information Network
- Forest Information System for Europe
- Regional to Local Large Carnivore Platforms
- Urban Greening Platform
- WISE Information System for Europe
- Zero Pollution Stakeholder Platform

Find out more about General Technical Assistance

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Going Local

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Technical Assistance for Biodiversity

Copernicus Land Monitoring Service

The Copernicus Land Monitoring Service provides accurate and up-to-date information about the Earth's land, oceans, and atmosphere through a network of satellites and ground-based sensors. This data can be used to monitor various aspects of the environment, including vegetation dynamics, land cover changes, and the impact of climate change. Such information is valuable for understanding ecosystems, assessing habitat conditions, and analyzing the state of biodiversity.

Technical Assistance for Biodiversity

Biodiversity Information System for Europe

The Biodiversity Information System for Europe is the source of data and information on biodiversity in Europe. It provides detailed information on protecting biodiversity, green infrastructure, biodiversity policy and data and other fields connected to challenges and the future of biodiversity.

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Technical Assistance for Biodiversity

European Nature Information System

The European Nature Information System (EUNIS), brings together European data from several databases and organisations on sites, species and habitats types. This tool made available by the European Environment Agency provide data that can be used for assistance to the Natura 2000 process and for coordination with the related EMERALD Network of the Bern Convention.

European Environment Agency

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Technical Assistance for Biodiversity

Knowledge Centre for Biodiversity

The Knowledge Centre for Biodiversity is a European Commission initiative on better knowledge management for policy-making on biodiversity. It provides tools that support the implementation of the EU Biodiversity Strategy by identifying and structuring relevant information.

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Technical Assistance for Biodiversity

Biodiversity Data Centre

The Biodiversity data centre (BDC), managed by the European Environment Agency, provides access to data and information on species, habitat types and sites of interest in Europe and to related products for biodiversity indicators and assessments. Priority is given to policy-relevant data and information for European and national institutions, professionals, researchers and the public.

European Environment Agency

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Technical Assistance for Biodiversity

InvestEU Advisory Hub

The InvestEU Advisory Hub complements the InvestEU Fund by supporting the identification, preparation and development of investment projects across the European Union. Managed by the European Commission and financed by EU budget, the InvestEU Advisory Hub connects project promoters and intermediaries with advisory partners, who work directly together to help projects reach the financing stage. The InvestEU Advisory Hub is a central entry point for project promoters and intermediaries seeking advisory support and technical assistance related to centrally managed EU investment funds.

Technical Assistance for Biodiversity

Green Advisory Service for Sustainable Investments Supports

The Green Advisory Service for Sustainable Investments Support (Green Assist) aims at building up a pipeline for green investment projects that have a high impact. These projects target sectors of the natural capital and circular economy, but also non-environmental sectors. Green Assist provides on demand, free, customized services that enable beneficiaries to prepare green investment projects.

GREEN ASSIST

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Technical Assistance for Biodiversity

Joint Assistance to Support Projects in European Regions

The Joint Assistance to Support Projects in European Regions (JASPERS) provides technical support in various fields such as transport, energy, biodiversity, information and communication technologies, urban development, etc. Its aim is to help regional authorities and recipients of EU funding to prepare and implement large-scale investment projects, ensuring their technical, economic and financial feasibility.

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Technical Assistance for Biodiversity

European Environment Information and Observation Network

The European Environment Information and Observation Network (EIONET) is a partnership network of the European Environment Agency (EEA) and its 38 member and cooperating countries. EEA and EIONET gather and develop data, knowledge, and advice to policy makers about Europe's environment. It also offers Climate Change Impact and Vulnerability assessments (CCIV) for further analysis.

Technical Assistance for Biodiversity

City Networks

Green City Accord is a movement of European mayors committed to making cities cleaner and healthier. Cities in the accord commit to address five areas of environmental management: air, water, nature and biodiversity, circular economy and waste and noise.

European Green Capital Award and European Green Leaf Award are annual award that recognize and reward local efforts to improve the environment.

CitiesWithNature and RegionsWithNature are platforms to engage and commit LRAs to showcase their efforts and recognize the value of nature in cities and regions. The platforms support 295 cities and regions from 72 countries to enhance ecosystem restoration, biodiversity conservation and nature-based solutions.

EUROPEAN GREEN CAPITAL
An initiative of the European Commission

EUROPEAN GREEN LEAF
An initiative of the European Commission

CitiesWithNature

RegionsWithNature

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Technical Assistance for Biodiversity

TAIEX-EIR PEER 2 PEER

The TAIEX-EIR PEER 2 PEER is an EU technical assistance and policy support instrument. It is designed to promote quality implementation of European environmental policy in EU Member States through peer-to-peer exchanges of expertise. The TAIEX-EIR PEER 2 PEER expert can address all issues covered by the EIR country report such as nature protection, biodiversity, green infrastructure and soil protection, improvement of air and water quality but also address causes of implementation gap such as administrative capacities, coordination or skills.

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Technical Assistance for Biodiversity

City Biodiversity Index

The City Biodiversity Index (CBI) is a self-assessment tool for cities to evaluate and monitor the progress of their biodiversity conservation efforts against their own individual baselines. Based on 28 indicators, this tool has been promoted by the CitiesWithNature Network.

CitiesWithNature

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Technical Assistance for Biodiversity

Natura 2000 Viewer

The Natura 2000 Viewer is an online mapping tool that allows users to visualize sites in the Natura 2000 network. It provides detailed information on Natura 2000 sites, such as their location, size, ecological characteristics and the plant and animal species they support. It also provides access to additional information on the regulations and conservation measures in place for each site.

Technical Assistance for Biodiversity

Forest Information System for Europe

The Forest Information System for Europe is a platform that aims to share information with the forest community on Europe's forest environment, its state and development. FISE aims to provide policymakers, researchers, and the general public with reliable and up-to-date information about Europe's forests. It collects and integrates data from multiple sources, including national forest inventories, satellite imagery, and other relevant datasets. This information is then analyzed and presented through various tools, reports, and interactive maps, allowing users to explore and understand the state and dynamics of European forests. Overall, the Forest Information System for Europe plays a vital role in promoting sustainable forest management, supporting evidence-based decision-making, and fostering collaboration and knowledge exchange among European countries.

Forest Information System for Europe

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Technical Assistance for Biodiversity

Water Information System for Europe

The Water Information System for Europe is a partnership between the European Commission and the European Environment Agency. It was launched in 2007 providing a web-portal entry to water related information ranging from inland waters to marine. For users from EU institutions or other environmental national, regional and local administrations WISE provides input to thematic assessments in the context of EU water related policies. For water professionals and scientists WISE facilitates access to reference documents and thematic data, which can be downloaded for further analyses. For the general public, including private or public entities, WISE illustrates a wide span of water related information through interactive maps, charts and indicators.

Technical Assistance for Biodiversity

Urban Greening Platform

The Urban Greening Platform aims to provide guidance and knowledge to support towns and cities in enhancing and restoring their urban nature and biodiversity. Developed by the European Commission in collaboration with Eurocities and ICLEI, this platform stresses the importance of the collaborative process of developing an urban greening plan.

European Commission

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Technical Assistance for Biodiversity

EU Pollinator Information Hive

The EU Pollinator Information Hive is a platform that showcases pollinator projects and provides information and assistance in setting up projects. The platform also provides training in pollinator-related issues and lists events on the subject.

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Technical Assistance for Biodiversity

European Alien Species Information Network

The European Alien Species Information Network (EASIN) is an initiative of the Joint Research Centre of the European Commission that aims to facilitate the exploration of existing alien species information. This tool allow policy makers and scientists to better tackle biological invasions.

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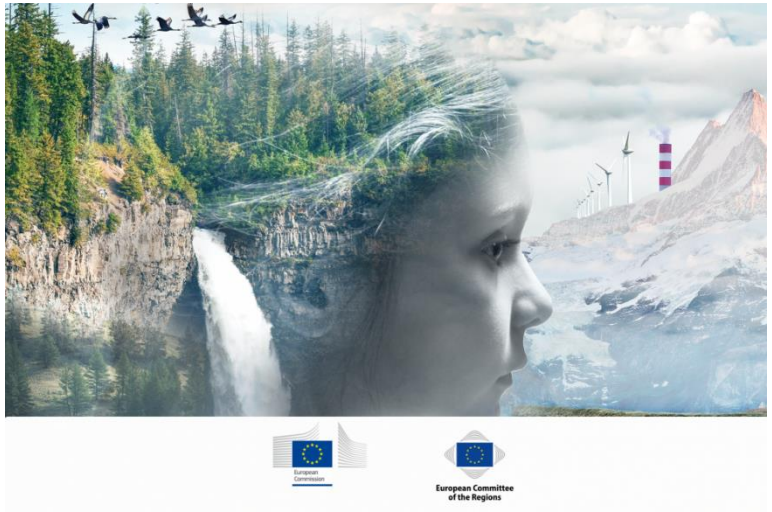
Technical Assistance for Biodiversity

Zero Pollution Stakeholder Platform

The Zero Pollution Stakeholder Platform is a platform launched by the European Commission and the Committee of the Regions that aims to achieve the zero pollution ambition. It brings together stakeholders and experts in order to promote collaboration and to foster integrated solutions. It helps local and regional authorities to deploy concrete measures to reduce pollution and also develop and share good practices on cross-cutting topics.



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Technical Assistance for Biodiversity

European Local Transport Information Service

The European Local Transport Information Service (ELTIS) is an online platform providing information on sustainable urban transport in Europe. Its main objective is to promote and support environmentally-friendly, efficient and inclusive urban mobility solutions. ELTIS offers a variety of resources and services to policy-makers, transport professionals, researchers and anyone interested in sustainable urban mobility issues. It facilitates the sharing of knowledge, the dissemination of best practices and the promotion of innovative urban mobility policies and solutions.

Eltis

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Technical Assistance for Biodiversity

EU Regional to local large carnivore platforms

The EU Regional to local large carnivore platforms brings together local stakeholders to address conflicts related to large carnivore conservation and management. This approach helps to increase awareness about solutions and good practice and to increase the range of options considered. It permits a bottom-up approach where collaboration at the local scale can inform decision making at the national scale.

European Commission

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