

Climate-ADAPT use cases

Layout: EEA

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Climate-ADAPT use case 1 — EU Directorate-General for Research and Innovation

Using Climate-ADAPT to find the latest scientific knowledge on adaptation for agenda-setting for EU research and innovation funding

Climate-ADAPT features used: database; EU policy (funding of adaptation); countries, regions (transnational) and cities pages (interactive Map Viewer); knowledge (Case Study Search Tool)

Sector: adaptation in general

Governance level: EU

Biogeographical region or macro-region: pan-European

Policy stage: EU Research Framework Programme development and implementation

The challenge

The Directorate-General for Research and Innovation (DG RTD) develops an EU research and innovation (R&I) agenda on climate change adaptation, which is supported by various actions and initiatives (such as Nature-based Solutions and Innovating with Cities) to improve the adaptation knowledge base, provide strategic recommendations on the scoping of the EU R&I framework programmes and mainstream research outputs into relevant EU policies and international agreements promoting adaptation. In the context of developing and promoting this agenda, DG RTD acts both as a user and as a provider of information from EU-funded research projects, assessing their contribution to the knowledge base and the value they add to the development of adaptation strategies and plans. In addition, it highlights remaining knowledge gaps and future challenges that research should address. It is also essential for DG RTD to

stay informed about the actions and initiatives on adaptation promoted by Member States, learning from good practices as well as from national and regional contexts. Finally, synergies with other environmental and climate policies need to be identified to develop the R&I agenda in a complementary way.

The approach

One important information source for developing this R&I agenda is Climate-ADAPT, as it is supported by the European scientific and policymaking community and provides access to a wide range of resources.

Mapping of R&I projects on adaptation is currently under development and will be finalised in early 2018 to contribute to the development of future EU research framework programmes and clustering of projects with similar objectives. The information provided by Climate-ADAPT on the 'EU funding of adaptation' ⁽¹⁾ page allowed DG RTD to identify the range of funding instruments beyond Horizon 2020 that provide significant support to Member States, regions and cities for investing in programmes and projects on adaptation (e.g. LIFE, the European Regional Development Fund (ERDF) and the Cohesion Fund). This was a useful starting point for developing a comprehensive mapping of research projects and creating synergies between those sharing similar research aims, strategies and methodologies.

The information on the transnational, national and sub-national adaptation research programmes presented on the individual transnational regions ⁽²⁾ pages and the individual country pages ⁽³⁾ allowed a better appreciation of the progress of adaptation plans and strategies in the Member States.

To identify knowledge gaps and future challenges, DG RTD uses several knowledge sources, including ⁽¹⁾ the Climate-ADAPT database ⁽⁴⁾ to access accurate and recent adaptation knowledge — publications such

⁽¹⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/funding>

⁽²⁾ <http://climate-adapt.eea.europa.eu/countries-regions/transnational-regions>






⁽³⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽⁴⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

as the EEA assessment reports are easily accessible; (2) case studies presenting good practices from EEA member countries, which can highlight innovations, as well as the implementation barriers (and enablers) encountered by local decision-makers; and (3) the Case Study Search Tool ⁽⁵⁾ to browse examples of implemented actions. In the context of developing a coherent EU R&I agenda, such bottom-up information is deemed essential for identifying which policy decisions and financing instruments are successful and which types of obstacles may prevent the

implementation of adaptation/mitigation actions at local level. Finally, (4) assessing the actual impact and added value of R&I projects by using the information highlighted on the research projects pages ⁽⁶⁾ can contribute to efforts to focus future research on specific environmental and climate policy priorities and areas for action. The R&I agenda, which builds on this new knowledge, provides valuable input into Priority 2, Action 4, of the EU Adaptation Strategy ('Better-informed decision-making — knowledge gap strategy'), which is currently under evaluation.



Figure A1 Contribution of EU R&I climate change research to Action 4 of the EU Adaptation Strategy

Projects	Research contributions	Knowledge gaps
	Novel assessment framework that incorporates risk and uncertainty into analysis of the costs and benefits of transition pathways	2. Regional and local-level risk assessments
	Decision support toolbox that helps policy makers better understand policy-related uncertainties and risks, and informs robust policy design	3. Models and tools to support decision making
	The Climate Policy Database collects information on implemented policies on climate change mitigation from countries worldwide	3. Models and tools to support decision making
	Empirical assessment of the effectiveness , costs, benefits, and economic values of mitigation/adaptation options	4. Monitoring/Evaluating past adaptation efforts
	Assessment of the current and future risks of a specific climate hazard to a single Critical Infrastructure (or a CI network)	1. Information on Damage/Adaptation costs
	Step by step guide on how identify climate change adaptation or risk mitigation options and prioritize them using cost-benefit analyses	3. Models and tools to support decision making
	Win-Win strategies to overcoming economic and institutional barriers in the fields of coastal zone flood risk management, urban transformations and energy poverty eradication and resilience	1. Information on Damage/Adaptation costs
		3. Models and tools to support decision making
	Standardisation of adaptation tools and approaches to allow cities to share and compare knowledge to develop their resilience capabilities	3. Models and tools to support decision making
	Catalogue of adaptation options & typology of cities' key aspects related to adaptation and survey/evaluation of existing adaptation measures	4. Monitoring/Evaluating past adaptation efforts
	Resilience Maturity Model – assesses current maturity stage and identifies future resilience demands and capacities to guide cities	3. Models and tools to support decision making

⁽⁵⁾ <http://climate-adapt.eea.europa.eu/knowledge/tools/sat>

⁽⁶⁾ <http://climate-adapt.eea.europa.eu/knowledge/adaptation-information/research-projects>

Figure A1 (cont.) Contribution of EU R&I climate change research to Action 4 of the EU Adaptation Strategy

Projects	Research contributions	Knowledge gaps
	Testing and Implementation Framework (TIF) to assess: - the maturity of innovative technologies for Climate Adaptation - the social acceptability of Climate Adaptation Innovations	3. Models and tools to support decision making
	Market Analysis Framework (MAF+) is a web-based toolbox designed to help innovators bring their solutions to the market	
	Multi-scale, multi-sectorial and multi-hazard vulnerability assessments for Urban Services Operation	2. Regional and local-level risk assessments
	Development of performance standards for adaptation options Testing of innovative adaptation options, including nature-based solutions	4. Monitoring/Evaluating past adaptation efforts
	Better understanding of key processes in European Earth System Models to derive credible and trustworthy climate projections beyond 2100	3. Models and tools to support decision making
	Improved impact assessment and regional downscaling will support new greenhouse gas emission scenarios for European decision-making	2. Regional and local-level risk assessments
	Boost the development of efficient Climate Services in Europe Facilitates climate smart public and private decision-making by supporting research for developing better tools, methods and standards on how to produce, transfer, communicate and use reliable climate information	3. Models and tools to support decision making
	New generation of advanced high-resolution global climate models to simulate and predict regional climate	3. Models and tools to support decision making
	Simulations are used for climate risk assessments in key sectors to provide key information for policy makers and governments	2. Regional and local-level risk assessments

Note: The figure shows how EU research projects on adaptation funded through the 2014-2018 Horizon 2020 programme are contributing to Action 4 of the EU Adaptation Strategy (i.e. by addressing gaps in knowledge).

Source: European Commission, 2017.

Future plans

To further support the mapping of projects and future agenda-setting for EU R&I on adaptation, DG RTD would appreciate the following additional or improved Climate-ADAPT features:

- Easy access to adaptation information is a key interest of DG RTD; in addition to the dissemination of relevant Horizon 2020 calls through the European Climate Adaptation Newsletter ⁽⁷⁾, the promotion of adaptation-relevant research calls from LIFE,
- Interreg, the European Investment Bank and other financing instruments in a user-friendly way directly on the 'EU funding of adaptation' page (e.g. by including the quick reference guide from the Covenant of Mayors Financing opportunities for local climate and energy actions (2014-2020)) ⁽⁸⁾ would enhance synergies and visibility to the larger stakeholder community.
- Complementing the overview on and quick access to R&I adaptation projects on Climate-ADAPT with summary information about overall progress

⁽⁷⁾ <http://climate-adapt.eea.europa.eu/newsletter>

⁽⁸⁾ https://www.covenantofmayors.eu/IMG/pdf/Quick_Reference_Guide_-_Financing_Opportunities_updated2016.pdf

on closing adaptation knowledge gaps through EU R&I projects would increase awareness among stakeholders of their added value for adaptation.

- Linkages and enhanced coordination with other sectoral platforms (e.g. the Disaster Risk Management Knowledge Centre (DRMKC)) as well as greater visibility of the results of ecosystem-based adaptation research through stronger linkages with project websites and relevant platforms such as Oppla ⁽⁹⁾, the Biodiversity Information System for Europe (BISE) ⁽¹⁰⁾, Natural Water Retention Measures platform (NWRM) ⁽¹¹⁾, ThinkNature ⁽¹²⁾ and the Partnership for Environment and Disaster Risk Reduction (PEDRR) ⁽¹³⁾ would be very valuable to promote key topics of EU-funded research such as Nature-based Solutions. Furthermore, European

Commission activities presenting information on ecosystem-based solutions and the interoperability of related platforms should be considered in the further development of Climate-ADAPT. For example, Climate-ADAPT could be a partner in the clustering exercise of adaptation-relevant Horizon 2020 projects on nature-based solutions for climate and water resilience (UNALAB, Connecting, GREEN GROWTH and URBAN GREEN UP) to improve data management and dissemination within EU evidence-based platforms.

- Announcing topic-specific webinars (i.e. the webinar series from the Covenant of Mayors) and other relevant R&I events on Climate-ADAPT would further support cooperation.

⁽⁹⁾ <http://www.oppla.eu>

⁽¹⁰⁾ <http://biodiversity.europa.eu>

⁽¹¹⁾ <http://nwrn.eu>

⁽¹²⁾ <https://www.think-nature.eu>

⁽¹³⁾ <http://pedrr.org>

Climate-ADAPT use case 2 — the Carpathians

Using country information from Climate-ADAPT to develop a Carpathian transnational region page and to feed into international adaptation policies

Climate-ADAPT features used: countries/regions/cities (country pages Map Viewer and individual pages)

Sector: adaptation in general

Governance level: transnational

Biogeographical region or macro-region: Continental/Alpine/Pannonian

Policy stage: policy development

The challenge

The Carpathian Mountains are the second longest mountain system in Europe, covering an area of about 210 000 km² shared by seven countries (the Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia and Ukraine), five of which are EU Member States. Land abandonment, habitat conversion, fragmentation, deforestation, unsustainable forestry and agricultural practices, and pollution are resulting in losses of landscape and species diversity. Climate change, causing changes in precipitation patterns, snow cover and temperature, intensifies these processes. At the Fourth Conference of the Parties to the Carpathian Convention in 2014, the Strategic agenda on adaptation to climate change in the Carpathian region ⁽¹⁴⁾ was adopted. By adopting the strategic agenda, the Conference called upon the contracting parties, local and regional authorities and other stakeholders of the Carpathian region to formulate policies and design strategies to adapt to the impacts of climate change.

The Secretariat of the Carpathian Convention ⁽¹⁵⁾, established in May 2004, hosted at the United Nations Environment Programme, supports the Convention process, including the Working Group on Climate Change Adaptation ⁽¹⁶⁾. One of the key actions of the working group is to provide a common platform for the Carpathian region to enable information-sharing and mutual learning among the Carpathian countries, as well as cooperation with other transnational regions in Europe. Furthermore, the working group supports the development of an 'Outlook on climate change adaptation in the Carpathian Mountains', which is planned to be launched at the Fifth Conference of the Parties to the Carpathian Convention in October 2017. The outlook is part of the Mountain Adaptation Outlook series, launched in Paris at the United Nations Framework Convention on Climate Change (UNFCCC) COP 21 in 2015; these are UN-led policy assessments at supra-national level on incorporating climate change adaptation into national development policies and plans in selected mountain regions.

The approach

By providing concise and comparable country information based on reporting under the Monitoring Mechanism Regulation (Regulation (EU) No 525/2013, the MMR), Climate-ADAPT adds value for adaptation at transnational levels. The Secretariat of the Carpathian Convention used the content of the individual Climate-ADAPT country pages of the five Carpathian countries in the EU to take stock of existing policies and programmes to provide an assessment of climate change impacts, vulnerability and adaptation at transnational level (the Carpathian Outlook) for the entire area of the Carpathian Convention. The drop-down menu at the top of the interactive Map Viewer on the 'Country information' introduction page ⁽¹⁷⁾ allowed the information for each country to be found quickly. The overview of the national

⁽¹⁴⁾ http://www.carpathianconvention.org/tl_files/carpathiancon/Downloads/03%20Meetings%20and%20Events/COP/2014_COP4_Mikulov/Follow%20Up/DOC12_Climate%20Change%20Strategic%20Agenda_FINAL_26Sep.pdf

⁽¹⁵⁾ <http://www.carpathianconvention.org/secretariat.html>

⁽¹⁶⁾ <http://www.carpathianconvention.org/wg-climate-change.html>

⁽¹⁷⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

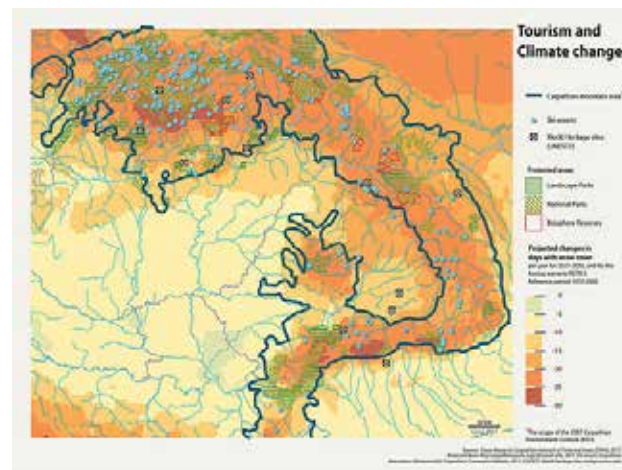
adaptation policies and links to key policy documents on the summary page ⁽¹⁸⁾ for the selected country provided the information in one place. The Secretariat valued the content that has been approved at national government level based on reporting under the MMR as trusted information that is updated annually by the EEA member countries on a voluntary basis. Because of the fact sheet character of the pages, the information presented is comparable across all countries covered by the Carpathian Convention. The 'Download page as PDF' button at the bottom of each country page facilitated easy export of the content for further use in the assessment document.

Currently, general information on adaptation in the Carpathian region is available on the Climate-ADAPT 'Central Europe' page ⁽¹⁹⁾. To provide more detailed information about adaptation in the Carpathian Mountains on Climate-ADAPT, a new page is being developed by the Secretariat using the same structure as the 'Baltic Sea Region' page ⁽²⁰⁾. The Secretariat collects additional and more mountain-specific information on climate change, impacts, vulnerabilities and existing adaptation action. The descriptive country information provided on the Climate-ADAPT country pages is concise and was therefore used as the basic information that was sent to the countries in a pre-filled questionnaire.

Future plans

Because of the lack of publications in English available online, the 'Transnational regions' page on the Carpathian Mountains does not yet include many links to further information. To further support cooperation at transnational level beyond the funding of research projects, the Secretariat plans to regularly update the page and to provide more links to key documents and further sources of information at transnational, national and sub-national levels on the new Carpathian Mountains page.

Figure A2 Projected changes in snow cover in the Carpathian Mountains (top) and a photograph showing the lack of snow in a ski resort in the Carpathian region, Stara Planina in Serbia (bottom)



Source: Top image © Carpathian Environmental Outlook; Bottom image © Eleonora Musco.

⁽¹⁸⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries/hungary>

⁽¹⁹⁾ <http://climate-adapt.eea.europa.eu/countries-regions/transnational-regions/central-europe>

⁽²⁰⁾ <http://climate-adapt.eea.europa.eu/countries-regions/transnational-regions/baltic-sea-region/adaptation/general>

Climate-ADAPT use case 3 — Bulgaria

Encouraging Bulgarian stakeholders to use the Bulgarian country page and further resources on Climate-ADAPT to inform the development of the Bulgarian National Adaptation Strategy

Climate-ADAPT features used: database (case studies); EU policy; countries/regions/cities (country pages)

Sector: adaptation in general

Governance level: national

Biogeographical region:
Continental/Black Sea/Mediterranean

Macro-region: Danube

Policy stage: policy development/implementation

The challenge

Based on the commitment in the Climate Change Mitigation Act, the Bulgarian government is committed to developing a national adaptation strategy. The Ministry of Environment and Water (MOEW) is coordinating the development of the strategy following a step-wise approach, guided by the EU Adaptation Strategy. To ensure a methodological basis, the MOEW published a framework document in 2014, National climate change risk and vulnerability assessment for the sectors of the Bulgarian economy. Supported by funding from the International Bank for Reconstruction and Development, a package of strategic documents, a set of risk and vulnerability assessments and a number of other documents with sectoral measures and economic analyses will be developed for the medium-term, up to 2030.

The approach

A National Coordination Council on Climate Change led by the MOEW and involving representatives of

all ministries and agencies is fostering the strategy development. The MOEW website serves as an outreach platform; the most important documents related to adaptation are published there, as well as ecological advice and various campaigns and competitions. However, no dedicated national knowledge platform on adaptation is available yet. To align the national adaptation strategy with the EU Adaptation Strategy, the MOEW used Climate-ADAPT, which has all the relevant EU information in one place, as a starting point for clarifying what the Bulgarian strategy might look like and how to proceed with the process. The EU policy pages were regularly consulted to keep track of recent developments in EU adaptation policy, for example in the sectors. The individual pages of other EU countries, accessible using the thematic maps in the interactive Map Viewer, were used to quickly access individual pages from other European countries, which were perceived as trusted information, and to learn from their experiences of strategy development and implementation. Many documents are provided in national languages on the country pages, which limits access to the countries' information sources linked to on Climate-ADAPT. The MOEW found the Climate-ADAPT case studies particularly helpful; it used them to present illustrative examples of already implemented adaptation measures at meetings and conferences that took place during the development of the national adaptation strategy.

Since Climate-ADAPT is a very complex platform, the webinars carried out by the EEA on Climate-ADAPT from April 2015 and the additional guidance documents provided help to users to become more familiar with the platform's structure and content. As well as using Climate-ADAPT features as reference information in multiple ways, Bulgaria benefits particularly from the added value of Climate-ADAPT, since it is a country without a comprehensive national adaptation platform. Actors involved in the adaptation policy process in Bulgaria were encouraged by using the Bulgaria country page, since the information available there is regularly updated by the MOEW and provides, along with the MOEW's website, the most comprehensive overview of adaptation in Bulgaria available.

Conference called upon the contracting parties, local and regional authorities and other stakeholders of the Carpathian region to formulate policies and design strategies to adapt to the impacts of climate change.

Future plans

The MOEW plans to adopt the national adaptation strategy and develop a national adaptation policy. While proceeding with the policy process, the MOEW would like to publish national case studies on Climate-ADAPT. There are already three Bulgarian case studies available on Climate-ADAPT ('Flood protection Smolyan', 'Lower Danube green corridor' and 'Preparing a market for adaptation solutions — Climabiz'). The MOEW will seek specific cooperation with Climate-ADAPT to present Bulgarian case studies at European level in a complementary way.

Figure A3 **One of the Rila lakes in the Rila Mountains**



Source: © Pixabay.

Climate-ADAPT use case 4 — Italy

Understanding the state of the art of EU countries' impact indicators to determine national indicators for climate change impacts in Italy

Climate-ADAPT features used: countries/regions/cities (country pages)

Sector: adaptation in general

Governance level: national

Biogeographical region: Mediterranean

Macro-region: southern Europe

Policy stage: monitoring and evaluation

The challenge

Among the key points emerging from the Italian National Adaptation Strategy adopted in 2015 was the lack of a quantitative knowledge base on current and projected climate change impacts. To fill this knowledge gap, the National System for Environmental Protection, consisting of the Italian Institute for Environmental Protection and Research (ISPRA) and the Regional Environmental Protection Agencies, was considered to be the most suitable institutional body. For this purpose, ISPRA, in collaboration with the Regional Environmental Protection Agencies, launched an

initiative aiming to define a national climate change impact indicators framework as a tool to support the development of adaptation strategies and plans.

The approach

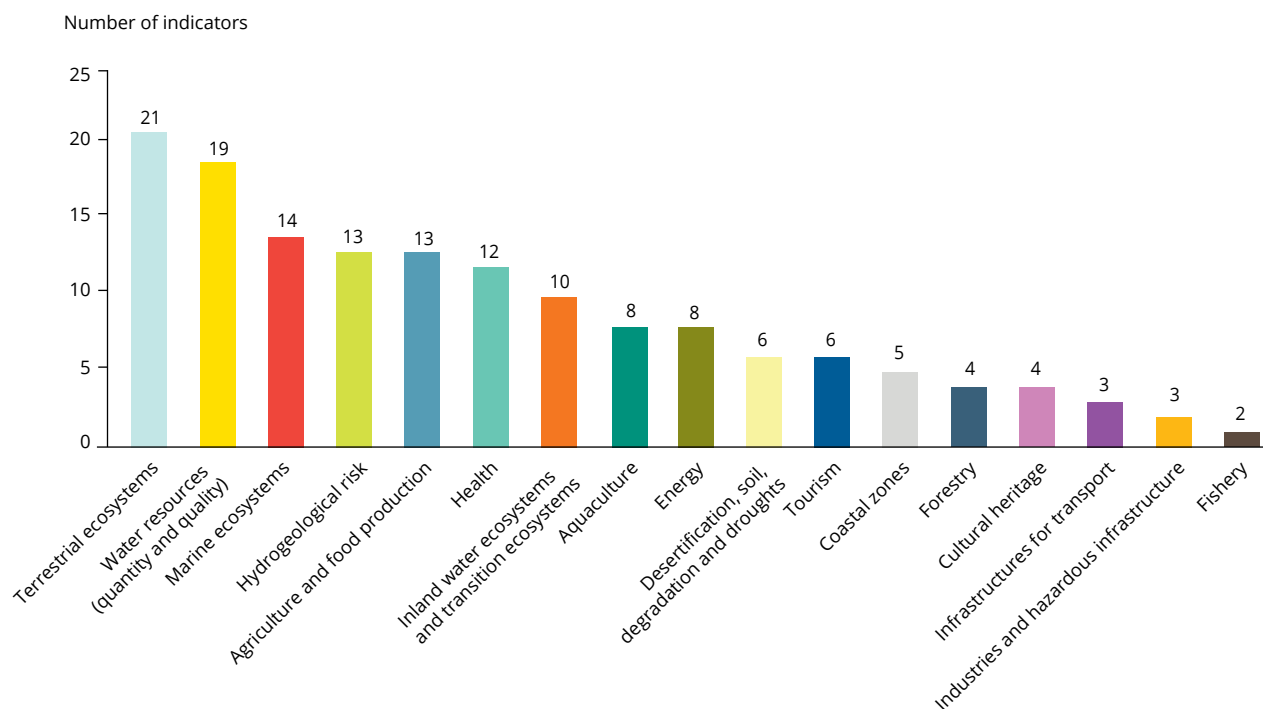
To take stock of existing experiences on climate change impacts and vulnerability indicators among the EU Member States, ISPRA developed an overview based mainly on the information provided within the country pages⁽²¹⁾ of Climate-ADAPT, with a particular focus on the contents of the 'Assessments' and 'Summary' pages. The information provided, as well as the documents listed on the individual country pages, were analysed and were compared with the aim of gaining inspiration from other countries already working on climate change impact indicators. In particular, information and documents from Belgium, France, Germany, Spain, Switzerland and the United Kingdom were analysed, and the most common and frequently used climate change impact indicators identified as references for the development of the Italian indicator system.

The selection of countries was mainly based on similarities in vulnerability features, as well as the availability of documents in English and/or French.

By using descriptive country information presented at EU level on Climate-ADAPT, ISPRA was able to take advantage of existing methodologies to develop evidence documents that will feed into the adaptation policy process in Italy.

⁽²¹⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

Figure A4 A first portfolio of potential climate change indicators for Italy



Source: Francesca Giordano (ISPRA, Italy).

Future plans

The future work of ISPRA and the Regional Environmental Protection Agencies over the next two years will focus on the definition of criteria for the selection of the best climate change impact indicators at national level and the best methodologies with which to study them. The purpose is to build a solid knowledge base on the current and projected impacts of climate change in Italy. ISPRA will use Climate-ADAPT to obtain quickly available and up-to-date information

on the approaches used by other Member States and select similar/comparable methods and tools when feasible. In this context, it would be helpful if the portlet of the thematic maps available on the introductory country pages of Climate-ADAPT, which use quick links to the information available on each topic for each country, could be enriched with more thematic maps such as those showing monitoring tools and indicators.

Climate-ADAPT use case 5 — Poland

Informing urban adaptation plans for large cities in Poland using Climate-ADAPT

Climate-ADAPT features used: database (case studies); countries/regions/cities (country pages Map Viewer and individual pages); knowledge (Urban Adaptation Support Tool/Case Study Search Tool)

Sector: adaptation in general

Governance level: national

Biogeographical region: Continental

Macro-region: Central Europe/Baltic Sea

Policy stage: policy development/implementation

The challenge

Cities in Poland are facing various impacts of climate change, including river flooding and heat waves. One of the key actions of the Polish National Strategy for Adaptation to Climate Change (NAS 2020), adopted in October 2013, was therefore to foster urban adaptation in Poland. Since a national adaptation action plan is not envisaged by the Polish government, the Ministry of the Environment (*Ministerstwo Środowiska*), which is in charge of implementing adaptation policy at national level — using a policy of 'soft coordination' — will encourage regional and local authorities to prepare action plans at regional or local level as soon as regional or local strategies are adopted.

The approach

As part of the implementation of the NAS 2020 process, the Ministry of the Environment has initiated and is currently coordinating the project 'Development of urban adaptation plans for cities with more than 100 000 inhabitants in Poland'. The Ministry of the Environment is conducting the project and has provided funds for its implementation

within the 2014-2020 Operational Programme Infrastructure and Environment. Urban adaptation plans were developed for [44 cities](#) in a step-wise approach from 2014 to 2017. All the plans follow the same methodology and have been developed by a consortium composed of the National Research Institute (leader), the Institute of Environmental Protection, the Institute of Meteorology and Water Management, the Institute for Ecology of Industrial Areas, and a consulting and engineering company (ARCADIS), as well as a subcontractor responsible for project communication (Deloitte Polska). All the work is carried out in close cooperation with the city administrations and under the supervision of the Ministry of the Environment. Over 30 % of the Polish population lives in the cities covered by the project.

The information provided on Climate-ADAPT was used to inform this policy process and to support participatory processes at national level in Poland. Climate-ADAPT information on national adaptation policies, as well as case studies from other European countries, supported the national adaptation policy by allowing learning from other useful approaches, and Climate-ADAPT tools were used to gain reference information. Climate-ADAPT features were valued by the Ministry of the Environment as one of the most important sources of information in the whole process, from the development of the national policy approach to the preparation of the specific urban adaptation guidelines.

The information provided on the Climate-ADAPT [country pages](#) was analysed for similarities, best practices and lessons learned on developing national adaptation policies and plans, and was used to compare the progress of the policy implementation in the various countries at national level. The export to PDF functionality and the possibility of creating images from the [Map Viewer](#) (using the 'Save as...' function, which could be accessed by right clicking) allowed easy export of the information for further use in documents and presentations that fed into the policy process. Climate-ADAPT case studies from various European countries (e.g. [Kruibeke, Belgium](#); [Montpellier, France](#))

were presented in meetings and workshops with stakeholders to illustrate implemented adaptation actions. The interactive Map Viewer available in the [Case Study Search Tool](#) was used to screen the case studies available on Climate-ADAPT and to select relevant ones in terms of impacts, adaptation sectors and European regions covered.

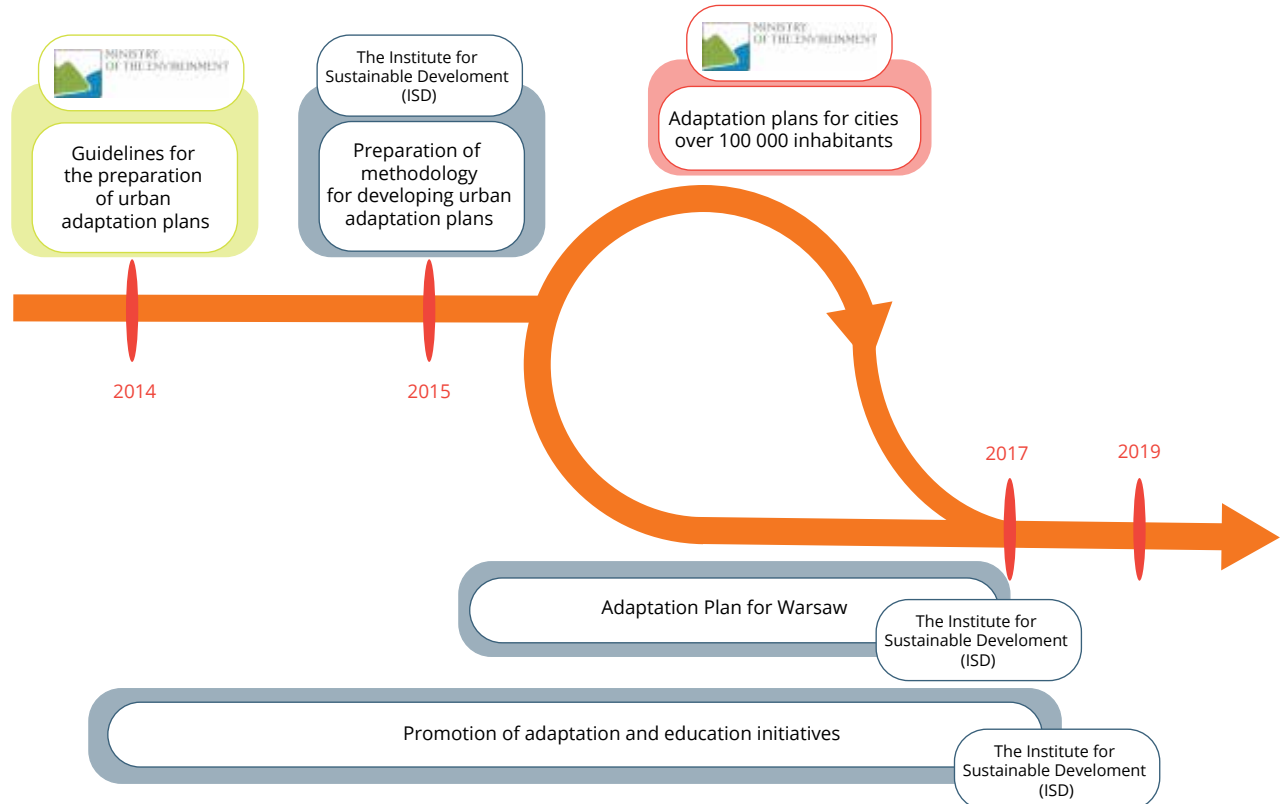
The [Adaptation Support Tool](#) as well as the more city-specific [Urban Adaptation Support Tool](#) (step 0-0) were extremely helpful in developing the Polish guidelines for urban adaptation strategy development, which were adapted to the specific situation in Poland. These guidelines, available on the national adaptation platform [Klimada](#), provide a shared framework and a checklist for the development of urban adaptation plans and are applicable to any local authority in Poland, including those not within the scope of the MPA (*Miejskie Plany Adaptacji*) project (Development of Urban Adaptation Plans for cities with more than 100 000 inhabitants in Poland).

The current plans for policy development on adaptation include the integration of adaptation to climate change into the national strategic document on environmental policies, continued work on urban adaptation in other Polish cities and the inclusion of adaptation issues in the framework of European Structural and Investment Funds (ESIF) programming, as well as the development of new adaptation initiatives for rural areas and agriculture under the Responsible Development Strategy ⁽²²⁾.

The overview information on adaptation in European countries, representing adaptation at Member State level, is crucial from the perspective of the Polish Ministry of the Environment. A synthesis of the methods and results of the vulnerability assessments of all the countries, available in English, would add value, making it possible to easily compare and combine the outcomes for the purpose of further developing vulnerability assessments in Poland.

Future plans

Figure A5 Development of urban adaptation plans in Poland



Source: Marcin Gradzki.

⁽²²⁾ <https://www.premier.gov.pl/mobile/en/news/news/the-government-adopted-the-responsible-development-strategy.html> and https://www.mr.gov.pl/media/22166/ResponsibleDevelopment_Strategy_CapitalAccumulationProgramme.pdf

Climate-ADAPT use case 6 — Spain

Spain is inspired by Climate-ADAPT case studies to create its own adaptation good practice examples

Climate-ADAPT features used: database; knowledge (Case Study Search Tool and criteria); share your information

Sector: adaptation in general

Governance level: national

Biogeographical region or macro-region: Mediterranean

Policy stage: policy implementation

The challenge

In the Spanish National Adaptation Strategy, adopted in 2006, case studies are valued as a very useful way of illustrating adaptation policy and action and promoting adaptation in provinces and cities as well as among different kinds of stakeholders.

In 2013, the Spanish Climate Change Office (*Oficina Española de Cambio Climático* (OECC)), together with the Biodiversity Foundation (Spanish Ministry of Agriculture and Fisheries, Food and Environment), launched the national adaptation platform, AdapteCCa, through which adaptation action is promoted at national and regional levels. The LIFE SHARA project, which began at the end of 2016, aims to further develop the platform in several areas, one of which is identifying and publishing good practice examples through the development of a common case study fiche and clear selection criteria.

The approach

Inspired by discussions in the 2014 EEA workshop on adaptation platforms in Europe and in the 2015 webinar on adaptation platforms, which was explicitly dedicated to cooperation on case studies, the OECC

started to revise the Spanish case studies published on Climate-ADAPT through the [Case Study Search Tool](#). Case studies on Climate-ADAPT are mainly developed based on the results of EU-funded research projects (the 7th Framework Programme or Horizon 2020) or LIFE projects. The seven case studies identified using the tool served as the starting point for identifying cases that could be used to promote action at national level in Spain.

To develop a systematic approach to the selection of national case studies for Spain, [Selection criteria for Climate-ADAPT case studies](#) was used to determine how Climate-ADAPT defined its policy on identifying European-level cases. Through the [LIFE SHARA Project](#) this methodology was revised and adapted to Spain's specific national circumstances. The OECC is now applying the national selection criteria to identify a list of 30 national case studies.

As the next step, within the LIFE SHARA project, Spanish colleagues used the case study metadata sheet available on Climate-ADAPT as an inspiration for the Spanish case study description sheet and tested, using real cases, if the metadata categories were fit for the specific purpose of identifying Spanish good practice examples. A final case study template was drawn up to be used for all Spanish case studies, with a description. This set of information will be not only included in AdapteCCa but also monitored regarding visits, downloads and surveys to evaluate its usefulness.

The use of the Climate-ADAPT features mentioned above allowed the OECC to start developing evidence documents to feed into the policy- and decision-making processes on adaptation at national and regional levels.

Future plans

The OECC seeks to establish strong links between AdapteCCa and Climate-ADAPT to enable them to work complementarily and to use synergies by efficiently exchanging information on case studies and other potential areas of interest. Common filter criteria will be selected to develop the automatic exchange of

Figure A6 Screenshot of AdapteCCa home page



Source: <http://www.adaptecca.es>

information and synergies in the evaluation of case studies and the further development of the case study concept in the future. The strong link between adaptation to climate change and biodiversity on

the Spanish platform may be particularly interesting in relation to the promotion of ecosystem-based approaches at European level.

Climate-ADAPT use case 7 — Turkey

Using the Adaptation Support Tool as a comprehensive and systematic checklist for developing a project proposal to revise the National Adaptation Strategy and Action Plan of Turkey

Climate-ADAPT features used: database; EU policy; knowledge (Adaptation Support Tool)

Sector: adaptation in general

Governance level: national

Biogeographical region: Anatolian, Mediterranean, Alpine

Macro-region: not applicable

Policy stage: policy development and planning

The challenge

The Ministry of Environment and Urbanisation (MEU) is the national focal point of Turkey to the UNFCCC, and it coordinates activities on combating climate change at national and international levels. The MEU designed a project proposal within the EU Instrument for Pre-accession Assistance (IPA II, 2014-2016) in coordination with relevant institutions to revise the current National Adaptation Strategy and Action Plan of Turkey (NASAP) (2011-2023), adopted in 2011, on the basis of the latest scientific evidence and in accordance with the EU Adaptation Strategy framework. The revised NASAP is planned to be implemented in the post-2020 period. The revision is organised as a comprehensive 48-month project, which requires a clear structure and methodology. The most challenging part of the revision of the NASAP is the design of the evaluation scheme and the use of appropriate indicators to monitor the success of the implemented policies and measures.

The approach

To keep up with latest policy developments and to ensure the consistency of the NASAP revision with the European adaptation policy framework, the MEU first consulted the Climate-ADAPT 'EU Adaptation Strategy' page ⁽²³⁾.

The development of the project proposal was built on experiences gained at national level. In identifying the steps of the revision process and designing project components and activities, the MEU benefited a great deal from the Adaptation Support Tool ⁽²⁴⁾. It provides a step-wise framework for systematically developing a comprehensive project for enhancing adaptation efforts in Turkey by means of national-level impact and vulnerability assessments, identifying and prioritising the adaptation policy options and revising the NASAP based on scientific evidence in accordance with the EU Adaptation Strategy framework. The steps of the tool helped in identifying and eliminating gaps in the current NASAP and in designing project components that support the mainstreaming of adaptation into sectoral policies, including for socio-economic sectors.

The project also incorporates awareness-raising and capacity-building activities on adaptation to climate change at both national and local levels. More comprehensive regional adaptation strategies and action plans will be developed. A grant programme will be developed for the implementation of adaptation actions by interested stakeholders at local and regional levels in Turkey.

Step 6 ⁽²⁵⁾ of the Adaptation Support Tool was consulted to develop the monitoring and evaluation component of the project. Since monitoring and evaluation of adaptation is still the most important challenge, the information given in this last step of adaptation planning, especially with regard to developing smart indicators for monitoring, could be extended further in the Climate-ADAPT database.

⁽²³⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/strategy>

⁽²⁴⁾ <http://climate-adapt.eea.europa.eu/knowledge/tools/adaptation-support-tool>

⁽²⁵⁾ <http://climate-adapt.eea.europa.eu/knowledge/tools/adaptation-support-tool/step-6>

The Climate-ADAPT database ⁽²⁶⁾ enabled MEU experts to quickly search for information using various filter criteria, to determine the usefulness of the knowledge sources described in the metadata sheets for database items and to find links to the relevant documents from other knowledge providers in Europe.

Since Climate-ADAPT presents European-level policy information as well as tools applicable to adaptation planning at national level, it proved to have added value for experts in the MEU in relation to developing a funding proposal for a national-level project to inform the policy- and decision-making processes for the revision of the NASAP. Furthermore, it was helpful in the participatory process of consulting on the draft project proposal with the relevant stakeholders.

Future plans

After the implementation phase of the revised NASAP in the post-2020 period, new steps will need to be taken. Following the identification of national-level

policy options, promoting adaptation efforts at local level is a matter of utmost importance. Therefore, the first step will be to initiate the preparation of detailed adaptation strategies in the regions and/or river basins in Turkey. As a next step, local governments will be encouraged to develop their own adaptation strategies on the basis of the revised NASAP and other regional/basin-level adaptation strategies that have been prepared or will be prepared. Furthermore, other stakeholders dealing with climate change issues, such as non-governmental organisations, private sector institutions, research and development institutions, etc., will be supported to take more specific adaptation actions at local level.

Since adaptation actions require significant financial investments, national and international financing options, which will be identified as part of the project, should be mobilised to support the implementation of adaptation measures by all stakeholders at both national and local levels.

Figure A7 Aphrodisias, Aydin



Source: © Pixabay.

⁽²⁶⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

Climate-ADAPT use case 8 — Greece

Supporting the preparation of EU LIFE Climate Action funding proposals in Greece at national, regional and local levels by using the Climate-ADAPT database, adaptation options and research projects

Climate-ADAPT features used: database; countries/regions/cities (country pages); knowledge (research projects, adaptation options)

Sector: adaptation in general

Governance level: national

Biogeographical region: Mediterranean

Macro-region: southern Europe

Policy stage: policy development

The challenge

The LIFE Climate Action sub-programme of the EU's LIFE Programme for Environment and Climate Action for 2014-2020 accounts for 25 % of the total LIFE budget and constitutes the EU programme dedicated to developing innovative responses to the challenges of climate change across the EU. It supports the implementation of the strategic priorities of EU climate policy within the EU and is therefore an important element of the overall mainstreaming of climate action within the EU budget.

The Greek LIFE Task Force (GR LTF), created in the context of the LIFE project on capacity-building in Greece (LIFE14/CAP/GR/003), operates at the Green Fund (Πράσινο Ταμείο, GRFU), a public organisation supervised by the Ministry of the Environment and Energy (MEE). Its roles include supporting the Greek LIFE national contact points by organising events and writers' seminars in the Greek regions to promote the LIFE programme and EU environmental and climate policy priorities, and providing support to potential beneficiaries interested in submitting proposals

fulfilling the requirements of the fund. Furthermore, the team supports the GRFU and the MEE when they participate in LIFE projects, especially strategic projects implemented over a wider geographical area (integrated projects).

Potential beneficiaries in Greece, including national, regional and local authorities, with various backgrounds and different levels of knowledge and skills on adaptation, have a range of training and information needs. In its role as a facilitator, the GR LTF had to become familiar with all aspects of adaptation relevant to the different sectors and governance levels in the country.

The approach

Given that the LIFE programme finances projects that have to add value to the understanding and implementation of climate change adaptation policies at EU level, the content presented on Climate-ADAPT and the functionalities available on the platform proved to be particularly helpful and suitable for establishing the basic background with respect to issues related to climate change impacts and the existing options for mitigating them.

In relation to the guidance provided to potential beneficiaries, especially during the writers' seminars conducted by the team, direct access to the state of the art in specific adaptation sectors was facilitated by the structure of Climate-ADAPT; in particular, the database and knowledge components of the platform allowed the GR LTF experts to be rapidly informed about particular climate change issues mentioned by the participants in each region, the potential soft, grey and hard solutions for responding to them, and any ongoing/concluded projects related to them. In addition, the platform gives the user the opportunity to explore the options implemented at different governance levels, locally, regionally and nationally.

This was particularly important, as, in most cases, the regional and local beneficiaries were quite interested in specific problems experienced in their area, such as the salinisation of water used in agriculture, but were not so aware of existing solutions and

similar cases in which these solutions had been implemented at regional or local levels, or of how to find such information. In such cases, the climate change expert from the GR LTF could work together with the participant in the database area of the platform, suggest some suitable keywords for filtering (e.g. 'saltwater', in this example) and explore together with the potential beneficiary the adaptation options provided; in most cases, the seminar participant was in a position to learn directly from material on the database even if, in the case of particularly technical terms, a translation into Greek would have made the material easier to understand. By performing this type of capacity-building exercise with the seminar participants, the GR LTF also gave them insights into how they could make use of the platform at a later stage by accessing the information sources for the options they were most interested in through the links provided in the 'Reference information' page for each adaptation option.

Although, due its size, the database appears slow in showing searching results shows delays in correspondence time, it is still an advantage to have all the relevant information in a searchable form in one place, especially for supporting the capacity-building processes of different users across cities, regions and countries. This has proved to be particularly useful when potential beneficiaries from regional and local administrations were able to define the problem but needed to help identifying different options and similar case studies, rather than strategic approaches, to deal with the adaptation challenges they faced.

In relation to strategically supporting the GRFU and MEE in their participation in LIFE proposals, the GR LTF experts mainly used the 'Research projects' page of Climate-ADAPT. For this more advanced use of the platform, they used the content to describe the state of the art of adaptation in Europe to justify and demonstrate the innovative character of the suggested solutions and approaches in the proposals.

GR LTF experts, working as intermediaries, felt that Climate-ADAPT added value in providing a trusted EU-wide information source on climate change vulnerability, impacts and adaptation, which can

Figure A8 LIFE information days were held in Athens and Thessaloniki



Source: LIFE 14 © Prassimo Tameio.

be used quite widely at different governance levels (local, regional, national and transnational). It allows EU citizens to access the same level of information, improving the cohesion of the EU and encouraging the streamlining of the measures and policies that are implemented to tackle this global issue, respecting the limits set by differing geographical and other circumstances.

Future plans

GR LTF experts will further consult and promote Climate-ADAPT as part of its role in facilitating Greek LIFE project applicants. In this respect, they would appreciate being able to search for EU-funded research projects on the basis of type of funding, which can indirectly indicate the technological readiness of the project, especially in relation to grey or hard adaptation options; in many cases, potential beneficiaries may look for the different phases and levels of a particular solution (i.e. research, more restricted implementation, wider implementation and related EU/national policies) in one sector/thematic area, and information on where European countries and the EU as a whole stand with reference to these is quite important for setting out objectives for dealing with climate change impacts.

Climate-ADAPT use case 9 — Lombardy Region

Developing a regional adaptation plan using European climate data accessed through tools and guidance on Climate-ADAPT

Climate-ADAPT features used: database (guidance); countries, regions, cities (Country pages), knowledge (Map Viewer and tools)

Sector: adaptation in general

Governance level: sub-national

Biogeographical region: Mediterranean

Macro-region: southern Europe

Policy stage: policy development

The challenge

For several years, and often leading the way into unknown territory, at least in Italy, the Lombardy region, with the support of the Lombardy Foundation for the Environment, has been actively working on climate change and on policies for its mitigation and adaptation.

In 2012, the Lombardy region, published the Guidelines for the implementation of the Regional Climate Change Adaptation Strategy ⁽²⁷⁾, which provided the first key elements for assessing the main impacts of climate change and an integrated assessment of the vulnerability of socio-economic and natural systems. Then, in 2014, the Regional Climate Change Adaptation

Strategy ⁽²⁸⁾ was approved, followed by, at the end of 2016, the Regional Climate Change Adaptation Plan.

The regional plan reports current and expected climate trends, impacts and targets; provides an analysis of the vulnerabilities and risks of the main targets for which climate change impacts are expected; and identifies the adaptation actions and priorities.

In addition, the LIFE project Master Adapt (MAInSTreaming Experiences at Regional and local levels for ADAPTation to climate change) is working on adaptation issues, through a partnership composed of Sardinia Region (lead partner), Lombardy Region, universities, and local stakeholders and administrations, with the aim of guiding local administrations in the mainstreaming process for adaptation policies.

The approach

All the information and data in the platform are certified; therefore, it is an important resource for several types of information, such as tools, reports and publications, national policies, etc.

As a sub-national administration, Lombardy Region, has used Climate-ADAPT to get a general overview of the state of the art of adaptation policies and to compare regional data with those provided by the platform.

For the development of Lombardy's Regional Climate Change Adaptation Plan, various types of data and information from the Climate-ADAPT platform were used: for instance, the model ENSEMBLES Europa, among others, was used to build the climate scenario for the territory.

⁽²⁷⁾ http://www.flanet.org/sites/default/files/RAS_Regional%20Adaptation%20Strategy.pdf

⁽²⁸⁾ <https://www.flanet.org>

Figure A9 **Regione Lombardia**



Source: © Fotolia.

Future plans

Both for Master Adapt and for regional activities, Lombardy Region intends to interact more frequently with Climate-ADAPT to deepen best practice and information exchange and develop activities in collaboration.

Climate-ADAPT use case 10 — Sardinia Region

Supporting cooperation across governance levels and access to European knowledge on Climate-ADAPT for the regional government of Sardinia

Climate-ADAPT features used: database (case studies, search function); countries, regions, cities (country pages); knowledge (adaptation options); networks (organisations); news

Sector: adaptation in general

Governance level: sub-national

Biogeographical region: Mediterranean

Macro-region: southern Europe

Policy stage: policy development

The challenge

The regional government of Sardinia ⁽²⁹⁾, Italy, is acting on adaptation to climate change in various ways.

The President of Sardinia Region chaired the Commission for the Environment, Climate Change and Energy (ENVE) within the European Committee of the Regions (CoR) ⁽³⁰⁾ until September 2017. Since the CoR is supporting the UNFCCC process as an active stakeholder at EU level, the President is also the rapporteur for the opinion Delivering the global climate agreement — a territorial approach to COP 22 in Marrakesh ⁽³¹⁾, which was approved by the CoR in October 2017.

In this context, Sardinia Region is promoting sustainable methods of energy production and high-level targets for greenhouse gas reduction, as well as considering aspects of adaptation in the field of environmental protection and energy. In addition, in the UNFCCC context, Sardinia Region became part of the Under2 Memorandum of Understanding ⁽³²⁾ (Under2MOU), which is a powerful instrument for aggregation and cooperation, capable of raising international awareness of the crucial role of sub-national governments in achieving global targets for climate change. Signatories from regional governments all over the world intend to contribute to the implementation of the global climate agreement by 'assessing the projected impacts of climate change on communities' ⁽³³⁾.

Supporting the engagement of the European regions on adaptation as part of the UNFCCC process requires up-to-date information on the progress of adaptation policies in European countries and regions.

The Sardinia Region, through its Minister for Environmental Protection, coordinates the Interregional Board on the Italian Strategy for Adaptation to Climate Change (SNAC), with the purpose of promoting and monitoring the implementation of regional adaptation strategies and plans consistently with the national strategy. In this regard, overview information on the state of implementation of national strategies and plans on adaptation to climate change in Europe is needed.

Networking is a crucial prerequisite for the LIFE project Master Adapt ⁽³⁴⁾, launched in October 2016, in which Sardinia Region acts in the role of coordinating beneficiary. The project aims to identify and test

⁽²⁹⁾ <http://www.regione.sardegna.it>

⁽³⁰⁾ <http://cor.europa.eu/en/Pages/home.aspx>

⁽³¹⁾ <http://cor.europa.eu/en/activities/opinions/pages/opinion-factsheet.aspx?OpinionNumber=CDR%201412/2016>

⁽³²⁾ <http://under2mou.org>

⁽³³⁾ <http://newsroom.unfccc.int/lpaa/cities-subnationals/under-2-mou-inspiring-regional-leadership-on-climate-change>

⁽³⁴⁾ <https://masteradapt.eu/?lang=en>

innovative tools for multilevel governance to support regions and local authorities in defining and developing adaptation strategies and policies. The partnership includes regional and local public institutions, non-profit scientific institutions and associations, environmental consultancies and universities.

The approach

Climate-ADAPT, as the platform of the European Commission and the EEA, represents a useful source of information and in particular examples related to adaptation plans and strategies. The Sardinia Region experts assessed, for example, the individual country pages of France, Germany, Italy, the United Kingdom and others to gain an overview of the state of the art of national plans and strategies among European countries. Links to platforms of other relevant organisations and in the news section of Climate-ADAPT

proved to be helpful for supporting cooperation and strengthening links among governments and other stakeholders.

Climate-ADAPT was regularly consulted to provide briefings to support the President of Sardinia Region in his role as chair of ENVE. This was done by consulting the EU policy pages, which contain summary information related to adaptation measures and policies in Europe.

The clear and intuitive menu allowed rapid movement around the sections of the platform and the user-friendly search engine ⁽³⁵⁾ is an efficient tool that allows users to easily find case studies, publications, reports, etc. The Sardinia Region experts used, in particular, appropriate keywords to quickly find the information they needed. Both the 'Cities and towns' ⁽³⁶⁾ and 'Covenant of Mayors' ⁽³⁷⁾ pages, as well as the

Figure A10 The city of Cagliari, regional capital of Sardinia



Source: Relive Communication © Andrea Iannelli.

⁽³⁵⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

⁽³⁶⁾ <http://climate-adapt.eea.europa.eu/countries-regions/cities>

⁽³⁷⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/covenant-of-mayors>

'Country information' page ⁽³⁸⁾ were consulted to find valuable information on the progress of all aspects of adaptation policy implementation at country and city levels in Europe.

Climate-ADAPT was also used to support the reporting of adaptation activities to global initiatives, such as activities related to the UNFCCC Under2MoU instrument involving the submission of adaptation data to the states and regions platform of the Carbon Disclosure Project (CDP) ⁽³⁹⁾. As a signatory of the Under2MoU, Sardinia Region has committed to adding regional data to the CDP platform. Although Sardinia has not yet joined the RegionsAdapt ⁽⁴⁰⁾ initiative (the new global commitment to supporting and reporting efforts on adaptation at state and regional levels), it has been able to submit regional data related to adaptation measures as requested by the CDP platform. Specifically, using the 'Case studies' and 'Adaptation options' pages on the Climate-ADAPT platform has been useful in undertaking this task.

By providing adaptation policy information at various levels of governance, links to key partners and dissemination services (e.g. the European Climate Adaptation Newsletter), Climate-ADAPT is supporting sub-national-level actors working in adaptation and cooperating with other governance levels.

Future plans

Downscaling climate change adaptation national strategies into regional policies is an essential precondition for influencing climate resilience. Continuing its work within the LIFE Master Adapt project, Sardinia Region will help regional and local public institutions to optimise and effectively integrate sectorial regional policies on climate change adaptation.

In addition, Sardinia Region will continue to encourage a collaborative approach among all Italian regions through its coordinating role in the Environment and Energy Commission of the Italian Conference of Regions, which aims to promote changes in lifestyles and production models at various levels. Efforts are now focused on defining the regional adaptation plan and carrying out innovative projects in the field of climate change funded by the European Commission and based on a memorandum of understanding with Climate-KIC S.R.L. ⁽⁴¹⁾ signed in June 2017. In this context, it would be helpful to have a section of the platform dedicated to regions (sub-national level) to enable easy identification of regions that have developed a regional plan or strategy or that are already implementing specific actions on adaptation.

⁽³⁸⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽³⁹⁾ <https://www.cdp.net/en/cities/states-and-regions>

⁽⁴⁰⁾ <http://www.nrg4sd.org/climate-change/regionsadapt>

⁽⁴¹⁾ <http://www.climatekicemiliaromagna.it/en/climate-kic-italy>

Climate-ADAPT use case 11 — Province of Barcelona

Finding inspiration to develop tools to support municipalities designing climate change adaptation plans

Climate-ADAPT features used: database; share your information; knowledge (Urban Adaptation Support Tool; Urban Vulnerability Map Book)

Sector: adaptation in general

Governance level: sub-national/local

Biogeographical region: Mediterranean

Macro-region: south-west Europe

Policy stage: adaptation planning

The challenge

The Province of Barcelona, Spain (*Diputació de Barcelona*, Diba), is a public authority providing strategic guidance, technical and financial support to Covenant of Mayors signatories and municipalities signing up for the Covenant of Mayors for Climate and Energy (as a Covenant territorial coordinator) since 2008. Diba also became a coordinator of the Mayors Adapt initiative. To appropriately support the 311 municipalities in the province of Barcelona on adaptation, Diba needed to develop several tools and resources. Considering the difficulty of assessing climate change vulnerability at municipal level, especially for medium and small municipalities, Diba had to develop specific assessment tools and a methodology to help in drafting local adaptation plans or sustainable energy and climate action plans (SECAPs) that include an adaptation component, as required by the Covenant of Mayors.

Diba also provides integral assistance to municipalities, helping with drafting adaptation plans and in their implementation, monitoring, communication and dissemination, as well as with capacity-building.

The approach

To provide an applicable methodology for designing municipal adaptation plans in small municipalities, given the very limited resources available, the approach had to be straightforward and practical, considering a set of minimum requirements for adaptation plans. Diba compiled the methodology [Metodologia per a la redacció de PAESC](#) using the main steps of the adaptation policy cycle from the Climate-ADAPT platform, mainly through the [Urban Adaptation Support Tool](#). Diba provided guidance that can be applied by small municipalities (less than 5 000 inhabitants) as well as larger ones (more than 50 000 inhabitants). It created a standardised approach so that Diba, as a coordinator, can carry out consistent analyses. Diba expects that the methodology will also help in establishing future strategies for various Diba adaptation tasks.

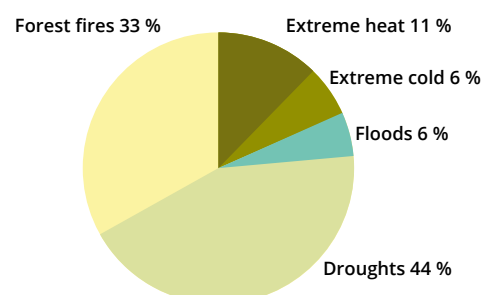
Furthermore, Diba has developed a specific tool to help municipalities assess their vulnerability to climate change. It is a simple-to-use Microsoft Excel tool called ASVICC that helps to gather information on factors that might affect the vulnerability of the municipality. To define the main threats (e.g. heat, water scarcity and droughts, flooding and forest fires) and exposure, sensitivity and capacity factors, Diba used the interactive [Urban Vulnerability Map Book](#). In addition to the Map Book, Diba made use of information from studies carried out by other public authorities, such as [the Catalan government](#) and the [Metropolitan Area of Barcelona](#). A questionnaire within the tool must be answered by the local authority and the resulting output is an initial vulnerability assessment.

An overview of adaptation options might help municipalities to systematically consider all approaches to adaptation that have already been established and to check which might be applied under their specific circumstances. Diba has therefore published a first edition of a [catalogue of adaptation options](#) online. The catalogue provides links to examples of good practices in Catalonia and to the support offered by Diba. Diba

Figure A11 Summary of the actions planned in a SECAP**Adaptation actions**

Execution

	pending 78 %		ongoing 22 %
Number of actions	Investment	Non-investment cost	Total cost
Extreme heat	2 172 899	0	26 700
Extreme cold	5 000	0	0
Heavy rain	0	0	0
Floods	122 395	0	3 200
Sea level rise	0	0	0
Droughts	78 097	0	1 584 059
Storms	0	0	0
Landslides	0	0	0
Forest fires	60 000	0	262 119
Other	0	0	0
Total	2 438 391	0	1 881 078

% actions according to risk

Note: All amounts in the table are in Euros.

Source: SECAP of Oristà, *Ajuntament d'Oristà*, *Agència d'energia d'Osona* and *Diputació de Barcelona*.

developed the list of options using the [adaptation options available in the Climate-ADAPT](#) knowledge section. Potential adaptation options can be explored on Climate-ADAPT by selecting a specific climate impact and/or adaptation sector of interest. In addition, the experiences of drafting SECAPs and adaptation plans in specific municipalities were considered in the development of the set of options.

Adaptation tools and methodologies are available also on the Spanish national adaptation platform AdapteCCa and in its database of strategies, studies, guidelines and portals. Climate-ADAPT added value for Diba at local level by providing a frame of reference and filling a methodological gap while AdapteCCa was being developed. The guidance and tools available on Climate-ADAPT were helpful because they are very specific regarding adaptation at local level. By providing access to methodologies and tools, Climate-ADAPT helped to inform the policy processes for the development of urban adaptation plans.

Future plans

Diba is working on refining the tools described above and upgrading them with inputs provided by the municipalities. New tools will be developed to facilitate the selection of adaptation measures and to help municipalities in their monitoring and reporting tasks. Considering the other essential aspects of adaptation, Diba is currently developing tools and studies to integrate cost-benefit analyses into the plans.

The tools and case studies presented on Climate-ADAPT and AdapteCCa are important for finding new approaches and successful stories that can inspire Diba. A prominent link should be established on Climate-ADAPT to allow cities to benefit from the new and comprehensive knowledge base on urban adaptation to be developed on the [Covenant of Mayors for Climate and Energy website](#).

Climate-ADAPT use case 12 — City of Bologna

Using Climate-ADAPT to develop the Bologna Urban Adaptation Plan and guidelines for medium-sized Italian cities

Climate-ADAPT features used: database (reports); countries, regions, cities (country pages and interactive Map Viewer; knowledge (Urban Adaptation Support Tool)

Sector: adaptation in general

Governance level: municipality

Biogeographical region: southern Europe

Macro-region: Mediterranean

Policy stage: policy development

The challenge

The city of Bologna has actively worked in recent years on sustainable development, by participating in several international, national and local projects in the fields of nature protection, environmental policy, and information and communication. The City of Bologna participated in 2 of the 56 approved Italian projects funded by the LIFE+ programme (2007-2013). In this context, Bologna was the coordinator of the LIFE+ Project BLUE AP ⁽⁴²⁾ (Bologna Local Urban Environment Adaptation Plan for a Resilient City ⁽⁴³⁾) and was the first Italian municipality to develop an action plan. The aim of the project was to identify and test concrete local climate resilience measures to make the city able to meet climate change challenges. The study conducted

during the project revealed that the main vulnerabilities affecting the urban area are heatwaves, water scarcity and drought, extreme rain events and hydrogeological risk; therefore, the plan contains strategies, targets and concrete actions to tackle extreme weather events related to climate change.

The city is also part of many important European networks, such as ICLEI and Eurocities; the city has also signed up to the Covenant of Mayors and the Mayors Adapt initiative and is actively committed to carrying out all the mitigation and adaptation actions added to its plans.

The approach

As coordinator of the LIFE+ BLUE AP project consortium, the city of Bologna used the Climate-ADAPT 'Country information' pages ⁽⁴⁴⁾ to see the state play of adaptation strategies at European level (i.e. in other European countries and regions) and to collect best practices and urban adaptation planning approaches for the implementation of the Bologna Urban Adaptation Plan. This helped the city to make a first selection of the most relevant urban planning approaches and methodologies developed at European level and to select information useful for the drafting of ten 'good practices sheets' and actions to be implemented in Bologna.

More specifically, the report Adaptation strategies for European cities: final report ⁽⁴⁵⁾ provided useful information for setting up the general framework of the Bologna Adaptation Strategy.

Detailed information about EU urban case studies was gathered from both the Climate-ADAPT database

⁽⁴²⁾ <http://www.blueap.eu/site/en>

⁽⁴³⁾ <http://www.blueap.eu/site/wp-content/uploads/2015/06/PianoBlueApfinale03062015.pdf>

⁽⁴⁴⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽⁴⁵⁾ <http://climate-adapt.eea.europa.eu/metadata/publications/eu-cities-adapt-adaptation-strategies-for-european-cities-final-report>

and the Urban Adaptation Support Tool and was used for describing, in the good practice sheets, the results obtained, the lessons learned and the methods adopted in a synthesised and communicative way.

Moreover, the Covenant of Mayors city profile pages ⁽⁴⁶⁾ enabled the city to make contacts and to cooperate with other cities that implemented their adaptation strategies. The interactive database ⁽⁴⁷⁾ (allowing the use of keywords) and the case study research tool ⁽⁴⁸⁾ made research into the specific adaptation measures developed by forerunner EU cities easier. The features used on the platform were both the Case Study Search Tool ⁽⁴⁹⁾ and the interactive maps for the city profiles ⁽⁵⁰⁾. In addition, the interactive Map Viewer allowed the city to find useful information about adaptation strategies and regulations in other countries. This helped the city to define the framework and the main topics for the Bologna Local Strategy and then for the Bologna Urban Adaptation Plan.

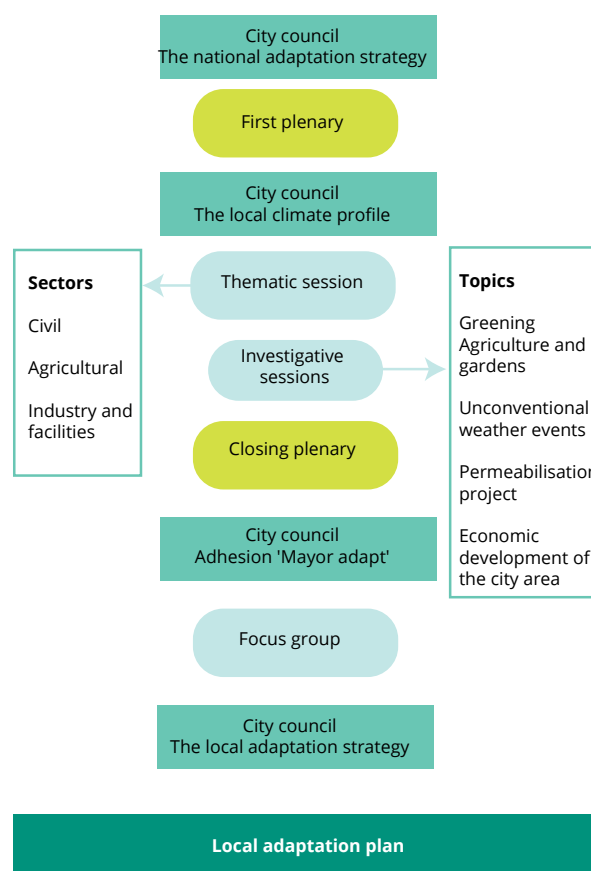
An important outcome of the project is that the planning and testing of actions developed in Bologna are intended to lead to the creation of guidelines useful for the definition of similar adaptation plans, which could be adopted by other medium-sized Italian cities. Thus, Bologna became a pilot city that was the first in Italy to tackle climate change with appropriate and creative measures.

Future plans

The city of Bologna is currently working on implementing the measures in the Adaptation Plan. Currently, around 20 % of the actions have been completed and 50 % are ongoing. To improve its resilience to extreme weather events, the city is involved in the Life+ RainBO ⁽⁵¹⁾ project, the aim of which is to prevent flooding events through an innovative forecast, modelling and alert system.

The city is also a partner of the PREPAIR LIFE project ⁽⁵²⁾, the aim of which is to improve air quality in the whole of northern Italy. Poor air quality is a very important issue related to heatwaves and drought; as temperatures rise and the number of days without rainfall increases, the concentrations of air pollutants also rise.

Figure A12 Process scheme used in the development of the adaptation plan in the city of Bologna



Source: Bologna Città Resiliente/Bologna Resilient City ([BLUE AP layman's report](#)).

To help Bologna in carrying out all these activities, it would be helpful if Climate-ADAPT could focus more on examples of adaptation strategies, plans and actions in cities.

⁽⁴⁶⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/covenant-of-mayors>

⁽⁴⁷⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

⁽⁴⁸⁾ <http://climate-adapt.eea.europa.eu/sat>

⁽⁴⁹⁾ <http://climate-adapt.eea.europa.eu/sat>

⁽⁵⁰⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/covenant-of-mayors>

⁽⁵¹⁾ <https://www.rainbolife.eu/en>

⁽⁵²⁾ http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6102

Climate-ADAPT use case 13 — Cascais Municipality

Using the Urban Adaptation Support Tool to train staff in a network of municipalities to develop local adaptation plans

Climate-ADAPT features used: database (guidelines/case studies); knowledge (Urban Adaptation Support Tool)

Sector: adaptation in general

Governance level: sub-national/local

Biogeographical or macro-region: south-west Europe, Atlantic area

Policy stage: planning actions

The challenge

The Cascais municipality (Portugal) was one of the first to develop a local strategy for the assessment of climate change (2010). The strategy used a multisector approach to climate change, which assesses climate and socio-economic scenarios, vulnerabilities, impacts and adaptation options for the coming decades. It also provides an approach to developing adaptation strategies by evaluating the actions that could contribute most to the resilience process.

The National Adaptation Strategy for Portugal (ENAA 2020) includes adaptation at local level as one of its main priorities. The pioneer work of Cascais has gained respect from other stakeholders at national level, and the Municipality of Cascais has contributed its experience to other local climate change strategies.

In 2013, the Cascais municipality participated in the ClimAdaPT.Local project, funded by EEA Grants, which was aimed at developing adaptation strategies for

26 municipalities, manuals for implementation and training courses. It is currently considered one of the most ambitious adaptation projects in Portugal.

Simultaneously, the city of Cascais recently (in 2017) undertook the endeavour of becoming the first municipality in Portugal with an action plan for adaptation covering a medium-term perspective. The first step was to understand how to evaluate the adaptation actions already implemented and to select actions for further use within local policy instruments in the future.

The approach

As part of the ClimAdaPT.Local project, the Cascais municipality needed to improve its methodology, particularly the first steps regarding the assessment of impacts and vulnerabilities and the determination of local governments' policy needs.

Although the experiences collected in previous participatory processes were very valuable in ensuring the commitment of all relevant partners within the local council and other stakeholders, challenges remained regarding how to best engage participants in contributing to urban adaptation action plans.

Because the national adaptation platforms, APA *Alterações Climáticas and Portal do Clima* ⁽⁵³⁾, currently provide information mainly on climate change and its impacts, and there is as yet no comprehensive knowledge base on urban adaptation at national level in Portugal, the Cascais municipality started to assess some of the information at EU level available on Climate-ADAPT. Through the Urban Adaptation Support Tool, developed within the European Commission's Mayors Adapt initiative, guidance on all stages of urban adaptation planning and policy is available that is directly applicable to cities. In [steps 1-6](#) of the tool, guidance on stakeholder participation methods from sources within Europe is available. Climate-ADAPT case

⁽⁵³⁾ <http://portaldoclima.pt/pt>

studies, specifically dealing with practical experiences with stakeholder engagement processes, are accessible using the tool.

A few of the Climate-ADAPT case studies, such as 'Implementation of the integrated master plan for coastal safety in Flanders (2014)' ⁽⁵⁴⁾ and 'Tamera water retention landscape to restore the water cycle and reduce vulnerability to droughts' (2015) ⁽⁵⁵⁾, accessed through the Case Study Search Tool ⁽⁵⁶⁾ were analysed in terms of approaches that could be transferable to the specific circumstances of the Portuguese municipalities. The methodologies used in the case studies were considered best practices and consistent with EU policies and were taken into account in the process of developing the methodology.

For the Cascais Adaptation Action Plan, a cost-benefit analysis was initially considered the best solution to assess the effects of the intended adaptation measures on the resilience of the city against climate change. However, as a result of the extensive information provided in steps 6-2 of the Urban Adaptation Support Tool (monitoring and evaluation) ⁽⁵⁷⁾ of Climate-ADAPT, it was decided that a monitoring framework rather than guidance with detailed prescriptions was the best solution to ensure the practical applicability of the plan. This meant that teams, resources and decision-making processes were decided on on the basis of a current baseline evaluation instead of a long-term cost-benefit analysis, as the uncertainty of future scenarios was too high for appropriate impact assessments.

In line with the recommendations on urban adaptation in Europe in the EEA report Urban adaptation to climate change in Europe 2016, local adaptation initiatives should benefit from knowledge available at higher levels of governance. Climate-ADAPT fulfils its role by providing access to relevant knowledge, for example on stakeholder involvement in the development of urban adaptation plans, to complement the information available at national level. Since monitoring and evaluation of adaptation is still a new area, Climate-ADAPT helped to inform the policy process in Portugal by providing the most current methodologies when needed.

Figure A13 Ribeira das Vinhas greenway restoration project



Note: The photograph shows a greenway restoration with nature-based solutions, which included re-naturalisation of the riverbed and creation of a permeable trail, which allows it to be under water without significant damage and without blocking transportation of sediments or other materials. The valley will furthermore be reforested with native plants and trees.

Source: Câmara Municipal de Cascais/Municipality of Cascais.

Future plans

The Cascais municipality is now launching the National Network of Adapted Municipalities, the goals of which are to promote and share knowledge on adaptation and provide resources in a similar way to Climate-ADAPT, but in Portuguese, which could result in the dissemination of ideas about methods and contents to cities of all sizes in all Portuguese-speaking countries and would be complementary to the activities and platforms of the municipality's European peers. The Municipality of Cascais, as a forerunner city, aims for an adaptation action plan that will be implemented and evaluated and will provide a methodology that can be replicated in the future, regardless of the demographic, economic or geographical characteristics of the city. It would be of great interest to the municipality and the National Network of Adapted Municipalities to share their acquired know-how and supporting materials (e.g. manuals) on Climate-ADAPT. In addition, the municipality would appreciate information and guidance on adaptation monitoring that could be obtained from Climate-ADAPT.

⁽⁵⁴⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/covenant-of-mayors>

⁽⁵⁵⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

⁽⁵⁶⁾ <http://climate-adapt.eea.europa.eu/sat>

⁽⁵⁷⁾ <http://climate-adapt.eea.europa.eu/sat>

Climate-ADAPT use case 14 — Municipality of Sorradille

Identifying best practice for vulnerability assessments in rural areas where there is no national adaptation platform

Climate-ADAPT features used: database/country pages/Adaptation Support Tool

Sector: adaptation in general

Governance level: municipality

Biogeographical region: Mediterranean

Macro-region: southern Europe

Policy stage: policy development

The challenge

Sorradille is a small town located in the middle of Sardinia, Italy. It has 417 inhabitants (according to the 2011 census). Rete Gaia s.r.l. is a consultancy that was employed by the Municipality of Sorradille⁽⁵⁸⁾ for technical support to develop a climate change adaptation plan for the municipality, within the framework of the Mayors Adapt initiative. The aim was to strengthen the resilience of the area to climate change. The innovative nature of the initiative lies in the development, for the first time, of a tailor-made approach for small rural centres, which it is believed can be replicated in other Italian and European villages. Sorradille is the first municipality in Sardinia to have developed a climate change adaptation plan. Because of the rural character and high environmental value of the municipal area of Sorradille, the adaptation plan

was mainly dedicated to analysing climate change vulnerability and risks in the surrounding rural area.

The vulnerability analysis was performed for the agriculture, health and biodiversity sectors, selected among those identified by the Mayors Adapt initiative as relevant for adaptation in the Sorradille territory, and by climate drivers, depending on the corresponding impacts (e.g. annual rainfall and water scarcity, consecutive days without rain, drought, etc.).

The approach

The Italian National Adaptation Strategy was approved in 2015, but there is as yet no online platform available presenting adaptation information at national level in Italy. Rete Gaia used the Italian country page on Climate-ADAPT to assess the knowledge available at national level. In addition, the Climate-ADAPT platform was consulted to obtain information on adaptation policies and programmes at European⁽⁵⁹⁾ and country levels⁽⁶⁰⁾. More specifically, the database⁽⁶¹⁾ was used to search for adaptation strategies already released at European level and to compare the available information. The Adaptation Support Tool was mainly used as a helpful tool to guide the vulnerability assessment process and the development of the adaptation plan.

The breadth and variety of practical examples available through the database and the country and sector pages, and the methodological approaches on vulnerability assessment provided on Climate-ADAPT, allowed Rete Gaia to collect adaptation practices that could then be analysed and catalogued in terms of priority actions through consultation with local stakeholders and with experts.

⁽⁵⁸⁾ <http://www.sardegnaresiliente.it/sorradille>

⁽⁵⁹⁾ <http://climate-adapt.eea.europa.eu/eu-adaptation-policy/strategy>

⁽⁶⁰⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽⁶¹⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

Figure A14 The Sorradile municipality and the Omodeo lake



Source: <http://www.sardegnaresiliente.it/sorradille> © Municipality of Sorradille.

Future plans

Adaptation processes require increasing and informed commitments from local governments, businesses and individual citizens. Besides consulting national websites, Rete Gaia and the Sorradile municipality intend to interact more frequently with Climate-ADAPT and the Covenant of Mayors website to acquire more information on EU best practices for adaptation policy development. It is important that knowledge on opportunities arising from the growing awareness of adaptation actions should be accessible to all

stakeholders. However, the knowledge provided on Climate-ADAPT is not available in all the languages of the European Union, thus preventing the tools and data being accessed by all users. The consortium of the new Covenant of Mayors is further developing the knowledge base on adaptation for the [EU urban adaptation initiative](#). The EEA should ensure that there are prominent links from Climate-ADAPT to the Covenant of Mayors website and communicate the special needs of small municipalities to the Covenant of Mayors.

Climate-ADAPT use case 15 — Intermediary organisation: Lombardy Foundation for the Environment

Intermediary organisation that supports learning from other EU countries about the legal and policy frameworks for mainstreaming adaptation

Climate-ADAPT features used: database; EU policy (sector pages); countries, regions, cities (individual country pages)

Sector: adaptation in general

Governance level: national and sub-national

Biogeographical region: Continental

Macro-region: Mediterranean and Alpine

Policy stage: implementation/mainstreaming of adaptation

by participating as a partner in major EU programmes (LIFE and Integrated LIFE, the 7th Framework Programme, Interreg IVC, European Territorial Cooperation, etc.). Particular efforts are currently aimed at promoting the mainstreaming process of adaptation to climate change into different policy sectors, advising policymakers at different governance levels, and capitalising on valuable experiences and lessons learned from other European countries and regions.

The approach

Climate-ADAPT has been used mainly to gain an understanding of the legal adaptation framework at EU level as well as to examine actions undertaken to mainstream adaptation across national policies to draw up evidence documents for policy development at regional level in Lombardy⁽⁶³⁾ and at municipal level in the area of the Seveso River, north of Milan.

The challenge

Fondazione Lombardia per l'Ambiente (Lombardy Foundation for the Environment, FLA)⁽⁶²⁾ is a non-profit scientific organisation established by the regional government of Lombardy to provide scientific support to national, regional and local administrations and agencies in the preparation of climate change adaptation strategies and action plans. FLA is currently involved in several research and policy projects on climate change adaptation and actively contributes to the enforcement of European environmental policies

The platform was a valuable observatory for a critical review of EU countries' experiences, since the available knowledge applies to various spatial scales. FLA mainly used the information contained in the EU sector pages and in the Climate-ADAPT country pages⁽⁶⁴⁾ (e.g. on Austria and France) to (1) search for information on legal measures and policy actions developed in several European countries; (2) identify useful practices and grey literature for innovative approaches to mainstreaming adaptation at the national and sub-national levels; and (3) assess their effectiveness and transferability to different spatial scales. The Climate-ADAPT database⁽⁶⁵⁾ allowed investigations to be conducted based on different timescales, impacts,

⁽⁶²⁾ www.flanet.org

⁽⁶³⁾ <http://climate-adapt.eea.europa.eu/metadata/publications/climate-change-adaptation-practice-across-the-eu/11246684>;
http://www.flanet.org/sites/default/files/RAS_Regional%20Adaptation%20Strategy.pdf;
http://www.regione.lombardia.it/wps/wcm/connect/841f23be-02ea-423c-b868-052cc92b6578/Allegato+alla+Comunicazione_Rapporto+di+sintesi_DEF.pdf?MOD=AJPERES&CACHEID=841f23be-02ea-423c-b868-052cc92b6578;
http://www.regione.lombardia.it/wps/wcm/connect/946249ce-87c4-4c39-88f9-5eab3a264f14/Documento+Azione+Adattamento+RL_9dic.pdf?MOD=AJPERES&CACHEID=946249ce-87c4-4c39-88f9-5eab3a264f14

⁽⁶⁴⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽⁶⁵⁾ http://climate-adapt.eea.europa.eu/data-and-downloads#b_start=0

vulnerabilities and targeted sectors. These could be used to assess progress in the development of national strategies and plans, to assess the mainstreaming process achieved in different EU regions and to understand the local barriers to or success factors for adaptation policies in European countries (e.g. in relation to flooding impact or the water management policy sector).

The main added value achieved by FLA using the abovementioned features of Climate-ADAPT (i.e. the country pages and database) has been the strengthening of its role as an intermediary organisation able to support various policy processes with evidence documents on adaptation, optimising human resources and saving time. The comprehensive

Figure A15 FLA and Lombardy Region experts during the preparation of the regional adaptation plan



Source: © Mita Lapi, Lombardy Foundation for the Environment.

overview of adaptation policies in Europe offered by the Climate-ADAPT platform, as a single tool capable of collecting an impressive amount of information on adaptation action at different levels, made it possible, in a reasonable amount of time, to appreciate differences and similarities between national approaches to mainstreaming adaptation.

Future plans

FLA has consistently used and will continue to use information from Climate-ADAPT in the context of international cooperation and research projects such as LIFE Master Adapt ⁽⁶⁶⁾ and Alpine Space Project (ASP) GoApply! ⁽⁶⁷⁾. Since the signatory countries of the Alpine Convention ⁽⁶⁸⁾ now have a dedicated instrument for further cooperation on adaptation (the Alpine Climate Board ⁽⁶⁹⁾), experts from FLA, appointed by the Italian Delegation to the Alpine Convention, will contribute to use Climate-Adapt information for the synthesis report and recommendations to the Alpine Conference 2018 envisaged by the working programme of the Alpine Climate Board.

Detailed information on non-state initiatives on adaptation, including at municipal and regional levels and the action plans published under the new Covenant of Mayors ⁽⁷⁰⁾, would help in gaining a deeper insight into the actions carried out — including on a voluntary basis — by regions and lower-level governments across Europe. The improvement of information on this level would further support assessment and reporting activities at regional and local levels.

⁽⁶⁶⁾ <https://masteradapt.eu/>

⁽⁶⁷⁾ <http://www.alpine-space.eu/projects/goapply/en/home>

⁽⁶⁸⁾ www.alpconv.org

⁽⁶⁹⁾ <http://www.alpconv.org/en/newsevents/latest/NewsDetails.html?entryid=122077>

⁽⁷⁰⁾ www.covenantofmayors.eu/

Climate-ADAPT use case 16 — Health sector in England

Using Climate-ADAPT information to create a risk and adaptation plan for the health sector in England

Climate-ADAPT features used: database; EU policy; countries, regions, cities (country pages); knowledge (research projects), events

Sector: health

Governance level: national

Biogeographical region: Atlantic

Policy stage: policy development

The challenge

The Sustainable Development Unit (SDU) for the health and social care system in England is funded by Public Health England (PHE) ⁽⁷¹⁾ and National Health Service England (NHSE) ⁽⁷²⁾. The SDU is tasked by PHE and NHSE with embedding the principles of sustainable development, carbon reduction and adaptation across the health and social care system and ensuring that this supports societal approaches to the wider determinants of health and health protection. One of the tasks of the SDU is to support embedding and coordination of the work to address challenges related to the impacts of climate change on hospitals and other health facilities, ambulance services and the wider supply chain. Public sector organisations are required to report on their preparation and planning for adaptation under the Second Adaptation

Reporting Power (2nd ARP) ⁽⁷³⁾, part of the Climate Change Act 2008. In response to the 2nd ARP, the SDU was tasked by PHE and NHSE with coordinating the cross-sector input and writing a sectoral adaptation plan for the whole of the health sector. The aim was to outline the risks from climate change to the public's health and to service delivery and the health sector's responses to these risks, as well as to determine whether or not adaptation plans were in place and provide recommendations for the next five years to increase the sector's resilience to climate change. This resulted in the Adaptation report for the healthcare system 2015 ⁽⁷⁴⁾, which provided evidence to inform the policy process, indicators to monitor progress, a sector strategy that set the future vision and recommendations that formed the beginning of a sector plan.

The health and care system in the UK comprises providing care, commissioning care, improving public health, empowering people and local communities, supporting the health and care system, education and training, and regulation, monitoring and safeguarding of patients' interests; these services are provided at a range of levels from individual to national. The report covered the following parts of the English health system: overarching system level, national bodies, providers (chiefly the National Health Service), ambulance trusts, clinical commissioning groups, and community and public health (Health and Wellbeing Boards).

The approach

The ARP2 report was co-funded by PHE and NHSE, with both sponsors contributing equally, and the SDU

⁽⁷¹⁾ PHE is an operationally autonomous executive agency of the Department of Health, which exists to protect and improve the nation's health and well-being, and to reduce health inequalities.

⁽⁷²⁾ NHSE is the national commissioning board for health services in England.

⁽⁷³⁾ <https://www.gov.uk/government/collections/climate-change-adaptation-reporting-second-round-reports>

⁽⁷⁴⁾ <https://www.gov.uk/government/policies/climate-change-adaptation>

produced it on behalf of the whole group. The report was produced by a cross-system working group (the Department of Health, NHSE and PHE). The group was aware of the wealth of information on climate scenarios and risk assessment that was available in the UK (from UK Climate Impacts Programme (UKCIP) work until 2012, the Climate Ready Support Service from the Environment Agency 2012-2015 and the UK government, including the 2012 Climate Change Risk Assessment (CCRA) ⁽⁷⁵⁾). However, there was benefit in finding out about what the rest of Europe was doing, particularly with a view to understanding the approaches of other European countries to adaptation in the health sector and reflecting on the European state of play in terms of knowledge and adaption responses. To find this information, members of the working group used the individual European country pages to find out what each country was doing in its health sector. They also looked at other countries' approaches by searching the database using the keywords function and used the research projects pages, knowledge tab and case studies to search for indicators and guidance. Finally, they used the EU policy pages to keep up to date with EU adaptation policy. Overall, this gave them a good understanding of the scope of knowledge and policy in this area; they discovered that, at the time (2013-2014), there were only a few relevant studies because this was a specialist area. In addition to Climate-ADAPT, they also had help from the World Health Organization and Ricardo-AEA.

PHE submitted the final ARP report to the Climate-ADAPT database and also submitted the report Health effects of climate change in the UK (2012) ⁽⁷⁶⁾. PHE submitted information to provide increased exposure for this work outside of the UK, to increase opportunities for collaboration and to expand and share knowledge.

More generally, PHE used the 'News' and 'Events' pages on the Climate-ADAPT home page to keep informed about upcoming events on adaptation to climate change in the EU. This information enabled them to participate in several sector-related events (e.g. European Commission meetings in Brussels) and stakeholder participation workshops on EU-funded research projects (e.g. Bottom-up Climate Adaptation Strategies towards a Sustainable Europe (BASE)).

Future plans

The SDU will be working with PHE, NHSE and cross-sector partners to produce the next ARP. PHE have been heavily involved with the CCRA in preparation for this. The CCRA work has been shared and developed through a national adaptation planning group for health attended by key national agencies from across the system, including the Department of Health, the Department for Environment, Food and Rural Affairs, PHE, NHSE and the SDU.

Figure A16 'Sustainable, Resilient, Healthy People & Places'

A sustainable approach

Helping to create sustainable, resilient, healthy places and people needs to be approached both by enabling the positives and by reducing the negatives allowing virtuous cycles to constantly improve outcomes.



Note: The 2014-2020 Sustainable Development Strategy for the health and social care system in England.

Source: © Public Health England Sustainable Development Unit.

⁽⁷⁵⁾ <https://www.gov.uk/government/policies/climate-change-adaptation>

⁽⁷⁶⁾ <https://www.gov.uk/government/publications/climate-change-health-effects-in-the-uk>

Climate-ADAPT use case 17 — Research organisation: UK Meteorological Office

The research perspective: assessing the status of EU climate projections from Climate-ADAPT for Copernicus Climate Services and EU-funded Horizon 2020 projects

Climate-ADAPT features used: database; EU policy (sector page); countries, regions, cities (country pages and interactive Map Viewer); news; events

Sector: adaptation in general/research

Governance level: national

Biogeographical region: Atlantic

Macro-region: North West Europe

Policy stage: policy development

The challenge

The UK Meteorological Office (Met Office) needed to get a quick and comprehensive overview of the state of the art of national climate projections in Europe's countries and regions for its Copernicus Climate Change Service (C3S) project 34a_Lot3 (Copernicus Roadmap for European Climate Projections⁽⁷⁷⁾) and its Horizon 2020 proposal on a European Climate Prediction system (EUCP), which it led (and won) in 2017.

The UK Met Office was fully aware of the wealth of information on climate scenarios that was available in the UK (from UKCIP work until 2012, the Climate Ready Support Service from the Environment Agency

2012-2015 and the UK government including the UK-wide climate projections (UKCP09)⁽⁷⁸⁾). However, the Met Office needed information on the status of national climate projections in other European countries to determine what type of climate services are needed.

The approach

To find information for its EU-funded research projects, the UK Met Office used the Climate-ADAPT country feature extensively, accessing individual country pages using the quick links on the home page. It also used the interactive Map Viewer⁽⁷⁹⁾ and several of the thematic maps with links to relevant reports to find the information for each country. These features allowed it to quickly gain an overview of activities such as climate projections, climate change risk assessments and national adaptation programmes in countries around Europe. Because of the fact sheet character of the pages, the information presented is moderately comparable across all countries. The 'Download page as PDF' functionality at the bottom of each country page allowed the information to be exported for further or future use.

The Met Office searched the database using filters, for example 'data type', to find the information it needed. It also used the filters 'network/organisations' and 'network/international organisations' to find stakeholders and make useful links to relevant organisations. Finally, the Met Office looked at information available on Climate-ADAPT in the form of a considerable number of sector pages on another Copernicus project, SECTEUR⁽⁸⁰⁾, which deals with understanding the needs of sectoral users in relation to climate data (agriculture/forestry, coastal areas, health, infrastructure, insurance and tourism).

⁽⁷⁷⁾ <https://climate.copernicus.eu/copernicus-roadmap-european-climate-projections>

⁽⁷⁸⁾ <http://ukclimateprojections.metoffice.gov.uk>

⁽⁷⁹⁾ <http://climate-adapt.eea.europa.eu/countries-regions/countries>

⁽⁸⁰⁾ <https://climate.copernicus.eu/secteur>; <http://www.the-iaea.org/projects/secteur>

The information extracted from Climate-ADAPT informed the UK Met Office's ongoing Copernicus project and has also been useful in a number of Horizon 2020 projects, for example Climateurope⁽⁸¹⁾. The Met Office is now more confident that it has found the most up-to-date national projections.

The UK Met Office used the information harvested from Climate-ADAPT primarily for research purposes to synthesise the information into a description of the state of play of climate projections in Europe. The information gathered from Climate-ADAPT was also used in participatory processes and for knowledge-sharing, for example in stakeholder consultations for the upcoming UKCP18 projections and in discussions with organisations involved in Copernicus and Horizon 2020 climate projects.

Where appropriate, the Met Office recommends Climate-ADAPT to colleagues, customers and stakeholders, because the information has been checked by experts and is considered to be trustworthy and accurate. This enabled the Met Office to gain an overview quickly, without having to regularly refer back to the primary literature.

Future plans

The UK Met Office is continuing to work on further Horizon 2020 and C3S projects relevant to European adaptation needs. The UK Met Office will continue to consult Climate-ADAPT as needed, to get a quick overview of the status of EU adaptation policy and knowledge development.

UK Met Office colleagues are planning to submit the key results of the SECTEUR project to the Climate-ADAPT database, so that they can be shared with other experts in Europe. This is because they are experienced Climate-ADAPT users and are aware of the added value of making research information available at EU level.

As both a research organisation and an information provider (i.e. an organisation that submits items) the UK Met Office would like to find the following additional features on Climate-ADAPT:

- a) Auto-generated comparisons between selection of countries/projects. It would be very useful from a research perspective if users could auto-generate comparisons between a selection of countries on their status of adaptation to climate change (e.g. by using traffic-light grading to produce a searchable mini-database and by using artificial intelligence).
- b) Closer links with other European Commission services and initiatives, for example C3S and Horizon 2020. It would be very helpful to allow users to benefit from enhanced links between Climate-ADAPT and C3S⁽⁸²⁾ and the Copernicus Atmosphere Monitoring Service⁽⁸³⁾. These services have dedicated science and media outlets as well as staff supporting them. Some of the other Copernicus components, such as the Copernicus Emergency Management Service⁽⁸⁴⁾ and mapping, etc., could also be relevant.

⁽⁸¹⁾ <https://www.climateurope.eu>

⁽⁸²⁾ <http://climate.copernicus.eu>

⁽⁸³⁾ <http://atmosphere.copernicus.eu>

⁽⁸⁴⁾ <http://emergency.copernicus.eu>