



Climate change adaptation of major infrastructure projects

ANNEX I: EU Level additional resources

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DATA AVAILABILITY			
Source (s)	Initial findings	Sector(s)	Good Practice
<i>Climate adapt</i>	<p>Aside from the Map Viewer and Map Book Urban Vulnerability there are numerous links to documents that contain data on sensitivity, exposure, climate change impacts, potential measures etc. The database contains an advanced search function, allowing users to search for specific data. Except broadband and waste, the different sectors are also mentioned in the search engine.</p> <p>http://climate-adapt.eea.europa.eu/</p>	All	Database-select 'information source: case study'. There is also reference to some external databases with case studies
<i>Map Viewer-climate adapt</i>	<p>This webtool combines the information from several research projects and institutions (ENSEMBLES, ESPON Climate, ClimWatAdapt, JRC-IES indicators, EEA-thematic indicators). The indicators inform on exposure, sensitivity, vulnerability, impact, respons capacity,etc. The Map Viewer provides relevant Climate Data and a good overview of the most frequent climate hazards in the EU. The level of detail is regional rather than local, so depending on the project type, data might not be sufficiently detailed and need downscaling first in order to be of use. Very practical however for a first quick (strategic) screening.</p> <p>http://climate-adapt.eea.europa.eu/knowledge/tools/map-viewer</p>	All	no
<i>Map book urban vulnerability</i>	<p>The webtool provides information on vulnerability of cities for a defined set of cities in the EU (exposure, sensitivity and response capacity indicators). Information is displayed in interactive map of EU. GIS datasets are made available. The tool includes links to other datasets and Climate-adapt cases, datasets etc. Although the focus is on cities, it contains relevant information for most if not all sectors. The usefulness of the information will depend on the scale of the project (more useful for projects that are on a larger scale as there are no local differentiators) or the required level of detail (more usefull in strategic planning than in e.g. design phase). The Map Book is a great tool to create awareness for e.g. permit granting or managing authorities.</p> <p>http://climate-adapt.eea.europa.eu/knowledge/tools/urban-adaptation/introduction</p>	All	There is a link to the climate-adapt case studies
<i>Urban adaptation to climate change in Europe 2016</i>	<p>The report discusses urban adaptation practices and complexities up to 2016, informs on the type of measures adopted the most up till now (both in infrastructure projects (dikes) and soft measures). The publication is mainly policy oriented, but the practical examples make it relevant for other stakeholders also. Including information on: knock-on effects, key observed and projected CC and CC impacts (EU scale), adaptation approaches (coping, incremental, transformational) and measures (table 3,3), appraisal of measures. The report provides guidance on governance for climate change adaptation.</p>	All	Examples are provided throughout the text, most of them have been

	https://www.eea.europa.eu/publications/urban-adaptation-2016		adopted in climate adapt.
<i>Climate Change Impacts and Vulnerability</i>	<p>An indicator based assessment of past and projected climate change provides an overview of data on vulnerability (exposure and sensitivity) and risk assessment (impact and chances). The report builds on the outcomes of several EU research projects and includes:</p> <ul style="list-style-type: none"> - an assessment of past and projected climate change (Chapter 3), its impacts on environmental systems (Chapter 4) and society (Chapter 5- e.g. impact on Energy and Transport), primarily based on indicators; - a structured review of multi-sectoral climate change impact, vulnerability and risk assessments for ecosystem services (Section 4.5) and society at large (Chapter 6); and - an overview of the policy background for climate change adaptation (Chapter 2) and the development of the associated knowledge base (Chapter 7) <p>https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016</p>	All	Case studies adopted throughout the text- mainly linked to institutional capacity and system frameworks
<i>Resilience of large investments and critical infrastructures in Europe to climate change</i>	<p>This technical report describes the activities of a project which provides the first comprehensive multi-hazard multi-sector risk assessment for Europe under climate change and identifies the most vulnerable and impacted regions in Europe throughout the 21st century. A large part of this study was devoted to collecting detailed geospatial information of current critical infrastructures, as a one-stop-shop was not available. Information on infrastructures in Europe was rather scattered, with different sources available for different infrastructure types, or with different data sources providing data for the same infrastructure type. - See TABLE 4.1 for sources by sector.</p> <p>https://ec.europa.eu/jrc/en/publication/resilience-large-investments-and-critical-infrastructures-europe-climate-change</p>	Energy, transport, waste, water,	Yes
<i>Non-paper Guidelines for Project Managers: Making vulnerable investments climate resilient</i>	<p>The Commission strongly encourages the use of the Guidelines, both in EU-funded projects and more widely. The non-paper guidelines were published simultaneously with the EU adaptation Strategy Package and support climate resilience being incorporated into a number of policy areas and financing instruments of relevance to asset and infrastructure. Annex II of the guidance provides an example of the methodology.</p> <p>https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/non_paper_guidelines_project_managers_en.pdf</p>	All	<p>EC Guide to Cost Benefit Analysis of Investment Projects;</p> <p>EU Member State Risk Assessment and Guidelines for Disaster Management;</p>

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<p><i>Implications of sea-level rise and extreme events around Europe: a review of coastal energy infrastructure</i></p>	<p>Using a Geographical Information System this paper assesses coastal energy infrastructure, comprising (1) oil/gas/LNG/tanker terminals and (2) nuclear power stations. It discusses planning and adaptation for sea-level rise and extreme events. Results indicate 158 major oil/gas/LNG/tanker terminals in the European coastal zone, with 40% located on the North Sea coast. There are 71 operating nuclear reactors on the coast (37% of the total of European coastal countries), with further locations planned in the Black, Mediterranean and Baltic Seas</p> <p>https://eprints.soton.ac.uk/360080/</p>	<p>Energy</p>	<p>yes</p>
<p><i>Adaptation to climate change, 2012</i></p>	<p>This CEDR report summarises main effects of climate change, strategies for adaptation and potential measures for design and operation of road infrastructure, some decision making tools are discussed i.e. risk analysis and cost-benefit analysis. An overview of risks related to climate change for each country of the working group is given and on-going work related to adaptation to climate change at national level and road administration level.</p> <p>http://www.cedr.fr/home/fileadmin/user_upload/Publications/2013/T16_Climate_change.pdf</p>	<p>Transport</p>	<p>Appendix 3 gives examples of adaptation work and good practice (27 case studies are reported)</p>
<p><i>JRC webpages</i></p>	<p>Climate change assessment- Aim is to carry out research in order to provide independent scientific advice and support to EU policy.</p> <p>the compilation of a large number of databases in addition to the development of software and modelling tools. Topics include costs and benefit of CCA, CC impacts, development of climate risk impact practices. Potentially relevant projects are e.g. PESETA, EDO, GDIS, EFAS, EFFIS, GEM E3, DMRKC. These projects require further investigation.</p> <p>Climate data covered are e.g. water indicators, precipitation, drought,...)</p> <p>https://ec.europa.eu/jrc/en/research-topic/climate-change</p>	<p>All</p>	<p>Yes</p>
<p><i>Acting on Climate Change, 2016</i></p>	<p>The CEDR report gives an updated review of risk identification methods. Specific examples on areas such as information to road users, incident management, implementation through planning phases, tools for risk analyses, legislative work, research, information-sharing and much more.</p>	<p>Transport</p>	<p>The appendix reports on ongoing research activities by various European and international bodies and case studies</p>
<p><i>Ariscc</i></p>	<p>ARISCC covers natural hazards and respective risks for railway infrastructures: temperature, precipitation, wind, lightning and vegetation. A guidance document is provided for Railway Infrastructure Managers for an integrated natural hazard management comprising the following elements: weather info, recording and mapping of natural</p>	<p>Transport</p>	<p>yes</p>

	<p>hazards, monitoring of the status of infrastructure, vulnerability assessment, management of risks, assessing future weather conditions, strategies and adaptation measures. ARISCC will also provide useful info about standards for new and for existing infrastructure. The results from the project are being used by administrations in at least one MS (Belgium), while not a project partner .</p> <p>http://www.ariscc.org/</p>		
<i>Ecconet</i>	<p>The ECCONET project examined the impact of climate change on inland navigation in Europe with the emphasis on the Rhine-Main-Danube corridor. The study focused on ship operations, ship engineering, hydraulic engineering activities and methods for the prediction of water conditions. Recent climate scenarios were evaluated, and adaptation strategies defined. Both scenario's were assessed with respect to applicability, implementation and costs.</p> <p>Cases: Case study on retrofitting a ship with an adjustable tunnel. Identification of innovative measures in technical changes, operation of the fleet, and new logistic solutions. 8 different measures are identified</p> <p>https://www.ecconet.eu/</p>	Transport	yes
<i>Challenges of Growth 2013</i> <i>Task 8: Climate Change Risk and Resilience</i>	<p>An overview is given of CC forecasts and impact on the EU aviation sector, considering temperature rise, precipitation, wind and sea level rise. It is concluded that further sector and location specific risk assessment is required to quantify potential impacts. The aviation sector needs to build climate resilience whilst dealing with growth in demand. Some of the regions where the highest rates of growth are expected are also areas (South East and Central Europe) which may experience the most severe impacts of climate change. The report recommends cost-benefit analysis to identify appropriate levels of infrastructure protection and to determine to what extent existing infrastructure should be protected and to what extent other measures, such as relocation, should be considered.</p> <p>Cases: Norwegian airports (avinor) have guidance stipulating runways should not be built lower than 7m above sea level + all exposed runways at coastal airports have undergone an extensive programme to increase wave and storm surge protection.</p> <p>http://www.eurocontrol.int/sites/default/files/article/content/documents/official-documents/reports/201303-challenges-of-growth-2013-task-8.pdf</p>	Transport	yes
<i>Climate change adaptation, coastal and marine issues</i>	<p>As a part of the EU strategy Package, the document gives a description of impacts of CC on coastal zones and of marine issues. Detail on environmental but also socio-economic aspects are included. The document contains a description of Existing Adaptation Efforts.</p> <p>https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/swd_2013_133_en.pdf</p>	Water, Transport, Energy	No
<i>Copernicus</i>	<p>Copernicus Climate Change Service (C3S): help societal and business sectors improve decision-making and planning regarding climate mitigation and adaptation.</p> <p>The platform provides reliable and up-to-date information on how the planet and its climate are changing. The SWICCA: Service for Water Indicators in Climate Change Adaption</p>	Energy, Transport, Urban	Urban SIS, Swicca

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	<p>The scope of the project is to bridge the gap between institutes who provide water and climate data on one side, and water managers and policy makers on the other side. SWICCA will deliver a climate service for water management, where local consultancies and agencies, known as 'knowledge purveyors' can easily access most relevant pan-European data and tools for local applications. Urban SIS: Climate Information for European Cities. The goal of the project is to provide a proof-of-concept of a service offering Essential Climate Variables (ECV) and impact indicators based on temperature and other climatic variables together with air pollutant concentrations. This information will bring more consistent and useful data to the health sector operating in urban areas.</p> <p>Copernicus provides data on: average surface air temperature, sea-ice, hydrological climate variables, air and sea-surface temperature, atmospheric circulation and precipitation – forecasts are updated every month and cover a time range of 6 months.</p> <p>http://www.copernicus.eu/</p>		
<i>Multi-hazard assessment in Europe under climate change.</i>	<p>The publication adds to the understanding of the extent to which climate-related extreme events will take place under future climate change. While being relevant in terms of topic and data provided, the scope of the document is however limited in its direct practical use in project preparation with regards to infrastructure projects.</p> <p>https://link.springer.com/article/10.1007/s10584-016-1661-x</p>	All	No
<i>Extreme Weather Events in Europe: preparing for climate change adaptation</i>	<p>DATA Climate Change consequences risk management Identification of adaptation measures decision-support : The World Bank has characterised the key steps in the development of an adaptation strategy</p> <p>http://www.easac.eu/fileadmin/PDF_s/reports_statements/Extreme_Weather/Extreme_Weather_full_version_EASAC-EWWG_final_low_resolution_Oct_2013f.pdf</p>	water, energy, transport	Yes
<i>The record of marine storminess along European coastlines</i>	<p>Scientific publication on (current and future) risk of storms.</p> <p>http://www.nat-hazards-earth-syst-sci.net/13/1999/2013/nhess-13-1999-2013.pdf</p>	All	No

<i>Financing urban adaptation on Climate Change</i>	<p>The document offers insights into lessons learned on the ground regarding the most successful approaches, the difficulties encountered and overcome and the key success factors in financing local adaptation action. While primarily focussed on policy and governance, these lessons are relevant for different stakeholders dealing with adapting infrastructure to future climate change. It includes a list of potential financing options at EU-level.</p> <p>http://www.eea.europa.eu/publications/financing-urban-adaptation-to-climate-change</p>	All	No, all the case studies have been added to the Climate Adapt database
<i>ClipC</i>	<p>includes DATA from satellite and in-situ observations, climate models, data re-analyses, and transformed data products enabling impact assessments and assessment of climate change. CLIPC complements existing services such as GMES/Copernicus pre-operational components, but focuses on datasets providing information on climate variability on decadal to centennial time scales from observed and projected climate change impacts in Europe. CLIPC provides a toolbox to generate, compare, manipulate and combine indicators: the climate impact indicator toolkit. Part of the toolbox is integrated with Climate-ADAPT.</p> <p>http://www.ceda.ac.uk/projects/clipc/</p>	All	Yes, some examples are included
<i>Mediation</i>	<p>Methodology for Effective Decision-making on Impacts and Adaptation. Objective: integrate, consolidate and enhance access to the existing knowledge in the proper context of local, regional and sectoral application, methods and data. Adaptation Platform provides three interlinked Core Elements - the Adaptation Pathfinder, the Toolbox, and the Case Study Navigator.</p> <p>http://www.mediation-project.eu/</p>	-	-
<i>WeAdapt</i>	<p>weADAPT is a collaborative platform on climate adaptation issues. It allows practitioners, researchers and policy-makers to access credible, high-quality information and connect with one another. It started off as a UK initiative but currently includes worldwide research and adaptation cases. It is especially meant to be a knowledge-sharing platform.</p> <p>http://www.weadapt.org</p>	All	No
<i>European Centre for Medium-Range Weather Forecasts</i>	<p>an independent intergovernmental organisation supported by 34 states. ECMWF is both a research institute and a 24/7 operational service, producing and disseminating numerical weather predictions to its Member States. This data is fully available to the national meteorological services in the Member States. The Centre also offers a catalogue of forecast data that can be purchased by businesses worldwide and other commercial customers.</p> <p>https://www.ecmwf.int/en/forecasts</p>	All	No
<i>disaster risk management knowledge centre</i>	<p>a focal point of reference in the European Commission that supports the development of DRM related actions. Some of the core activities of the DRMKC are to develop an EU wide web-based platform focusing on dissemination and visualisation of data, tools and methodologies (started in 2017).</p> <p>http://drmkc.jrc.ec.europa.eu/</p>	All	-

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<i>DRMKC Risk Data Hub</i>	includes knowledge and models developed by different sectors and for different hazards over recent decades and economic (and other types of) loss data to feed the models and to improve forecasting of expected losses. http://drmkc.jrc.ec.europa.eu/partnership/Scientific-Partnerships/Risk-Data-Hub#documents/789/list	All	-
<i>IES- European Drought observatory</i>	Raw data/ indicators on drought http://edo.jrc.ec.europa.eu/edov2/php/index.php?id=1000	all	-
<i>European Flood Awareness system</i>	Flood indicator data, including flash floods https://ec.europa.eu/jrc/en/research-topic/floods	All	-
<i>The European Forest Fire information system (EFFIS)</i>	IES/ Copernicus Data on forest fires. Historic data not directly accessible through the website, only limited time (e.g. 90days) available online http://effis.jrc.ec.europa.eu/applications/data-and-services/	All	-
<i>CORDEX</i>	Regional climate modelling. Cordex is the successor for the ENSEMBLE Regional climate data portal http://www.cordex.org/ ,	All	-
<i>European Soil Data Centre (ESDaC)</i>	Several soil related indicators, e.g. future rainfall erosivity https://esdac.jrc.ec.europa.eu/ https://esdac.jrc.ec.europa.eu/themes/future-rainfall-erosivity-projections-2050-based-climate-change	All	-

<p><i>The costs of climate-change adaptation in Europe: a review (2012), EIB</i></p>	<p>The purpose of this review is to compare recent estimates on adaptation costs based on their adaptation perspective. Available are adaptation-cost estimates for industrialized countries in general, climate change impact assessments for Europe, as well as several adaptation cost or climate impact studies on the sector level.</p> <p>http://www.eib.org/attachments/efs/economics_working_paper_2012_05_en.pdf</p>	<p>All</p>	<p>-</p>
<p><i>OURCOAST network and database</i></p>	<p>The OURCOAST database is a comprehensive compilation of hundreds of case study summaries that reflect successful cases of integrated coastal management applied throughout Europe, including many cases focusing particularly on climate change adaptation information and communication systems, planning and land management instruments, and institutional coordination mechanisms.</p> <p>http://ec.europa.eu/ourcoast/index.cfm?menuID=3</p>	<p>Urban/ water</p>	<p>yes</p>
<p><i>Liscoast</i></p>	<p>The proposed work aims to develop and apply an integrated assessment tool LISCoAsT. The main objectives are to: (i) Develop dynamic scenarios of catastrophic coastal hazards (e.g., storm surges, sea-level rise) in view of climate change; (ii) Develop scenarios of exposure and vulnerability in coastal areas; (iii) Carry out a bottom-up, highly disaggregated assessment of climate impacts on coastal areas in Europe and worldwide in view of global warming.</p> <p>Available data sets are: storm surge level, wave energy flux and sea level.</p> <p>http://data.jrc.ec.europa.eu/collection/LISCOAST</p>	<p>water</p>	<p>-</p>
<p><i>Adapting information and communication technology infrastructure to the effects of climate change</i></p>	<p>The International Telecommunication Union has issued the recommendation L.1502 "Adapting information and communication technology infrastructure to the effects of climate change"¹ for the purpose of identifying climate threats and their impact. L.1502 supports resilience by design in identified risk areas, and proposes changes to equipment installation standards to ensure protection from more frequent extreme weather phenomena and their impacts.</p> <p>https://www.itu.int/rec/T-REC-L.1502-201511-I/en</p>	<p>Broadband</p>	<p>yes</p>

¹ <https://www.itu.int/rec/T-REC-L.1502-201511-I/en>

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<i>ICLEI Resilience Resource Point</i>	The ICLEI Resilience Resource Point ² provides a gateway into the growing collection of websites, networks and literature dedicated to adaptation and resilience, with a particular focus on urban regions and cities. http://resilient-cities.iclei.org/resilient-cities-hub-site/resilience-resource-point/	Urban/ All	yes
<i>Adaptation of Road Bridges to climate change- Piarc</i>	Short description of potential climate change impacts on road bridges and the need to integrate climate change consideration in the design of new and existing road bridges https://www.piarc.org/en/order-library/26472-en-Adaptation%20of%20road%20bridges%20to%20climate%20change.htm	Transport	yes
<i>The resilient road- FEHRL</i>	In 2017 the Forum of European Highway Research Laboratories published a progress report on their 'Forever Open Road' initiative, in which Climate resilience is one of the three topics under consideration. The report provides guiding principles and related actions (e.g. identifying vulnerabilities) for new road transport infrastructure at a high level, but also points out which research and innovation topics should be addressed in the coming year. By doing so they offer information on potential (future) climate change adaptation measures. Last but not least, the report also provides an overview of demonstration projects. http://foreveropenroad.fehrl.org/library?id=7614	Transport	yes

² <http://resilient-cities.iclei.org/resilient-cities-hub-site/resilience-resource-point/>

METHODOLOGIES

Source (s)	Initial findings	Sector	Good Practice
<i>Commission Implementing Regulation (EU) 2015/207</i>	The document lays down detailed rules for implementing the Common Provisions Regulation. In the case of EU-funded major projects, the beneficiary has to provide the information requested in the format for submission of the information on a major project (ANNEX II of this implementing act). Commission Implementing Regulation (EU) 2015/207	All	-
<i>Climate adapt</i>	As part of the adaptation planning tool and the 'Urban Adaptation Planning Tool', links to an assessment report of methodologies to carry out vulnerability analysis and risk assessment methodologies are included. This links to the GRaBS project (see DR 2313). http://climate-adapt.eea.europa.eu/	All	Database-information source: 'case study'
<i>Climate change in Major Projects</i>	This document explains the requirements on Climate Change Adaptation (and mitigation) for major projects in order to obtain ESI funding. The requirements for ESIF are clarified in a table specifying the needed information. Three different types of information are mentioned: the vulnerability assessment (based on exposure and sensitivity analysis), Risk assessment (based on impacts and probability of events) and adaptation options (measures, appraisal and planning). For each of these aspects a short methodology is given. https://ec.europa.eu/clima/sites/clima/files/docs/major_projects_en.pdf	All	-
<i>Non-paper Guidelines for Project Managers: Making vulnerable investments climate resilient</i>	The Commission strongly encourages the use of the Guidelines, both in EU-funded projects and more widely. They sit within the evolving policy context on adaptation in the Commission, which is seeing climate resilience being incorporated into a number of policy areas and financing instruments of relevance to asset and infrastructure. Annex II of the guidance provides an example of the methodology. http://climate-adapt.eea.europa.eu/metadata/guidances/non-paper-guidelines-for-project-managers-making-vulnerable-investments-climate-resilient	All	EC Guide to Cost Benefit Analysis of Investment Projects; EU Member State Risk Assessment and Guidelines for Disaster Management;

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<p><i>GRaBS</i></p>	<p>The research project (interreg IV C) resulted in a number of resources, including the vulnerability and risk assessment tool, adaptation action plans developed by the participating local and regional authorities, a database of case studies presenting the use of green and blue space adaptation to climate change in urban areas around the world, and a number of expert papers.</p>	<p>Urban</p>	<p>No</p>
<p><i>TURAS</i></p>	<p>A research project on urban resilience with a focus on city making and community development. The TURAS toolkit offers a set of tools, methods and guidelines for urban resiliency development, including over 80 case studies. Climate change was one of the focal points in the study. The cases describe the methodology and process, more information is available through the project owner. It is not specified what 'additional material' is available. While inspiring and informing on a general approach, for the more complex approaches the level of detail is not sufficient to replicate the intricate steps of processes in project preparation.</p> <p>http://www.turas-cities.org/about#about</p>	<p>Urban, water</p>	<p>Over 80 projects are included, however not all tools/methodologies or guidelines fall within the scope. Most on increasing resiliency capacity or adaptation measures.</p>
<p><i>The Economic Appraisal of Investment Projects at the EIB</i></p>	<p>This guide illustrates how the Bank conducts economic appraisal across all the sectors of the economy where it operates. The Bank uses standard economic appraisal techniques, including Cost-Benefit Analysis, Cost-Effectiveness Analysis and, more recently, Multi-Criteria Analysis, taking into account the evolving circumstances of each sector. Including a section on methodologies for each individual sector (section 11-16).</p> <p>http://www.eib.org/attachments/thematic/economic_appraisal_of_investment_projects_en.pdf</p>	<p>All</p>	<p>Yes</p>
<p><i>Resilience of large investments and critical infrastructures in Europe to climate change</i></p>	<p>This technical report describes the activities of a project which provides the first comprehensive multi-hazard multi-sector risk assessment for Europe under climate change and identifies the most vulnerable and impacted regions in Europe throughout the 21st century. A large part of this study was devoted to collecting detailed geospatial information of current critical infrastructures, as a one-stop-shop was not available. Information on infrastructures in Europe was rather scattered, with different sources available for different infrastructure types, or with different data sources providing data for the same infrastructure type. - See TABLE 4.1 for sources by sector.</p> <p>https://ec.europa.eu/jrc/en/publication/resilience-large-investments-and-critical-infrastructures-europe-climate-change</p>	<p>Energy, transport, waste, water,</p>	<p>Yes</p>

<p><i>Econadapt – Case Study 1: Disaster Risk Reduction</i></p>	<p>The report examines Disaster Risk Management (DRM) strategies of European countries, focused on flooding. A database of DRM investments was constructed containing 110 investments/projects. It is found that most countries employ some form of cost-benefit analysis (CBA) as a decision making tool in long-term investments in flood protection infrastructures. However, other tools such as CEA, MCA, and ROA are also used, sometimes as substitutes, but in most cases, as complements. The report concludes that decision-making in this matter is very complex.</p> <p>http://econadapt.eu/sites/default/files/docs/Deliverable%205-1%20approved%20for%20publishing_0.pdf</p>	<p>Water</p>	<p>The Netherlands provide an interesting example where CBA is used at the highest level.</p>
<p><i>EC Guide to Cost Benefit Analysis of Investment projects</i></p>	<p>Guidance on project appraisals, as embodied in the regulations of the Structural Funds (SF), the Cohesion Fund (CF), and Instrument for Pre-Accession Assistance (IPA) - very financial/technical in risk assessment method.</p> <p>cases: Several including case study for waste (energy recovery) and waste water</p> <p>http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/cba_guide.pdf</p>	<p>All</p>	<p>yes</p>
<p><i>Cost-benefit analysis</i></p>	<p>The CEDR report (2016) recommends cost-benefit analysis for possible adaptation measures as a basis for decision-making. The report refers to a case study (Amalfi coastal road) in which the method was applied. It is also put forward in several cases within the Base - adaptation inspiration book (2016). Also PIARC is suggesting that CBA should be part of a risk and vulnerability assessments.</p> <p>http://www.cedr.fr/home/fileadmin/user_upload/Publications/2013/T16_Climate_change.pdf</p>	<p>All</p>	
<p><i>RIMARROC</i></p>	<p>RIMAROCC method for risk analysis and risk management in road transport, developed by CEDR. It stands for Risk Management for Roads in a Changing Climate. It is a method for risk management and is based on risk identification, risk probability, and risk consequences. The RIMAROCC method consists of seven steps and is a cyclical process of continuous performance improvement and capitalisation on experiences. CEDR suggests to promote it across Europe in order to mitigate risks.</p> <p>http://www.cedr.eu/download/Publications/2016/CEDR2016-5_Acting-on-climate-change.pdf</p>	<p>Transport</p>	<p>-</p>
<p><i>EU-Circle</i></p>	<p>The project (H2020) wants to offer a pan-European framework for strengthening critical infrastructure by developing a methodological framework for assessment of risks and impacts, offering information on impacts to CI in certain sectors (transport, energy and water), contributing to Climate impact assessment standards and looking at adaptation options for CI. The webplatform also includes dissemination material with links to CI risk assessment methodologies, and tools such as Carver², CIS Decision Support System, CIPMA, RAMCAP plus, SRA, etc. While very interesting information is provided, the focus is on critical infrastructure, making it less practical for e.g. project promoters to find their way in the information. This makes the results probably more interesting for managing authorities and permit granting authorities. It is however too soon to draw any conclusions as the research activities are ongoing.</p>	<p>All</p>	<p>Yes, a set of cases in transport, water and energy sectors</p>

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	http://www.eu-circle.eu/ and http://www.eu-circle.eu/wp-content/uploads/2017/03/12.-The-EU-CIRCLE-case-studies.pdf (case-studies)		
<i>SRA-tool</i>	methodology and tool for gas infrastructure. The safety risk assessment includes risks from extreme weather events, such as extreme wind or floods. Practical tool and useful for project development. http://www.gie.eu/index.php/publications/doc_download/22643-gie-security-risk-assessment-methodology-risk-assessment-tool and http://www.gie.eu/index.php/publications/doc_download/22642-gie-security-risk-assessment-methodology-full-version	Energy	no
<i>Ramses</i>	Research project focussed on cities, but potentially of interest to all sectors. The Reconciling Adaptation, Mitigation and Sustainable Development for Cities (RAMSES) project (FP7) aims to provide quantified evidence of impacts of climate change in urban areas and assesses costs and benefits of a wide range of adaptation measures, focusing on cities. This quantitative knowledge is essential for designing and implementing adaptation strategies in the EU and beyond. The Transition Handbook embeds the most important findings from the project in a process management cycle, using the Urban Adaptation Support Tool developed by the European Environment Agency, and synthesises the project results in a practical step-by-step fashion, presenting resources that cities can use to strengthen their knowledge of climate adaptation planning. The transition handbook and training package offer a link to several existing tools (CityCat, UrbCLim, Urbclim high Res, Eurosurge, ENVI-MET,Draught Severity Index,...) and methodologies and can be used as a high-quality guidance on adaptive management, including risk and vulnerability assessments, assessing, selecting and implementing adaptation options and monitoring and evaluation. The guidance contains e.g. video links and case studies. Both practical oriented documents and scientific reports (fully explained methodologies) are included, ensuring that the project can be of use to science, consultants and policy. A few examples are: adaptation cost curves, cost calculation methodologies, an assessment of climate impacts for the transport, energy and urban sectors. http://www.ramses-cities.eu/fileadmin/uploads/Deliverables_Uploaded/ramses_del2.2_final.pdf	urban, water, transport, Energy	yes
<i>Resin</i>	RESIN is an interdisciplinary, practice-based research project investigating climate resilience in European cities. Through co-creation and knowledge brokerage between cities and researchers, the project is working on developing practical and applicable tools to support cities in designing and implementing climate adaptation strategies for their local contexts. The project aims to compare and evaluate the methods that can be used to plan for climate adaptation in order to move towards formal standardisation of adaptation strategies. Final results will include a vulnerability and impact assesment method and a measures library. http://www.resin-cities.eu/home/	Urban	Yes, the Tier 1 cities could provide a case
<i>EU Cities Adapt</i>	The EU cities adapt project provided capacity building and assistance for cities in developing and implementing an adaptation strategy, and additional technical support to DG CLIMA on the state of play of urban adaptation.Awareness raising and exchange of knowledge and good practice and development of tools and guidance on how cities can adapt to climate change were other objectives. 6 adaptation tools/ methdologies were analysed in depth, a long list of 50 tools is also included (see annex 6 of the final	Urban	yes

Directorate-General for Regional and Urban Policy

	<p>report). Many of the tools have a focus on policy, but the Baltic Climate tool also targets business. The report is mainly useful for (local) authorities, looking to increase their (adaptation related) institutional capacity.</p> <p>http://climate-adapt.eea.europa.eu/metadata/publications/eu-cities-adapt-adaptation-strategies-for-european-cities-final-report</p>		
<i>EU CIRcle</i>	<p>EU-CIRCLE's scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. The project's research organisations are working in close partnership with the project's 4 core cities Paris, Manchester, Bratislava, Bilbao.</p> <p>http://www.eu-circle.eu/</p>	-	-
<i>ClipDaR</i>	<p>ClipDaR ("Design guideline for a transnational database of downscaled climate projection data for road impact models") addressed the need for review, analysis and assessment of existing (regional) Climate Change projections regarding transnational highway networks (TEN-T).</p> <p>http://www.cedr.eu/strategic-plan-tasks/research/cedr-call-2012/call-2012-climate-change-road-owners-adapting-climate-change/clipdar-project-results/</p>	Transport	yes
<i>Roadapt</i>	<p>ROADAPT targeted the need for a risk-based approach addressing causes, effects and consequences of weather related events to identify the major risks that demanding mitigating measures from road authorities. An initial framework for this had been prepared through the RIMAROCC framework (Risk Management for Roads in a Changing Climate) under ERANET ROAD Call 2011. ROADAPT aimed to further develop this framework into practical and useful methods for road owners and road operators.</p> <p>The ROADAPT QuickScan methodology is an example of a risk-mapping approach. http://www.cedr.eu/strategic-plan-tasks/research/cedr-call-2012/call-2012-climate-change-road-owners-adapting-climate-change/roadapt-project-results/</p>	Transport	yes
<i>International climate change adaptation framework for road infrastructure</i>	<p>The framework guides road authorities through the process of increasing the resilience of their networks and assets through four stages:</p> <p>Stage 1: Identifying scope, variables, risk, and data Stage 2: Assessing and prioritising risks Stage 3: Developing and selecting adaptation responses and strategies Stage 4: Integrating findings into the decision-making process</p>	Transport	yes

<https://www.piarc.org/en/order-library/23517-en-International%20climate%20change%20adaptation%20framework%20for%20road%20infrastructure.htm>

TOOLS

Source (s)	Initial findings	Sector	Good Practice
<p><i>Map Viewer- climate adapt</i></p>	<p>The interactive map allows you to This webtool combines the information from several research projects and institutions (ENSEMBLES, ESPON Climate, ClimWatAdapt, JRC-IES indicators, EEA-thematic indicators). The indicators inform on exposure, sensitivity, vulnerability, impact, respons capacity,...). The Map Viewer provides relevant Climate Data and a good overview of the most frequent climate hazards in the EU. The level of detail is regional rather than local, so depending on the project type, data might be too high level and need downscaling first in order to be of use. Very practical however for a first quick (strategic) screening.</p> <p>http://climate-adapt.eea.europa.eu/knowledge/tools/map-viewer</p>	<p>All</p>	<p>-</p>
<p><i>Map book urban vulnerability</i></p>	<p>The webtool provides information on vulnerability of cities for a defined set of cities in the EU (exposure, sensitivity and response capacity indicators). Information is displayed in interactive map of EU. GIS datasets are made available. The tool includes links to other datasets and Climate-adapt cases, datasets etc. Although the focus is on cities, it contains relevant information for most if not all sectors. The usefulness of the information will depend on the scale of the project (more useful for projects that are on a larger scale as there are no local differentiators) or the required level of detail (more usefull in strategic planning than in e.g. design phase). The Map Book is a great tool to create awareness for e.g. permit granting or managing authorities.</p> <p>http://climate-adapt.eea.europa.eu/knowledge/tools/urban-adaptation/introduction</p>	<p>All</p>	<p>There is a link to the climate-adapt case studies</p>
<p><i>Econadapt toolbox (Id 2105)</i></p>	<p>The toolbox provides easy accessible information on the economic assessment of adaptation actions. The Toolbox presents guidance on a range of available methods that can be used to support adaptation decision-making. A data repository summarises 21 adaptation measures and their cost and benefits, estimates can be applied to similar contexts in order to assess adaptation actions.</p>	<p>Urban, energy, transport,water</p>	<p>The toolbox is based on data sources which can be consulted. Some sources are linked to specific cases.</p>
<p><i>ToPDAd Data Exploration tool (Id 2106)</i></p>	<p>The ToPDAd Data Exploration tool is an interactive, multi-dimensional data analysis tool that allows exploration of the outcomes of the integrated modelling results for case themes and assessments and the comparison and performance assessment of adaptation strategies over different scenarios over time. ToPDAd allows estimating the cost of inaction versus selected adaptation measures. More in-depth analysis of the tool is needed in order to assess the potential of its use by third parties (e.g. managing authorities, project promotor, ...).</p>	<p>Energy, transport</p>	<p>Case studies on arctic shipping, energy production in Northern Europe, Flooding in London, Nuclear energy in France,</p>

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			Weather extremes and urban traffic.
<i>Covenant of Mayors for Climate and Energy / Mayor Adapt</i>	<p>Mayors Adapt – the Covenant of Mayors Initiative on Climate Change Adaptation – was set up by the European Commission to engage cities in taking action to adapt to climate change and is now intergated in the covenant. The covenant offers: a template for the secap which contains an adaptation scoreboard for cities, case-studies and best practices, peer-to peer learning activities for cities (twinings), information on adaptation and funding of adaptation practices. The template is a useful tool for local and regional authorities. With regards to project development it is certainly interesting to check whether the city or region were the development is planned is member of the Covenant and if so, to check the status of their vulnerability analysis. Often a city/ local authority will have more detailed studies caried out in order to be able to complete the CoM template. The information provided would be usefull for all stakeholders in project preparation.</p> <p>http://www.covenantofmayors.eu/Adaptation.html</p>	All, focus on urban	Yes, benchmark of excellence + city of Ghent (sewer system, flood proofing)
<i>Forest fires and adaptation options in Europe.</i>	<p>Fire. Statiscal analysis of adaptation options</p> <p>Methodologies /tools</p> <p>identification of adaptation measures</p> <p>https://link.springer.com/article/10.1007/s10113-014-0621-0</p>	All	
<i>TURAS</i>	<p>A research project on urban resilience with a focus on city making and community development. The TURAS toolkit offers a set of tools, methods and guidelines for urban resiliency development, including over 80 case studies. Climate change was one of the focal points in the study. The cases describe the methodology and process, more information is available through the project owner. While inspiring and informing on a general approach, for the more complex approaches the level of detail is not sufficient to replicate the intricate steps of processes in project preparation</p> <p>http://www.turas-cities.org/about#about</p>	Urban, water	Over 80 projects are included, however not all tools/ methodologies or guidelines fall within the scope. Most on increasing resiliency capacity or adaptation measures.

<p><i>EU-Circle</i></p>	<p>The project (H2020) wants to offer a pan-European framework for strengthening critical infrastructure by developing a methodological framework for assessment of risks and impacts, offering information on impacts to CI in certain sectors (transport, energy and water), contributing to Climate impact assessment standards and looking at adaptation options for CI. The webplatform also includes dissemination material with links to CI risk assessment methodologies, and tools such as Carver², CIS Decision Support System, CIPMA, RAMCAP plus, SRA, etc. While very interesting information is provided, the focus is on critical infrastructure, making it less practical for e.g. project promoters to find their way in the information. This makes the results probably more interesting for managing authorities and permit granting authorities. It is however too soon to draw any conclusions as the research activities are ongoing.</p> <p>http://www.eu-circle.eu/ and http://www.eu-circle.eu/wp-content/uploads/2017/03/12.-The-EU-CIRCLE-case-studies.pdf (case-studies)</p>	<p>All</p>	<p>Yes, a set of cases in transport, water and energy sectors</p>
<p><i>SRA-Tool</i></p>	<p>Safety Risk Assessment: A semi-quantitative risk assessment methodology and tool for gas infrastructure. The safety risk assessment includes risks from extreme weather events, such as extreme wind or floods. Practical tool and useful for project development.</p> <p>http://www.gie.eu/index.php/publications/doc_download/22643-gie-security-risk-assessment-methodology-risk-assessment-tool and</p>	<p>Energy</p>	<p>No</p>
<p><i>Risk assessment methodologies for critical infrastructure protection. Part II A new approach.</i></p>	<p>Risk assessment methodologies for critical infrastructure protection. Part II A new approach.</p> <p>http://publications.jrc.ec.europa.eu/repository/bitstream/JRC96623/lbna27332enn.pdf</p>	<p>All</p>	<p>Yes, mentioning of efforts in several MS- to be further investigated</p>
<p><i>Ramses</i></p>	<p>Research project focussed on cities, but potentially of interest to all sectors. The Reconciling Adaptation, Mitigation and Sustainable Development for Cities (RAMSES) project (FP7) aims to provide quantified evidence of impacts of climate change in urban areas and assesses costs and benefits of a wide range of adaptation measures, focusing on cities. This quantitative knowledge is essential for designing and implementing adaptation strategies in the EU and beyond. The Transition Handbook embeds the most important findings from the project in a process management cycle, using the Urban Adaptation Support Tool developed by the European Environment Agency, and synthesises the project results in a practical step-by-step fashion, presenting resources that cities can use to strengthen their knowledge of climate adaptation planning. The transition handbook and training package offer a link to several existing tools (CityCat, UrbCLim, Urbclim high Res, Eurosurge, ENVI-MET, Draught Severity Index,...) and methodologies and can be used as a high-quality guidance on adaptive management, including risk and vulnerability assessments, assessing, selecting and implementing adaptation options and monitoring and evaluation. The guidance contains e.g. video links and case studies. Both practical oriented documents and scientific reports (fully explained methodologies) are included, ensuring</p>	<p>All</p>	<p>yes</p>

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	<p>that the project can be of use to science, consultants and policy. A few examples are: adaptation cost curves, cost calculation methodologies, an assessment of climate impacts for the transport, energy and urban sectors.</p> <p>http://www.ramses-cities.eu/home/</p>		
<i>ClipC</i>	<p>includes DATA from satellite and in-situ observations, climate models, data re-analyses, and transformed data products enabling impact assessments and assessment of climate change. CLIPC complements existing services such as GMES/Copernicus pre-operational components, but focuses on datasets providing information on climate variability on decadal to centennial time scales from observed and projected climate change impacts in Europe. CLIPC provides a toolbox to generate, compare, manipulate and combine indicators: the climate impact indicator toolkit. Part of the toolbox is integrated with Climate-ADAPT.</p> <p>http://www.ceda.ac.uk/projects/clipc/</p>	All	Yes, some examples are included
<i>EU Circle</i>	<p>EU-CIRCLE's scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. The project's research organisations are working in close partnership with the project's 4 core cities Paris, Manchester, Bratislava, Bilbao.</p> <p>http://www.eu-circle.eu/</p>	All	-
<i>Liscoast</i>	<p>The proposed work aims to develop and apply an integrated assessment tool LISCoAsT. The main objectives are to: (i) Develop dynamic scenarios of catastrophic coastal hazards (e.g., storm surges, sea-level rise) in view of climate change; (ii) Develop scenarios of exposure and vulnerability in coastal areas; (iii) Carry out a bottom-up, highly disaggregated assessment of climate impacts on coastal areas in Europe and worldwide in view of global warming.</p> <p>Available data sets are: storm surge level, wave energy flux and sea level.</p> <p>http://data.jrc.ec.europa.eu/collection/LISCOAST</p>	water	-
<i>Regiowiki</i>	<p>Tool to navigate the legislation and guidance notes on the European Structural and Investment Funds 2014-2020 in a dynamic way, including the implementing acts where a template for a major project application can be found</p> <p>http://ec.europa.eu/regional_policy/en/information/legislation/regulations/</p>	All	-

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GUIDANCE			
<i>Technical guidance on integrating climate change adaptation in programmes and investments of Cohesion Policy</i>	The purpose of this guidance is to help adaptation experts, Managing Authorities and other stakeholders to ensure that Cohesion Policy programmes and projects address and consider the expected impacts of climate change and take active steps to reduce climate risks	All	Not applicable
<i>Adapting infrastructure to climate change</i>	The paper discusses the instruments and financing provided by the European Union to make Europe's infrastructure more climate resilient and contains some guidance for improved resilience e.g. technical standards / framework for assessment/ management of flood risk. https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/swd_2013_137_en.pdf	Energy, transport, Urban	yes
<i>Adaptation of transport to climate change in Europe</i>	This document describes adaptation practices concerning transport across European countries and provides a summary of the challenges; an overview on the state of adaptation action concerning the transport sector and system; a review of a number of inspiring initiatives in different countries; and conclusions on a potential way forward https://www.eea.europa.eu/publications/adaptation-of-transport-to-climate	Transport	yes
<i>Open European Day 2016</i>	The report provides the narrative from the 'Open European Day' in Bonn, The focus is on adaptation practices in cities (city perspective, policy/ admin). The report mentions several cases throughout Europe and touches on: c. ollaboration, co-creation, institutional capacity and knowledge transfer (science to policy, information vs data), nature based solutions, ... It provides guidance from cities to cities and ... as such provides an example of peer-to-peer learning. http://resilientcities2017.iclei.org/fileadmin/sites/resilient-cities/files/Resilient_Cities_2016/Documents/OED_Report_2016.pdf	Urban	yes
<i>EU-Circle</i>	The project (H2020) wants to offer a pan-European framework for strengthening critical infrastructure by developing a methodological framework for assessment of risks and impacts, offering information on impacts to CI in certain sectors (transport, energy and water), contributing to Climate impact assessment standards and looking at adaptation options for CI. The webplatform also includes dissemination material with links to CI risk assessment methodologies, and tools such as Carver ² , CIS Decision Support System, CIPMA, RAMCAP plus, SRA, etc. While very interesting information is provided, the focus is on critical infrastructure, making it less practical for e.g. project promoters to find their way in the information. This makes the results probably more interesting	All	Yes, a set of cases in transport, water and energy sectors

	<p>for managing authorities an permit granting authorities. It is however to soon to draw any conclusions as the research activities are ongoing.</p> <p>http://www.eu-circle.eu/ and http://www.eu-circle.eu/wp-content/uploads/2017/03/12.-The-EU-CIRCLE-case-studies.pdf (case-studies)</p>		
<i>Guidelines on developing adaptation strategies</i>	<p>This document contributes to achieving the first objective of the EU Adaptation Strategy. It provides a first answer to identified barriers to the uptake of adaptation strategies at national level. It builds on and aims to make more operational the so-called Adaptation Support tool, one of the key features of Climate-ADAPT. This tool was developed together with Member States and other stakeholders during the preparation of Climate-ADAPT</p>	All	Not applicable
<i>Adapting infrastructure to climate change</i>	<p>Document identifies relevant climate hazards related to energy and transport, irrespective of projects location. Guidelines for project managers: making vulnerable investments climate resilient. Several planning themes are discussed, importance of SEA Directive and Floods Directive is highlighted. Importance of adequate insurances in this matter.</p> <p>Two case studies are described, Hafencity in Hamburg and Greening of roofs and facades in Austrian Cities.</p> <p>SWD (2013) 137 - Adapting infrastructure to climate change</p>	Energy, transport, urban	yes
<i>Econadapt - Case Study 2: Economic Project Appraisal</i>	<p>This work package (#6) examined 2 investment projects that deal with adaptation to a higher risk of floods: the case studies tackle hazard assessment and impact assessment, than formulated some adaptation steps and performed an economic assessment to support the decision making process. Based on cases studies, WP6 resulted in some guidelines to address the economic appraisal of major adaptation projects.</p> <p>Cases: Fluvial flood protection in the Vltava river basin in the Czech Republic; and the restructuring of a district, Zorrotzaurre, in the city of Bilbao, Spain.</p> <p>http://econadapt.eu/case-study-2-economic-project-appraisal</p>	Urban, water	yes
<i>Ecconet</i>	<p>The ECCONET project resulted in guidelines and policy recommendations and a development plan for inland waterways (deliverable 5.1). An important conclusion is that no immediate action to combat the climate change effects seems to be necessary, however a targeted policy taking into account the climate change and its effects on the IWT system is advisable. Further research to monitor the development path of climate change and its impact on European waterways is essential, as well as the reduction or elimination of uncertainty.</p> <p>https://www.ecconet.eu/</p>	Transport	no

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<p><i>Placard interchange</i></p>	<p>The PLATform for Climate Adaptation and Risk reDuction – is a hub for dialogue, knowledge exchange and collaboration between the climate change adaptation (CCA) and disaster risk reduction (DRR) communities (H2020). It aims to enhance the coherence of and give direction to CCA and DRR research, policy and practices, strengthening cooperation and countering fragmentation between the domains. They do this by means of workshops (presentations are available online) , policy briefs and webinars. Topics have been the link between CCA and the ecosystem services approach (1) and foresight as a method to reduce vulnerability to climate related hazards (2). The policy briefs are high-level and short, making them useful for inspiring improved action in governance.</p> <p>http://www.placard-network.eu/</p>	<p>All</p>	<p>Not at moment of writing this report</p>
<p><i>TURAS</i></p>	<p>A research project on urban resilience with a focus on city making and community development. The TURAS toolkit offers a set of tools, methods and guidelines for urban resiliency development, including over 80 case studies. Climate change was one of the focal points in the study. The cases describe the methodology and process, more information is available through the project owner. While inspiring and informing on a general approach, for the more complex approaches the level of detail is not sufficient to replicate the intricate steps of processes in project preparation</p> <p>Over 80 projects are included, however not all tools/ methodologies or guidelines fall within the scope. Most on increasing resiliency capacity or adaptation measures.</p> <p>http://www.turas-cities.org/about#about</p>	<p>Urban, water</p>	<p>yes</p>
<p><i>Guide for adressing climate change adaptation in standards</i></p>	<p>The guidance informs on how to integrate/ deal with climate change adaptation in standards. Different climate change adaptation options are mentioned for the different life stages of a project. 4 Cases are added in an annex (legal standard for floodin NL, drainage system(UK), network rail(UK), legal safety network for prevention of regional nuisance from excess water(NL)).</p> <p>ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/32_CENCLCGuide32.pdf</p>	<p>All</p>	<p>yes</p>
<p><i>Ramses</i></p>	<p>Research project focussed on cities, but potentially of interest to all sectors. The Reconciling Adaptation, Mitigation and Sustainable Development for Cities (RAMSES) project (FP7) aims to provide quantified evidence of impacts of climate change in urban areas and assesses costs and benefits of a wide range of adaptation measures, focusing on cities. This quantitative knowledge is essential for designing and implementing adaptation strategies in the EU and beyond. The Transition Handbook embeds the most important findings from the project in a process management cycle, using the Urban Adaptation Support Tool developed by the European Environment Agency, and synthetises the project results in a practical step-by-step fashion, presenting resources that cities can use to strengthen their knowledge of climate adaptation planning. The transition handbook and training package offer a link to several existing tools (CityCat, UrbCLim, Urbclim high Res, Eurosurge, ENVI-MET,Draught Severity Index,...) and methodologies and can be used as a high-quality guidance on adaptive management, including risk and vulnerability assessments, assessing, selecting and implementing adaptation options and monitoring and evaluation. The guidance contains e.g. video links and case studies. Both practical oriented documents and scientific reports (fully explained methodologies) are included, ensuring that the project can be of use to science,</p>	<p>All</p>	<p>yes</p>

	<p>consultants and policy. A few examples are: adaptation cost curves, cost calculation methodologies, an assessment of climate impacts for the transport, energy and urban sectors.</p> <p>http://www.ramses-cities.eu/home/</p>		
<i>EU Cities Adapt</i>	<p>The EU cities adapt project provided capacity building and assistance for cities in developing and implementing an adaptation strategy, and additional technical support to DG CLIMA on the state of play of urban adaptation. Awareness raising and exchange of knowledge and good practice and development of tools and guidance on how cities can adapt to climate change were other objectives. 6 adaptation tools/ methodologies were analysed in depth, a long list of 50 tools is also included (see annex 6 of the final report). Many of the tools have a focus on policy, but the Baltic Climate tool also targets business. The report is mainly useful for (local) authorities, looking to increase their (adaptation related) institutional capacity.</p> <p>http://climate-adapt.eea.europa.eu/metadata/publications/eu-cities-adapt-adaptation-strategies-for-european-cities-final-report</p>	urban	yes
<i>Integrating Climate Change Information and Adaptation in Project Development- Emerging experience from practitioners, EUFIWACC</i>	<p>The document provides insight in and guidance on how to include climate change adaptation into projects and project preparation. There are practical tips for project developers and/ or consultants on the following topics: assessment scoping, climate information and impacts, project planning and design, analysing and explaining risks, costs and benefits, communicating findings and monitoring of results. While there is very useful information included there is no extensive guidance incorporated on how to carry out e.g. a vulnerability assessment.</p> <p>http://www.eib.org/attachments/press/integrating-climate-change-adaptation-in-project-development.pdf</p>	All	Some potential case studies from the conference that preceded the guidance
<i>EUFIWACC guidance: Integrating climate resilience into project development and implementation (Workshop presentation)</i>	<p>Presentation on the EUFIWACC guidance- delivers clear message: includes high level guidance on how to include adaptation into projects- ideal as an introduction to the real guidance, being the EUFIWACC paper (DR1332). Includes tips on how to use the guidance (e.g. as a managing authority). Contact details for more information included in the last slide.</p> <p>http://www.jaspersnetwork.org/download/attachments/21168520/4%20-NP%20Climate%20Adaptation%20meeting%20-%20EUFIWACC%20guidance.pdf?version=1&modificationDate=1467908097000&api=v2</p>	All	no
<i>SuRe</i>	<p>Performance standard Private standard, but most information publicly available - climate and resilience indicators are included. There is no methodology/ guidance/ etc. included on how to deal with CCA in an infra project aside from some fairly general requirements. Through the structure of the document it could be interpreted as a high-level guidance, but information is fairly limited with regards to 'how' to realise/ provide the asked for information and studies. There is for instance the requirement of a vulnerability study, but a methodology is not given.</p>	Transport/ Urban	no

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	http://www.gib-foundation.org/sure-standard/		
<i>The Basics of Climate Change Adaptation, Vulnerability and Risk Assessment</i>	<p>Climate Change Adaptation, Vulnerability and Risk Assessment is the process of managing climate adaptation considerations throughout the development of a project. It involves identifying which climate hazards the project is vulnerable to, assessing the level of risk and considering adaptation measures to reduce that risk to an acceptable level. The purpose of this document is to provide advice about what the basic principles of such an assessment are, especially in relation to project development, and what is expected in good practice.</p> <p>http://www.jaspersnetwork.org/plugins/servlet/documentRepository/displayDocumentDetails?documentId=381</p>	all	yes
<i>Climate Change and Major Projects in 2014-2020: Framework of available guidance</i>	<p>is a one page document that provides a practical overview of the main documents at EU level for uptake of climate change adaptation in major projects.</p> <p>http://www.jaspersnetwork.org/plugins/servlet/documentRepository/displayDocumentDetails?documentId=421</p>	all	no
<i>Jasper Network Seminar on Climate Change</i>	<p>The seminar brings together practioners from different Member States to discuss and inform on the uptake of climate change adaptation in Major Projects and the needed actions in order to fulfill the set requirements. The presentations offer practice oriented guidance and explain on good practice in a few Member States.</p> <p>http://www.jaspersnetwork.org/display/EVE/Follow-up+on+Climate+Change+Related+Requirements+for+Major+Projects+in+the+2014-2020+Programming+Period</p>	all	Yes
<i>Climate change adaptation & disaster risk reduction in Europe</i>	<p>the EEA has recently published "Climate change adaptation & disaster risk reduction in Europe"³ in order to contribute to better informed EU, national and subnational strategies, plans and processes for enhancing coherence between climate change adaptation and disaster risk management action</p> <p>https://www.eea.europa.eu/publications/climate-change-adaptation-and-disaster</p>	all	yes

³ <https://www.eea.europa.eu/publications/climate-change-adaptation-and-disaster>

<i>EU Circle</i>	<p>EU-CIRCLE's scope is to derive an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. The project's research organisations are working in close partnership with the project's 4 core cities Paris, Manchester, Bratislava, Bilbao.</p> <p>http://www.eu-circle.eu/</p>	-	-yes
<i>Rescue</i>	<p>RESilience to cope with Climate Change in Urban arEas – a multisectorial approach focusing on water. Cities included are Bristol (coastal, river and pluvial flooding, droughts and sea-level rise) Barcelona (urban flooding, combined sewer overflow during heavy storm events, droughts, heat waves and sea level rise), Lisboa (urban flooding, sea-level rise and derived coastal erosion and heat waves), and methods applied will be replicable for other cities with similar characteristics and climate issues. Outputs will include hazard, risk and vulnerability assessment for urban services operation, resulting in a resilience and adaptation strategy ready for market uptake for each of the cities.</p> <p>http://www.resccue.eu/</p>	All	yes
<i>The costs of climate-change adaptation in Europe: a review (2012), EIB</i>	<p>The purpose of this review is to compare recent estimates on adaptation costs based on their adaptation perspective. Available are adaptation-cost estimates for industrialized countries in general, climate change impact assessments for Europe, as well as several adaptation cost or climate impact studies on the sector level.</p> <p>http://www.eib.org/attachments/efs/economics_working_paper_2012_05_en.pdf</p>	All	
<i>OURCOAST network and database</i>	<p>The OURCOAST database is a comprehensive compilation of hundreds of case study summaries that reflect successful cases of integrated coastal management applied throughout Europe, including many cases focusing particularly on climate change adaptation information and communication systems, planning and land management instruments, and institutional coordination mechanisms.</p> <p>http://ec.europa.eu/ourcoast/index.cfm?menuID=3</p>	Urban/ water	yes
<i>Methodologies for Climate Proofing Investments and Measures under Cohesion and Regional Policy and the Common Agricultural Policy</i>	<p>DG CLima. Objective is to indicate the climate impacts on economic sectors including transport, construction and buildings, energy supply as well as the water infrastructure sector. It also gives a baseline assessment of climate change impacts for the various EU Member States</p>	All	

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<i>Adapting information and communication technology infrastructure to the effects of climate change</i>	The International Telecommunication Union has issued the recommendation L.1502 "Adapting information and communication technology infrastructure to the effects of climate change" ⁴ for the purpose of identifying climate threats and their impact. L.1502 supports resilience by design in identified risk areas, and proposes changes to equipment installation standards to ensure protection from more frequent extreme weather phenomena and their impacts. https://www.itu.int/rec/T-REC-L.1502-201511-I/en	Broadband	yes
<i>Adapting information and communication technology infrastructure to the effects of climate change</i>	The International Telecommunication Union has issued the recommendation L.1502 "Adapting information and communication technology infrastructure to the effects of climate change" ⁵ for the purpose of identifying climate threats and their impact. L.1502 supports resilience by design in identified risk areas, and proposes changes to equipment installation standards to ensure protection from more frequent extreme weather phenomena and their impacts. https://www.itu.int/rec/T-REC-L.1502-201511-I/en	Broadband	yes
<i>ICLEI Resilience Resource Point</i>	The ICLEI Resilience Resource Point ⁶ provides a gateway into the growing collection of websites, networks and literature dedicated to adaptation and resilience, with a particular focus on urban regions and cities. http://resilient-cities.iclei.org/resilient-cities-hub-site/resilience-resource-point/	Urban/ All	yes
<i>Piarc- Adaptation of Road Bridges to climate change</i>	Short description of potential climate change impacts on road bridges and the need to integrate climate change consideration in the design of new and existing road bridges https://www.piarc.org/en/order-library/26472-en-Adaptation%20of%20road%20bridges%20to%20climate%20change.htm	Transport	yes
<i>The resilient road-FEHL</i>	In 2017 the Forum of European Highway Research Laboratories published a progress report on their 'Forever Open Road' initiative, in which Climate resilience is one of the three topics under consideration. The report provides guiding principles and related actions (e.g. identifying vulnerabilities) for new road transport infrastructure at a high level, but also points out which research and innovation topics should be addressed in the coming year. By doing so they offer information on potential (future) climate change adaptation measures. Last but not least, the report also provides an overview of demonstration projects.	Transport	yes

⁴ <https://www.itu.int/rec/T-REC-L.1502-201511-I/en>

⁵ <https://www.itu.int/rec/T-REC-L.1502-201511-I/en>

⁶ <http://resilient-cities.iclei.org/resilient-cities-hub-site/resilience-resource-point/>

	http://foreveropenroad.fehrl.org/library?id=7614		
<i>Environmental Climate and Social Guideline on Hydropower Development- EIB</i>	<p>The guideline is applicable to all types of small and large hydropower projects, including run of the river, storage, pumped storage and diversion. It also applies to associated infrastructure. It is useful in scoping of impacts and defining the steps to take in order to fully integrate climate considerations but also social and other environmental impacts in project preparation.</p> <p>http://www.eib.org/attachments/general/events/eib-guideline-on-hydropower-development%20-draft-april-2018.pdf</p>	energy	yes
<i>DG Regio guidance documents</i>	<p>Extensive list of guidance documents relevant for responsible authorities regarding ESIF and beneficiaries. Link to regiowiki</p> <p>http://ec.europa.eu/regional_policy/en/information/legislation/guidance/</p>	All	-
<i>Guidance for beneficiaries of European Structural and Investment Funds and related EU instruments</i>	<p>Guidance for beneficiaries on how to effectively access and use the European Structural and Investment Funds and on how to exploit complementarities with other instruments of relevant Union policies. The links provided throughout the document will allow potential beneficiaries to find their way in the maze of material available online, leading them to the most immediate and useful websites and documents. An online check-list is also available to help potential beneficiaries identify the most appropriate funding sources</p> <p>http://ec.europa.eu/regional_policy/en/information/publications/guides/2014/guidance-for-beneficiaries-of-european-structural-and-investment-funds-and-related-eu-instruments</p>	All	-
<i>Guide to Multi-Benefit Cohesion Policy Investments in Nature and Green Infrastructure</i>	<p>The guide underlines the crucial interconnections which exist between nature, society and the economy. In particular it shows that investments in nature, biodiversity and green infrastructure are relevant for cohesion policy. Further, it emphasises how investments of the ERDF and Cohesion Fund in nature and green infrastructure can actually contribute to several policy objectives and deliver multiple benefits, in particular socio-economic development. And eventually it assists authorities and stakeholders with practical recommendations to improve the delivery of the co-funded programmes and projects.</p> <p>http://ec.europa.eu/regional_policy/en/information/publications/guides/2013/guide-to-multi-benefit-cohesion-policy-investments-in-nature-and-green-infrastructure</p>	All	-

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<p><i>Guide to high-speed broadband investment</i></p>	<p>The guide underlines the crucial interconnections which exist between nature, society and the economy. In particular it shows that investments in nature, biodiversity and green infrastructure are relevant for cohesion policy. Further, it emphasises how investments of the ERDF and Cohesion Fund in nature and green infrastructure can actually contribute to several policy objectives and deliver multiple benefits, in particular socio-economic development. And eventually it assists authorities and stakeholders with practical recommendations to improve the delivery of the co-funded programmes and projects.</p> <p>http://ec.europa.eu/regional_policy/en/information/publications/guides/2013/guide-to-multi-benefit-cohesion-policy-investments-in-nature-and-green-infrastructure</p>	<p>All</p>	<p>-</p>
<p><i>Funding opportunities for disaster risk management within EU cohesion policy</i></p>	<p>Information on the funding opportunities for risk prevention from cohesion policy in the 2014-2020 period. providing an overview of funds, links to policy and providing some case studies of projects that have been funded. It showcases a number of good examples and explains how you can get support.</p> <p>http://ec.europa.eu/regional_policy/en/policy/themes/climate-change/funding-risk-prevention/</p>		
<p><i>How to use structural funds for SME & entrepreneurship policy</i></p>	<p>This guidebook is intended to serve as a 'cookbook' on how to design, apply for and implement concrete projects in support of SMEs from the EU Structural Funds. It bases itself very much on previous initiatives in... their area and is intended to be as hands-on as possible for all those designing a concrete project. It also provides concrete examples of good practice.</p> <p>https://publications.europa.eu/en/publication-detail/-/publication/0a5e4b2b-2066-4b21-b06e-eec610c4532b</p>		

DESIGN STANDARDS

Source (s)	Initial findings (on best practice)	Sector (s)	Good Practice
<i>Ariscc</i>	Design standards currently focus mainly on the dimensioning of drainage systems and on the height of dams and flood barriers due to expected increases in rainfall intensity and duration (especially in winter) and on the increase and differentiation of temperature standards (e.g. the stress-free temperature for tracks) due to expected increases in average and especially in maximum temperature in future climates. The results from the project are being used by administrations in at least one MS (Belgium), while not a project partner . http://www.ariscc.org/	Transport	-
<i>Guide for addressing climate change adaptation in standards</i>	The guidance informs on how to integrate/ deal with climate change adaptation in standards. Different climate change adaptation options are mentioned for the different life stages of a project. 4 Cases are added in an annex (legal standard for floodin NL, drainage system(UK), network rail(UK), legal safety network for prevention of regional nuisance from excess water(NL)). ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/Guides/32_CENCLCGuide32.pdf	All	yes
<i>Resin</i>	The project is currently exploring the feasibility of standardization and certification, framed by the 3 RESIN topics (impact and vulnerability, selecting and prioritization adaptation option and decision tool) and the 3 priority sectors identified by the EC (energy infrastructure, transport infrastructure, and buildings). The Standardisation Institute of the Netherlands (NEN) is working with the project partners in streamlining the project's outputs into European standardised approaches http://www.resin-cities.eu/resources/standardisation/	Energy, transport, urban	-
<i>ISO 26000</i>	ISO 26000 provides guidance on how businesses and organizations can operate in a socially responsible way. This means acting in an ethical and transparent way that contributes to the health and welfare of society. Climate change adaptation is included in ISO 26000 https://www.google.be/search?source=hp&ei=hoQRWpyGFYSxkwWL8rMY&q=ISO26000&oq=ISO26000&gs_l=psy-ab.3..0i10k1l3j0i10i30k1l7.1412.1412.0.2015.1.1.0.0.0.37.37.1.1.0....0...1.1.64.psy-ab..0.1.35....0.-_VXP0ng6QY	-	-

SYSTEM AND LEGAL FRAMEWORK			
Source (s)	Initial findings	Sector	Good Practice
<i>Climate Adapt</i>	Climate adapt gives an overview of the legal and system framework in the 'country information' pages. Depending on the country the information is more or less up to date. The country information pages are updated regularly http://climate-adapt.eea.europa.eu/	All	Yes
<i>Urban adaptation to climate change in Europe 2016</i>	The study provides an insight in urban adaptation governance on both EU-level and Member state level. It delves into the different legal and administrative organisations in several of the EU member states, including best practices, barriers and gaps for local, regional and national governance in the urban environment. The publication also provides an overview of EU-level support for local authorities (EU Adaptation Strategy, Mayor adapt / Covenant of Mayors for Climate and Energy, budget & funding, EGCA/ EGL, ULTIS, URBACT, Cities of Tomorrow (2011), EU URBAN Agenda, CEN, CENELEC) and the EU research landscape (p.62 and onwards) https://www.eea.europa.eu/publications/urban-adaptation-2016	All	Examples are provided throughout the text. e.g. box 5.4 provides information on the "Legal and system framework" 326in France, Denmark and UK
<i>Regional and Local Adaptation in the EU since the Adoption of the EU Adaptation Strategy in 2013</i>	The report gives an overview of current adaptation in the different Member States with regards to climate change adaptation strategies, actions plans and adaptation action in general. The report analyses the potential of initiatives like Mayor Adapt and RegionAdapt as accelerators of adaptation implementation at local level. It also gives recommendations on governance e.g. horizontal collaboration and best practices on governance structures and institutional capacity. Not sector specific. http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf	All	Limited reference to good practices and examples in governmental organisation
<i>Climate Change Impacts and Vulnerability</i>	An indicator based assessment of past and projected climate change provides an overview of data on vulnerability (exposure and sensitivity) and risk assessment (impact and chances). The overview of the policy background for climate change adaptation (Chapter 2) and the development of the associated knowledge base (Chapter 7) are particularly relevant for the legal and system framework. https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016	All	Case studies adopted throughout the text- mainly linked to institutional capacity and system frameworks

<p><i>National monitoring, reporting and evaluation of climate change adaptation in Europe</i></p>	<p>This report provides new insights into adaptation monitoring, reporting and evaluation (MRE) systems at the national level in Europe and constitutes the first attempt to consolidate emerging information across European countries. The National organisations involved in adaptation for number of EU MS are mentioned in Table 2.1. For different MS there is also information on stakeholder involvement in adaptation. The status of indicator development within national-level is covered in table 2.4.</p> <p>http://www.eea.europa.eu/publications/national-monitoring-reporting-and-evaluation</p>	<p>--</p>	<p>Several references of how MS are organized with regards to MRE (UK, BE, FR, SW, DK, ES, AT, NL)</p>
<p><i>European policy responses to climate change: progress on mainstreaming emissions reduction and adaptation.</i></p>	<p>The document reports on how climate change has been mainstreamed into European Union sectoral policies and analyses its impacts on achieving European policy goals (e.g. figure 1: EU policies for reducing flood and drought risks: a complex interaction; Table 1 Overview of factors influencing climate policy mainstreaming). It demonstrates that synergies can be achieved between mitigation and adaptation in some areas of EU policy such as land-use management in agriculture and more efficient use of water resources.</p> <p>https://link.springer.com/article/10.1007/s10113-015-0801-6</p>	<p>Energy, Water</p>	<p>References to how MS are organized.</p>
<p><i>Open European Day 2016</i></p>	<p>The report provides the narrative from the 'Open European Day' in Bonn, The focus is on adaptation practices in cities (city perspective, policy/ admin). The report mentions several cases throughout Europe and touches on: collaboration, co-creation, institutional capacity and knowledge transfer (science to policy, information vs data), nature based solutions, ... It provides guidance from cities to cities and as such provides an example of peer-to-peer learning. Many examples given provide an insight in how climate change adaptation is embedded in local governance an includes tips and tricks to increase either adaptation capacity or institutional capacity to deal with adaptation issues.</p> <p>http://resilientcities2017.iclei.org/fileadmin/sites/resilient-cities/files/Resilient_Cities_2016/Documents/OED_Report_2016.pdf</p>	<p>Urban</p>	<p>yes</p>
<p><i>EU Cities Adapt</i></p>	<p>The EU cities adapt project provided capacity building and assistance for cities in developing and implementing an adaptation strategy, and additional technical support to DG CLIMA on the state of play of urban adaptation. Awareness raising and exchange of knowledge and good practice and development of tools and guidance on how cities can adapt to climate change were other objectives. Annex 4 of the final report analyses 4 EU city climate change adaptation action plans or strategies and informs on the legal and system framework. The report is mainly useful for (local) authorities, looking to increase their (adaptation related) institutional capacity.</p> <p>http://climate-adapt.eea.europa.eu/metadata/publications/eu-cities-adapt-adaptation-strategies-for-european-cities-final-report</p>	<p>urban</p>	<p>yes</p>

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<p><i>The Strategy Package</i></p>	<p><i>EU</i></p> <p>The EU Strategy on adaptation to climate change, adopted by the European Commission in April 2013, sets out a framework and mechanisms for taking the EU's preparedness for current and future climate impacts to a new level. With regards to the legal and system framework, the commission has encouraged all MS to adopt a comprehensive adaptation strategy. With regards to capacity building the commission has taken several financial actions as part of the EU adaptation strategy, including funding projects to bridge knowledge gaps or setting aside 20% of the EU budget for 2014-2020 for spending on climate change mitigation and adaptation.</p> <p>http://climate-adapt.eea.europa.eu/eu-adaptation-policy/strategy</p>	<p>All</p>	<p>No</p>
<p><i>EC Guidance for integrating climate change and biodiversity into Environmental Impact Assessments</i></p>	<p>The document provides guidance for integrating climate change into EIA and offers also a link to tools/ methodology/ further information on the topic. Specifically for CCA, the reference is made to the GRaBS toolkit, Robust Decision Making, Green Infrastructure, ESS, (Disaster) Risk Management, Scenario's, etc. The tool is no longer operational online, making an assessment of the tool impossible at the moment. There is a link to contact the researchers.</p> <p>http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf</p>	<p>All</p>	<p>no</p>
<p><i>Floods Directive</i></p>	<p>Member States have to develop a flood risk management plan, with the specific requirement to take into account the climate change projected changes for the prediction of future floods and expected impacts, including a socio-economic analysis.</p> <p>http://ec.europa.eu/environment/water/flood_risk/</p>	<p>All</p>	<p>-</p>
<p><i>EU strategy on Green Infrastructure</i></p>	<p>The EU strategy on Green Infrastructure aims to ensure that the protection, restoration, creation and enhancement of green infrastructure become an integral part of spatial planning and territorial development whenever it offers a better alternative, or is complementary, to standard grey choices. Climate change adaptation actions are closely linked to Green Infrastructure as often Green Infrastructure can serve as an adaptation measure, e.g. floodplain restoration, urban green to counter-act the urban heat island effect, etc.</p> <p>http://eur-lex.europa.eu/resource.html?uri=cellar:d41348f2-01d5-4abe-b817-4c73e6f1b2df.0014.03/DOC_1&format=PDF</p>	<p>All</p>	
<p><i>Mainstreaming Of Adaptation Into The ESIF 2014-2020</i></p>	<p>Mainstreaming of adaptation in the 2014-2020 European Structural and Investment Funds programming has taken place at several levels: the report provides insight in how this has been done, what barriers are to implementation and how adaptation is integrated in the 28 Member States. The report also includes some recommendations for a next funding period.</p> <p>https://ec.europa.eu/clima/sites/clima/files/budget/docs/report_mainstreaming_adaptation_en.pdf</p>		

<p><i>Climate Change Adaptation, Risk Prevention and Management, Version 2 - 20/02/2014</i></p>	<p>This guidance explains the elements related to thematic objective 5" promoting climate change adaptation, risk prevention and management" and the related investment priorities for adaptation to climate change and prevention and management of risks under the ERDF and Cohesion Fund.</p> <p>http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/guidance_fiche_climat_change.pdf</p>	<p>All</p>	<p>no</p>
<p><i>Common Provisions Regulation (EU) No 1303/2013</i></p>	<p>The CPR (Common Provision Regulation) lays down a single set of rules covering the EU's five Structural and Investment Funds (the ESI funds). One of the requirements for the approval of major projects states the need for "...taking into account climate change adaptation and mitigation needs and disaster resilience.</p> <p>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R1303</p>	<p>All</p>	<p>-</p>
<p><i>Common delegated Regulation (EU) No 480/2014</i></p>	<p>This regulation defines the quality review criteria against which the information provided on a major project is assessed. Criterion 6.1 states: " Demonstrated contribution to the objectives of environmental and climate change policies, in particular targets linked to the Europe 2020 strategy and evidence of account being taken of the risks related to climate change, adaptation and mitigation needs, disaster resilience and of the appropriate measures implemented or foreseen to ensure resilience of the project to climate change variability."</p> <p>http://eur-lex.europa.eu/eli/reg_del/2014/480/oj</p>		
<p><i>Commission Implementing Regulation (EU) No 1011/2014</i></p>	<p>Annex I, part B sets the format for independent quality review (IQR) report. Criterion 7.2 states: " summarise relevant information on the climate change adaptation and mitigation and disaster resilience. Give a clear statement whether or not the project meets the relevant criteria for quality review."</p> <p>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R1011</p>		
<p><i>Commission Implementing Regulation (EU) No 2015/207</i></p>	<p>This regulation defines detailed rules implementin regulation No1303/2013, including the format for submission of the information on a Major Project in Annex II (specifically sections D.2, D.3, E.2, E.3, F.1 and F.8 refer to climate change) and the methodology for carrying out the cost-benefit analysis in Annex III (specifically sections 2.1.4, 2.3.3 and 2.4 refer to climate change.</p> <p>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015R0207</p>		

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<p><i>Integrating the Environment and Climate Change into EU International Cooperation and Development towards Sustainable Development</i></p>	<p>EC DG DEVCO has published criteria in order to mainstream climate adaptation into projects. The purpose of a climate screening exercise is to identify potential climate change risks that may affect the achievement of the project objectives. The findings of the screening will help identify if a more detailed Climate Risk Assessment (CRA) is necessary.</p> <p>https://ec.europa.eu/europeaid/integrating-environment-and-climate-change-eu-international-cooperation-and-development-towards_en</p>	<p>-</p>	<p>-</p>
<p><i>Climate change adaptation and disaster risk reduction in Europe – Enhancing coherence of the knowledge base, policies and practices</i></p>	<p>Enhancing coherence of the knowledge base, policies and practices. The report assesses current practices and level of know-how, and highlights emerging innovative tools national, regional and local authorities are using to tackle the impacts of weather- and climate-related hazards.</p> <p>https://www.eea.europa.eu/publications/climate-change-adaptation-and-disaster</p>	<p>all</p>	<p>yes</p>
<p><i>DG Regio guidance documents</i></p>	<p>Extensive list of guidance documents relevant for responsible authorities regarding ESIF and beneficiaries. Link to regiowiki</p> <p>http://ec.europa.eu/regional_policy/en/information/legislation/guidance/</p>	<p>All</p>	<p>-</p>

INSTITUTIONAL CAPACITY			
Source (s)	Initial findings	Sector	Good Practice
<i>Urban adaptation to climate change in Europe 2016</i>	<p>The study contains information on the institutional capacity in several members states and provides tips and best practices on how to increase institutional capacity (e.g. knowledge building and support).</p> <p>https://www.eea.europa.eu/publications/urban-adaptation-2016</p>	All	Examples are provided throughout the text, most of them have been adopted in climate adapt. (extensive information on Barcelona-support by the provinces and national support systems in Denmark)
<i>Regional and Local Adaptation in the EU since the Adoption of the EU Adaptation Strategy in 2013</i>	<p>The report gives an overview of current adaptation in the different Member States with regards to climate change adaptation strategies, actions plans and adaptation action in general. The report analyses the potential of initiatives like Mayor Adapt and RegionAdapt as accelerators of adaptation implementation at local level. It also gives recommendations on governance e.g. horizontal collaboration and best practices on governance structures and institutional capacity.</p> <p>http://cor.europa.eu/en/documentation/studies/Documents/Local%20and%20regional%20adaptation.pdf</p>	--	Limited reference to good practices and examples in governmental organisation
<i>Climate Change Impacts and Vulnerability</i>	<p>An indicator based assessment of past and projected climate change provides an overview of data on vulnerability (exposure and sensitivity) and risk assessment (impact and chances). The overview of the policy background for climate change adaptation (Chapter 2) and the development of the associated knowledge base (Chapter 7) are explained, informing on capacity building practices in several MS.</p> <p>https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016</p>	All	Case studies adopted throughout the text- mainly linked to institutional capacity and system frameworks

<p><i>Overview of climate change adaptation platforms in Europe</i></p>	<p>Decision-Support</p> <p>7 platforms are linked to the implementation of a national adaptation strategy (NAS) or action plan (Austria, Denmark, France, Germany, Poland, Spain and Switzerland).</p> <p>The document gives more insight in climate change and disaster risk reduction (DRR) platforms, providing reflections and lessons learned, info on the technical design of adaptation measures. The publication is relevant to, amongst others, decision-makers considering how to improve access to relevant information on climate change as well as disaster risk management.</p> <p>http://www.eea.europa.eu/publications/overview-of-climate-change-adaptation</p>	<p>All</p>	<p>Potential cases from the seven platforms mentioned</p>
<p><i>Open European Day 2016</i></p>	<p>The report provides the narrative from the 'Open European Day' in Bonn, The focus is on adaptation practices in cities (city perspective, policy/ admin). The report mentions several cases throughout Europe and touches on: c. ollaboration, co-creation, institutional capacity and knowledge transfer (science to policy, information vs data), nature based solutions, ... It provides guidance from cities to cities and as such provides an example of peer-to-peer learning. Many examples given provide an insight in how climate change adaptation is embedded in local governance an includes tips and tricks to increase either adaptation capacity or institutional capacity to deal with adaptation issues.</p> <p>http://resilientcities2017.iclei.org/fileadmin/sites/resilient-cities/files/Resilient_Cities_2016/Documents/OED_Report_2016.pdf</p>	<p>Urban</p>	<p>yes</p>
<p><i>The EU Strategy Package</i></p>	<p>The EU Strategy on adaptation to climate change, adopted by the European Commission in April 2013, sets out a framework and mechanisms for taking the EU's preparedness for current and future climate impacts to a new level. With regards to the legal and system framework, the commission has encouraged all MS to adopt a comprehensive adaptation strategy. With regards to capacity building the commission has taken several financial actions as part of the EU adaptation strategy, including funding projects to bridge knowledge gaps or setting aside 20% of the EU budget for 2014-2020 for spending on climate change mitigation and adaptation.</p> <p>http://climate-adapt.eea.europa.eu/eu-adaptation-policy/strategy</p>	<p>All</p>	<p>No</p>
<p><i>LIFE Funding for climate action</i></p>	<p>The LIFE Funding for climate action ensures demonstration and innovative projects with the objective of climate can be funded and ensure an increased resilience to climate change.</p> <p>https://ec.europa.eu/clima/policies/budget/life_en</p>		<p>-</p>

<i>Placard</i>	<p>PLACARD's (PLAtform for Climate Adaptation and Risk reDuction) mission is to be the recognised platform for dialogue, knowledge exchange and collaboration between the Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) communities.</p> <p>http://www.placard-network.eu/</p>	all	yes
<i>WeAdapt</i>	<p>weADAPT is a collaborative platform on climate adaptation issues. It allows practitioners, researchers and policy-makers to access credible, high-quality information and connect with one another. It started of as a UK initiative but currently includes worldwide research and adaptation cases. It is especially meant to be a knowledge-sharing platform.</p> <p>http://www.weadapt.org</p>	All	yes
<i>Mayors Adapt</i>	<p>Mayors Adapt – the Covenant of Mayors Initiative on Climate Change Adaptation – was set up by the European Commission to engage cities in taking action to adapt to climate change.</p> <ul style="list-style-type: none"> - The Covenant of Mayors Monitoring and Reporting framework now includes a section on adaptation to climate change: - The Covenant of Mayors collects case studies to inspire cities and facilitate peer-to-peer learning. - The Funding instruments page gives an overview of information on funding on the CoM website. - An e-learning module on adaptation for cities is available for signatories to the Covenant of Mayors exclusively. The module features practical information, case studies and links to further useful resources. <p>Urban adaptation tool http://climate-adapt.eea.europa.eu/knowledge/tools/urban-ast/step-0-0 practical step-by-step guidance tool to assist signatories of the Mayors Adapt and the now integrated Covenant of Mayors for Climate and Energy initiative in planning for and taking adaptation action</p> <p>http://www.covenantofmayors.eu/Adaptation.html</p> <p>-</p>	All/urban	Yes
<i>C40 network</i>	<p>Network C40 (Climate Leadership Group) which is the network of delta cities. The network has developed a good practice guide with practical examples on how delta cities adapt to climate change impacts i.e. sea level rise, flooding and storms. The good practice guide includes both soft and technical measures as for instance pumping, sea walls, green-blue infrastructure, organisational approaches and flood proofing. Good practices are coming from all over the world, including European cities such as Rotterdam, Copenhagen, London. Furthermore, it has included a knowledge portal with a focus on water management, urban development.– Network Exchange Program offers Chief Resilience Officers and members of their cities' resilience teams the opportunity to share</p>	All/urban	yes

	<p>knowledge, source innovation and discover new solutions to the pressing resilience challenges they face. E.g. one example is a network exchange on multi-benefit solutions to water management</p> <p>http://deltacities.com/documents/5_C40_GPG_CDC.original.pdf http://deltacities.com/knowledge-portal The 100 Resilient Cities</p>		
<i>100 resilient cities</i>	<p>Pioneered by The Rockefeller Foundation is financially supported by The Rockefeller Foundation and managed as a sponsored project by Rockefeller Philanthropy Advisors (RPA), an independent 501(c)(3) nonprofit organization that provides governance and operational infrastructure to its sponsored projects.</p> <p>http://www.100resilientcities.org/ 100 Resilient Cities</p>	All/ urban	Yes
<i>Resilient Regions</i>	<p>RESILIENT REGIONS ASSOCIATION IS A NEUTRAL ARENA where the business sector, academia, municipalities and government agencies meet to solve regional challenges.</p> <p>http://www.resilientregions.org/</p>	All	yes
<i>European funding for Broadband</i>	<p>The publication gives an overview of planned funding (ESIF) through the different OP's in the Member States.</p> <p>file:///C:/Users/LVertriest/AppData/Local/Microsoft/Windows/INetCache/IE/0PMK67NB/BCO-SFoverviewofEUFundingforBroadband.pdf</p>	Broadband	-
<i>Urban Agenda</i>	<p>Climate change is one of the 12 focus areas for the urban agenda. In the main Urban Agenda Priority Themes the central scope of the Climate AdaptationPartnership is: "the objectives to anticipate the adverse effects of climate change and takeappropriate action to prevent or minimise the damage it can cause to Urban Areas. The focuswill be on: vulnerability assessments, climate resilience and risk management (includingthe social dimension of climate adaptation strategies)."</p> <p>https://ec.europa.eu/futurium/en/climate-adaptation</p>	All	-

<i>Climate change adaptation and disaster risk reduction in Europe – Enhancing coherence of the knowledge base, policies and practices</i>	Enhancing coherence of the knowledge base, policies and practices. The report assesses current practices and level of know-how, and highlights emerging innovative tools national, regional and local authorities are using to tackle the impacts of weather- and climate-related hazards. https://www.eea.europa.eu/publications/climate-change-adaptation-and-disaster	All	yes
<i>Natural capital Financing Facility</i>	The EIB supports the LIFE funding programme and Strategy on Green Infrastructure by its Natural Capital Financing Facility ⁷ (NCF) providing funding to nature-based solutions, with the aim of boosting investment for biodiversity and nature-based adaptation to climate http://www.eib.org/products/blending/ncff/index.htm	All	-
<i>National climate change vulnerability and risk assessments in Europe, 2018</i>	This report provides the first systematic review of national climate change impact, vulnerability and risk assessments across Europe. It is based on information about relevant multi-sectoral assessments reported from EEA member countries. The purpose of the report is to share experiences and knowledge and to highlight approaches and practical solutions that countries have used to produce and present their assessments. The EEA published this report in April 2018. https://www.eea.europa.eu/publications/national-climate-change-vulnerability-2018	All	yes
<i>Generating successful projects, developing and managing the project pipeline</i>	Training material on cohesion policy 2014-2020 for EU Member State experts on implementing issues. http://ec.europa.eu/regional_policy/sources/docgener/informat/expert_training/2015/implementing_issues.pdf	All	no
<i>EU Competency framework for management and implementation of the ERDF and Cohesion Fund</i>	These instruments aim to support administrations in their efforts to improve their administrative capacity for management of the funds by helping them to identify and address potential competency gaps. the 'Infographic: EU Competency framework for management and implementation of the ERDF and Cohesion Fund' informs in a quick way how the EU Competency Framework and the accompanying Self-Assessment Tool for national coordinating bodies, managing, certifying and audit authorities, joint secretariats and intermediate bodies work.	All	-

⁷ <http://www.eib.org/products/blending/ncff/index.htm>

http://ec.europa.eu/regional_policy/en/policy/how/improving-investment/competency/

http://ec.europa.eu/regional_policy/en/information/publications/guidelines/2017/user-guidelines-for-the-eu-competency-framework-and-self-assessment-tool

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