

André Jol, EEA Head of Group

Climate change impacts, vulnerability impacts, vulnerability and adaptation

Baltic Pathway Towards Low Carbon and Climate Resilient Development, Riga,
Latvia, 31.10.2017

European information on climate change impacts, vulnerability and adaptation



Global and European policy context



Global level

UNFCCC Paris Agreement
Sendai Framework for Disaster Risk
Reduction
Sustainable Development Goals

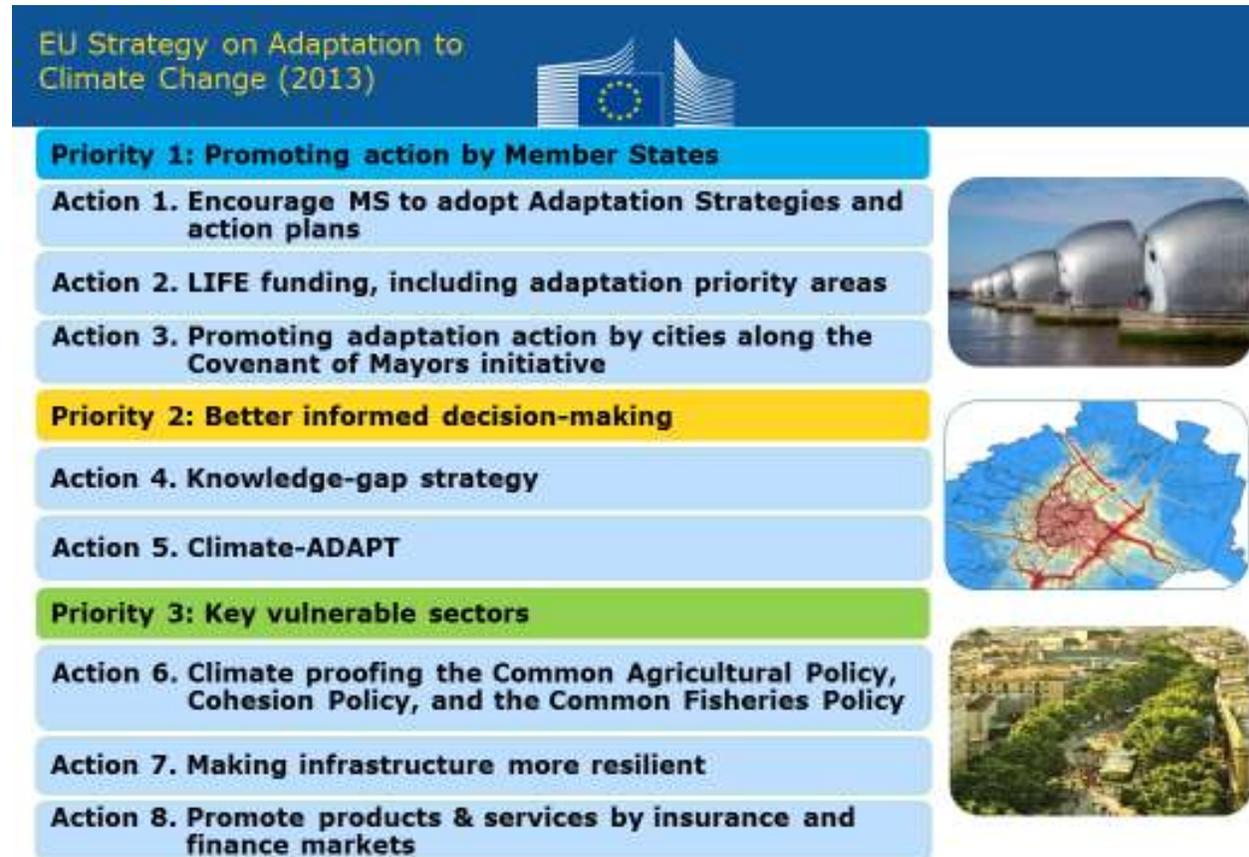


European level

EU Climate Adaptation Strategy
EU Civil Protection Mechanism
EU Action Plan on Sendai Framework for
Disaster Risk Reduction
EU Floods Directive
EU Green Infrastructure Strategy

EU climate change adaptation strategy evaluation by the European Commission

- Increase in number of MS with a **national adaptation strategy** and/or action plan (see below)
- **Mainstreaming** in many relevant EU policies being assessed
- Reflecting on **changes needed due to the Paris climate agreement**
- [First stakeholder workshop 5 April 2017](#), Second **stakeholder workshop** 23 Jan. 2018, **Public consultation** from end Nov 2017 to mid Feb. 2018
- **Commission communication** planned for autumn 2018



Minimum of 20 % of EU funds for climate action

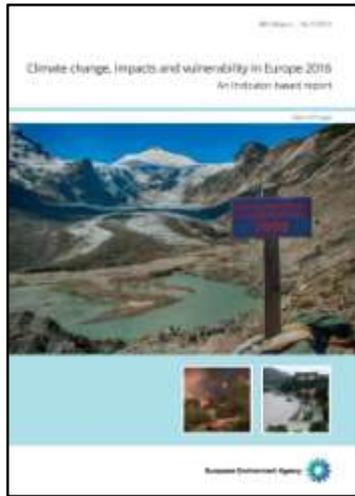
EU MS 'adaptation preparedness' scoreboard

- **European Commission** within the EU adaptation strategy evaluation
- **Process-based indicators** linked to adaptation policy making process (see e.g. guidelines for national adaptation strategies)
- About **30 questions** for various areas of performance and domains of relevance
 - Step 1: Preparing the ground for adaptation
 - Step 2: Assessing risks and vulnerabilities to climate change
 - Step 3: Identifying adaptation options
 - Step 4: Implementing adaptation action
 - Step 5: Monitoring and evaluation
- Based on **updated information MS submitted voluntarily in 2017** under the EU climate change monitoring mechanism (presented in country pages on Climate-ADAPT, see below)
- **Draft MS 'Adaptation preparedness scoreboards'** prepared by **end 2017**, to be made available as part of public consultation



EEA main products and services on CC IVA 2016 – 2017

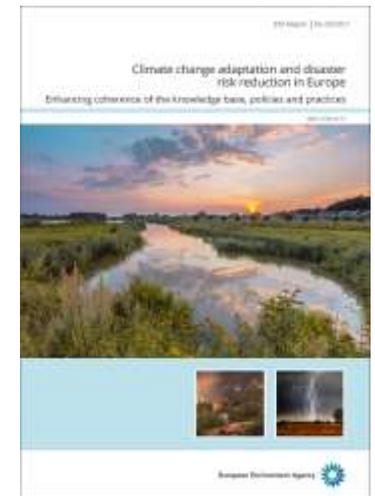
Impacts and vulnerability, Jan 2017



Urban adaptation (2016, 2017)



Adaptation and disaster risk reduction (2017)

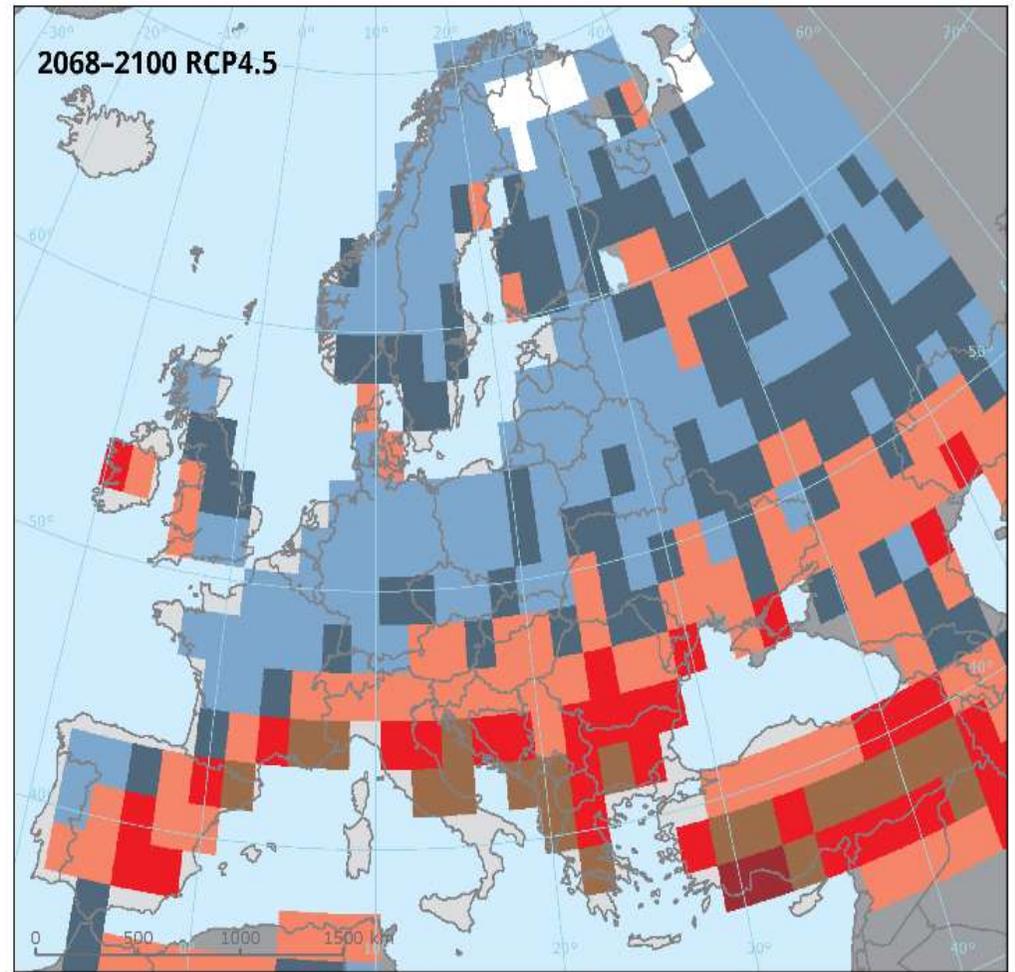


Climate change is affecting all European regions – but adaptation needs differ across regions

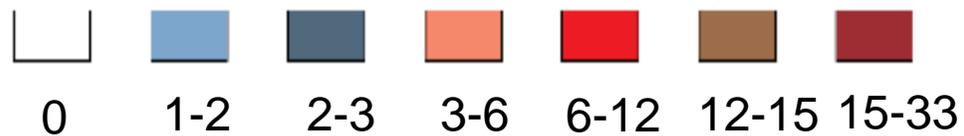
- **35 indicators** (past trends and projections) and multi-sectoral vulnerability and risks
- Length of time series, geographical coverage and quality of **climate change data improved**, due to global and European efforts (e.g. H2020, Copernicus, national research)
- **European impact indicators** have also improved, although information is **scattered and not easily comparable**
- Many **national CC impact, vulnerability, risk assessments** are available, improvements possible (e.g. cascading effects; effects from CC outside Europe)
- Currently there are **no common methods and indicators** for such assessments
- **Interest** across countries in **learning** from each other



The number of extreme heatwaves will increase



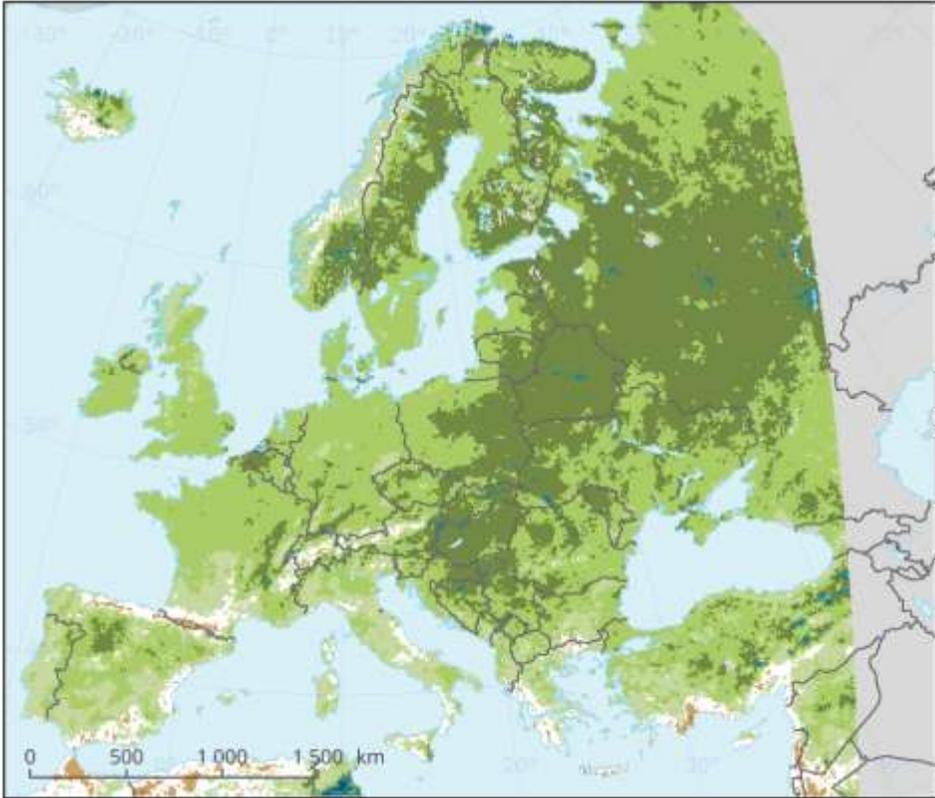
Number of extreme heatwaves over 33 years



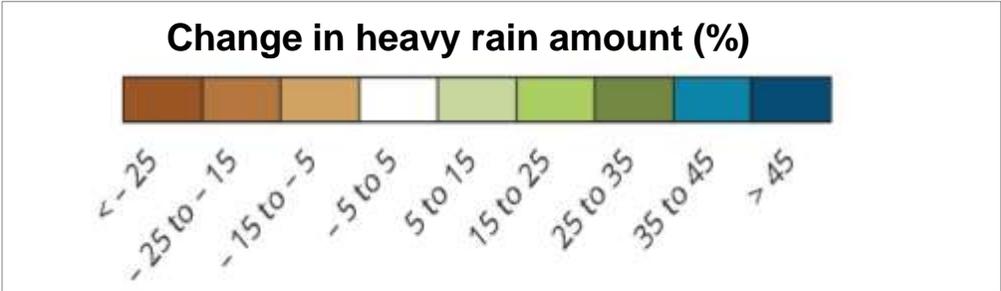
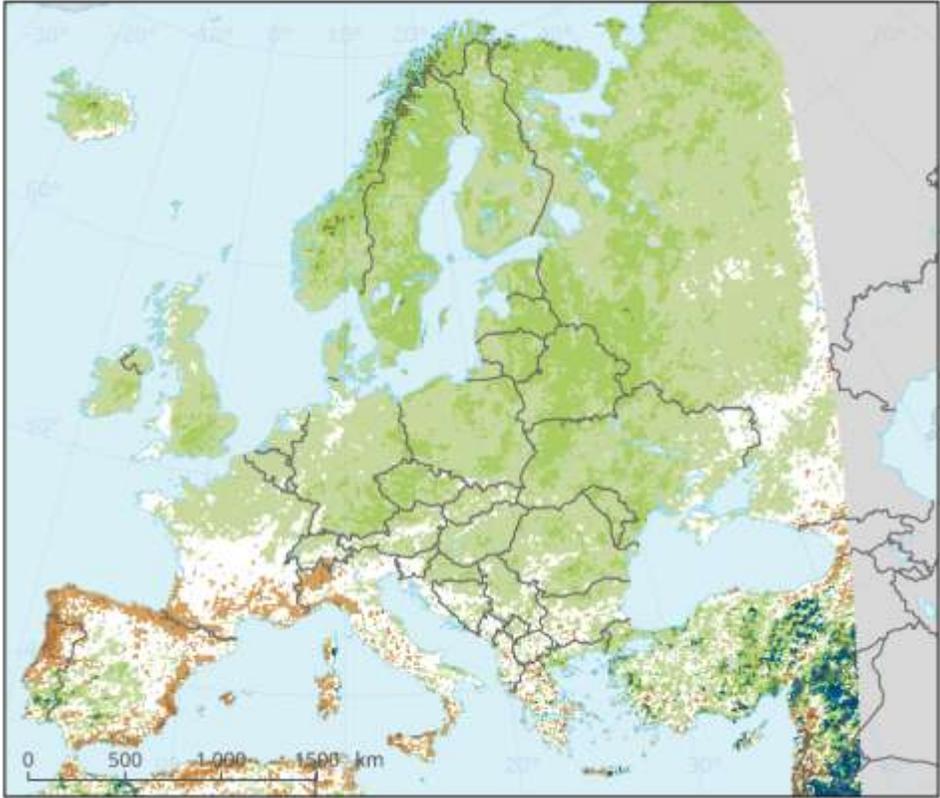
Source: JRC, Russo et al, 2014

Heavy rain projections 2071-2100

Winter 2071-2100

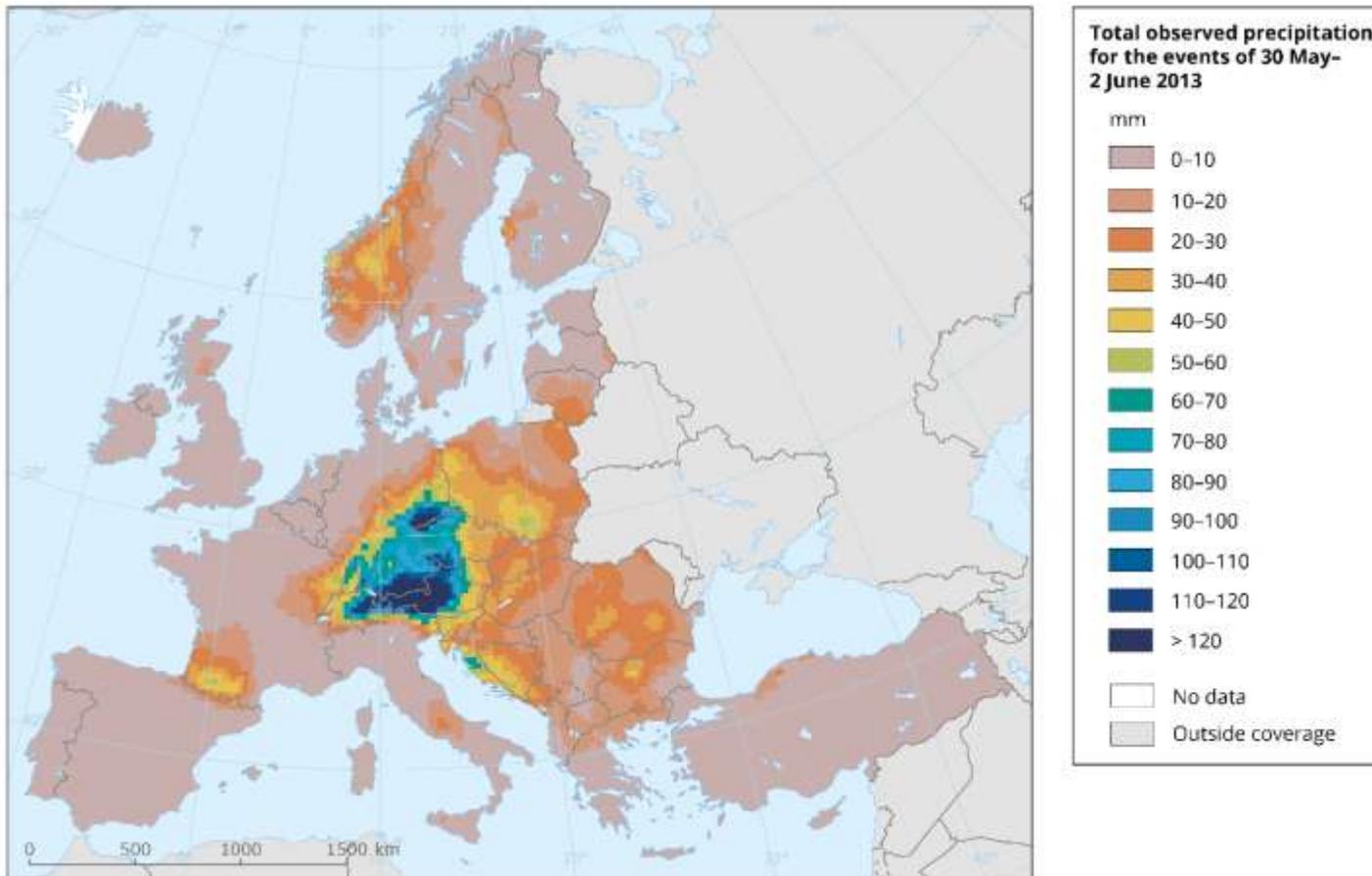


Summer 2071-2100



Source: EURO-CORDEX, 2015

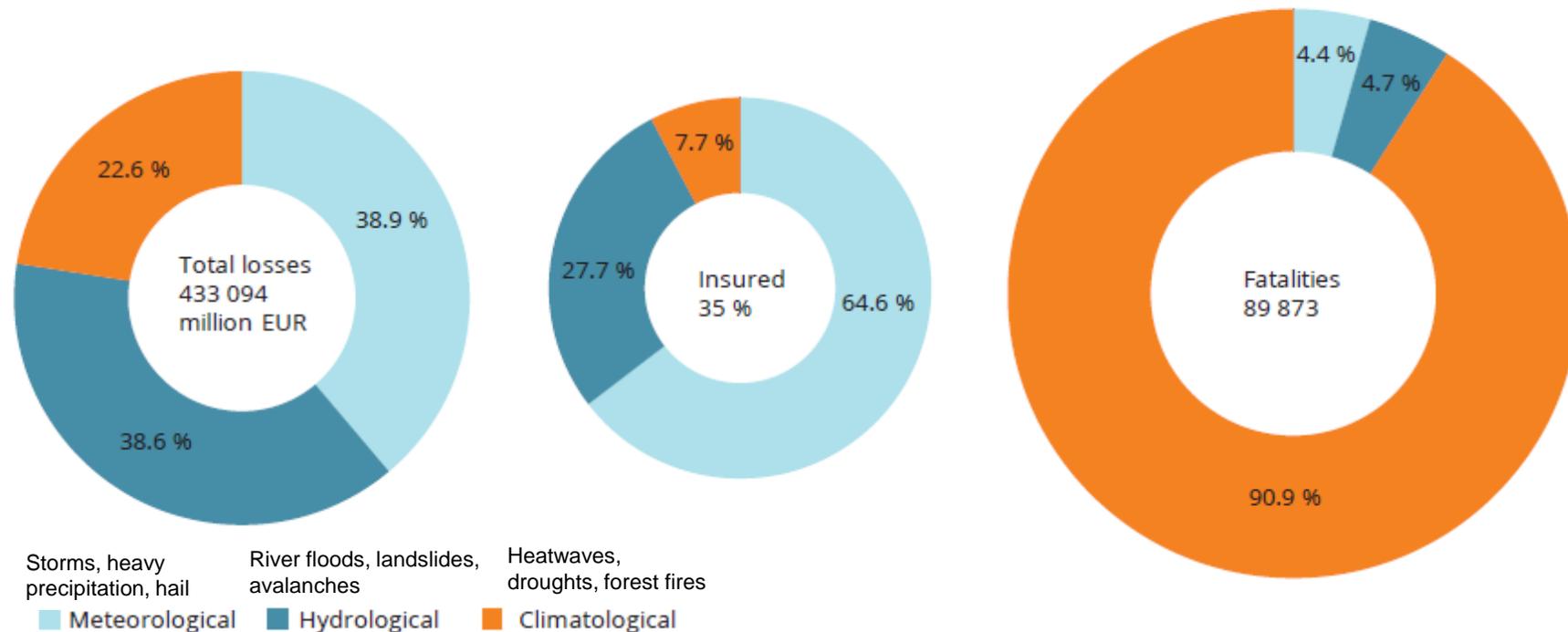
Heavy rain in June 2013 triggered floods in central Europe



Total losses in Germany, Austria, Czech Republic and Switzerland amounted to EUR 10 billion

Extreme climate events are costly and life-threatening

Figure 4.3 Total economic losses (left), insured losses (middle) and fatalities (right)

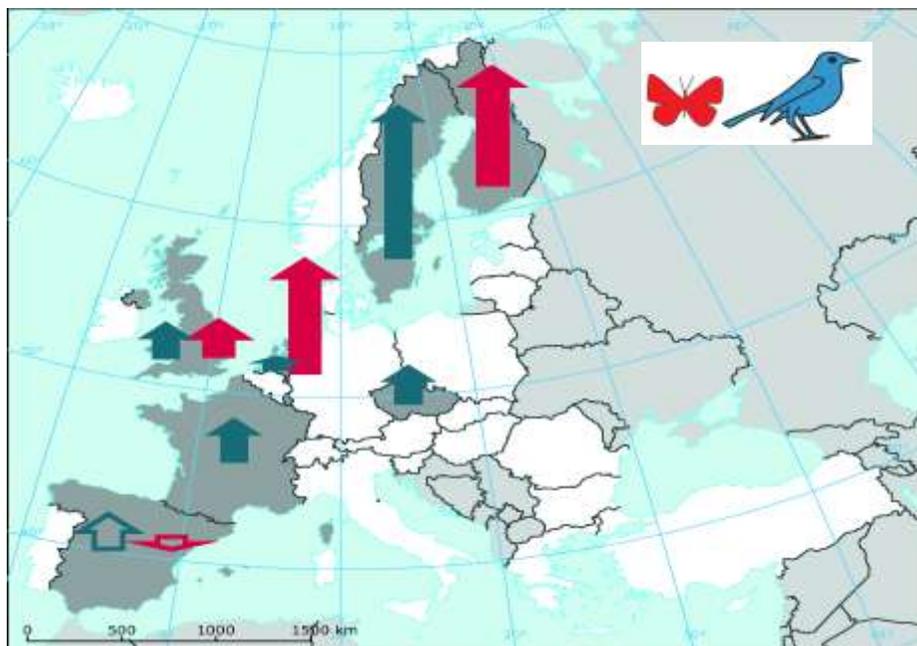


Note: Diagrams show total economic losses (expressed in 2015 values), insured losses and fatalities in EEA member countries over the period 1980–2015. Hazard categories: meteorological events, hydrological events and climatological events.

Source: EEA, based on NatCatSERVICE data received under institutional agreements.

Ecosystems are changing in response to climate change – but most species cannot follow the pace of climate change

Change in bird and butterfly communities (community temperature index, 1990–2008)



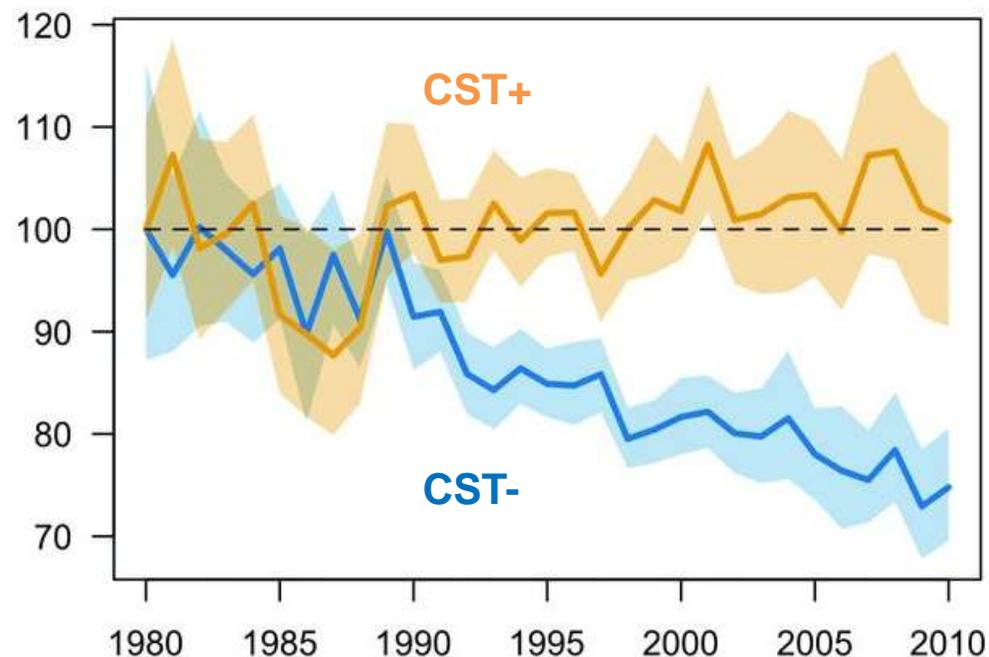
9490 bird communities:
37 km „northward“ on average

2130 butterfly communities:
114 km „northward“ on average

Climate zones:
250 km northward

Source:
Devictor et al. (2012)

Abundance of bird species in Europe (1980–2010)



CST+: Species expected to respond *positively* to regional climate change → **no trend**

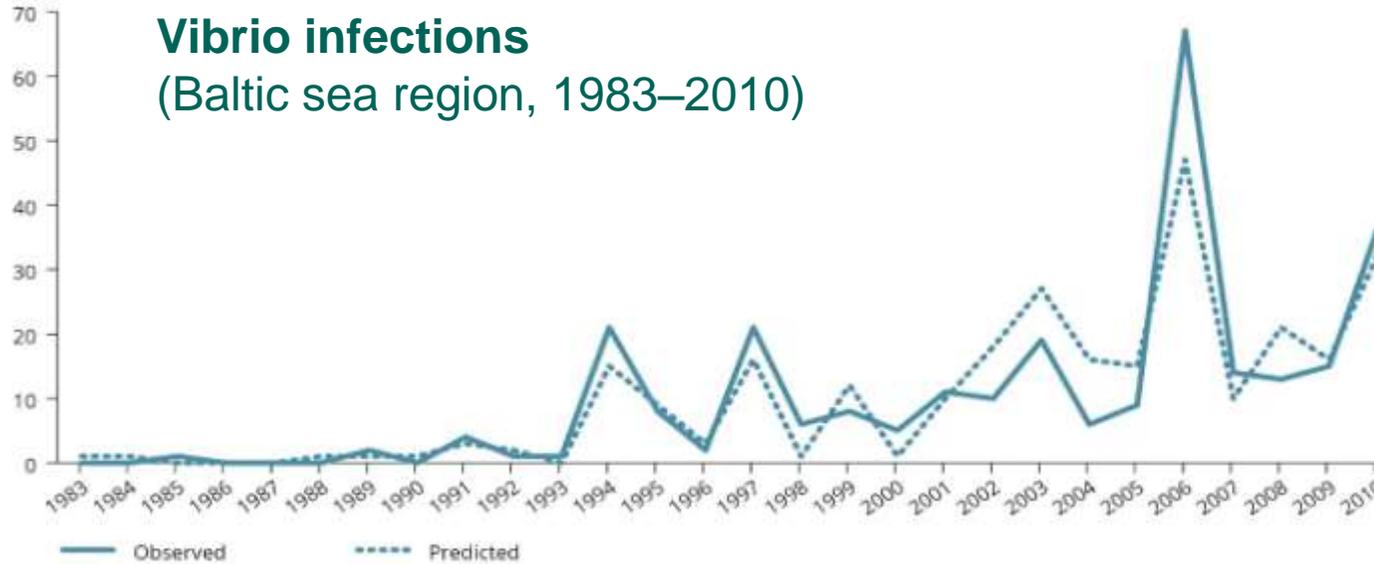
CST-: Species expected to respond *negatively* to regional climate change → **declining trend**

Source:
Stephens et al. (2016)



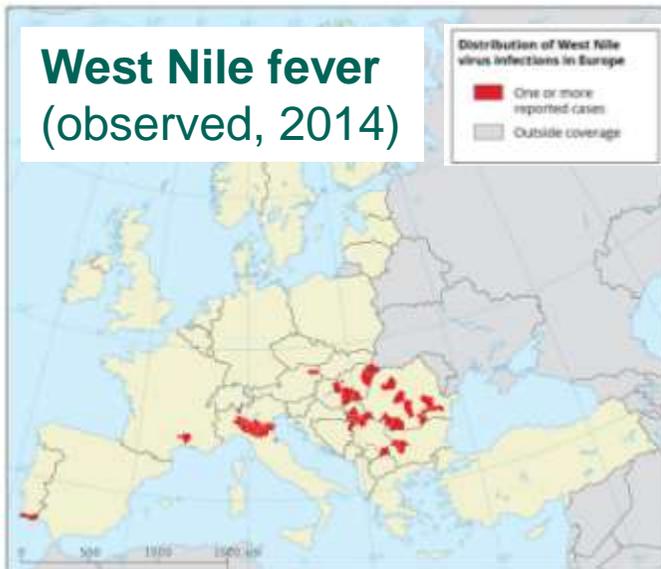
Climate change is facilitating the spread of infectious diseases

Vibrio infections
(Baltic sea region, 1983–2010)

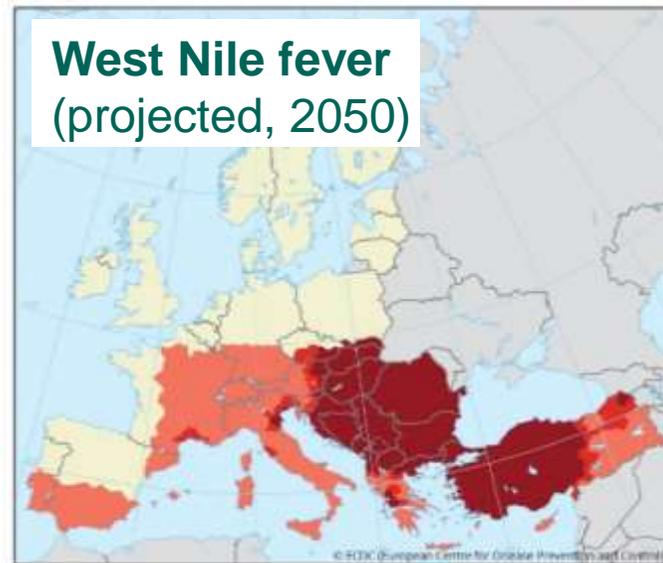


Source:
Baker-Austin et al. 2012

West Nile fever
(observed, 2014)



West Nile fever
(projected, 2050)



Source: ECDC
(Semenza et al. 2014)



Europe is also vulnerable to climate change impacts outside Europe

Trade (non-agricultural commodities)

- Risks for raw materials supply
- Risks for manufacturing industry
- Arctic sea transportation

Trade (agricultural commodities)

- Global food price volatilities
- Reliability of supply and distribution

Infrastructure

- Risks for energy supply
- Vulnerable energy infrastructure
- Transportation network disruptions

Human mobility

- Changing tourism flows
- Climate-induced migration
- Critical role of Africa

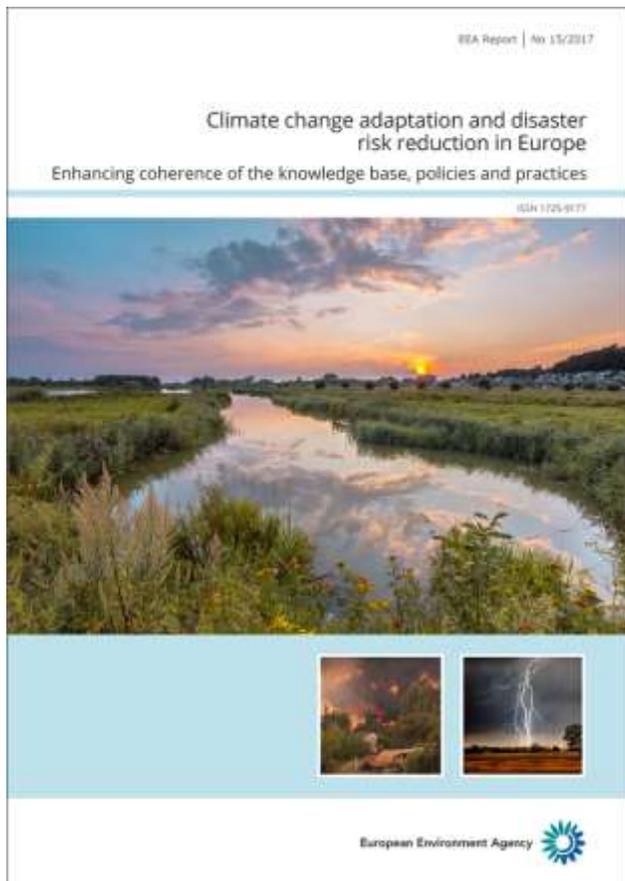
Geopolitical risks

- Climate and armed conflict
- Climate and security strategies
- Rights and access to Arctic resources

Finance

- Economic repercussions due to extreme events
- Insurance systems

Climate change adaptation and disaster risk reduction in Europe 'Enhancing coherence of the knowledge base, policies and practices' (17 Oct. 2017)



The report presents:

- Main global and European policies on CCA and DRR
- Knowledge base on weather- and climate-related hazards and their impacts
- Good practice examples of linking CCA and DRR
- Opportunities and benefits from linking CCA and DRR in Europe

Key features of Climate-ADAPT

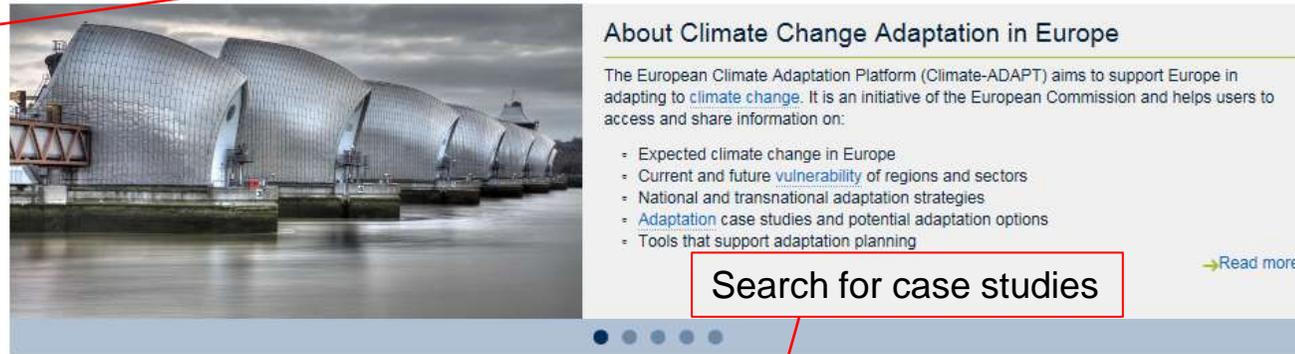
Database search

Countries, Cities

Tools



EU policy and funding



Adaptation support tool

Search for case studies



Country profiles



European Climate Adaptation Platform Climate-ADAPT

Scope:

- Launched 2012, supports developing and implementing adaptation strategies, policies and actions
- Complementary to national, other platforms

Intended Users:

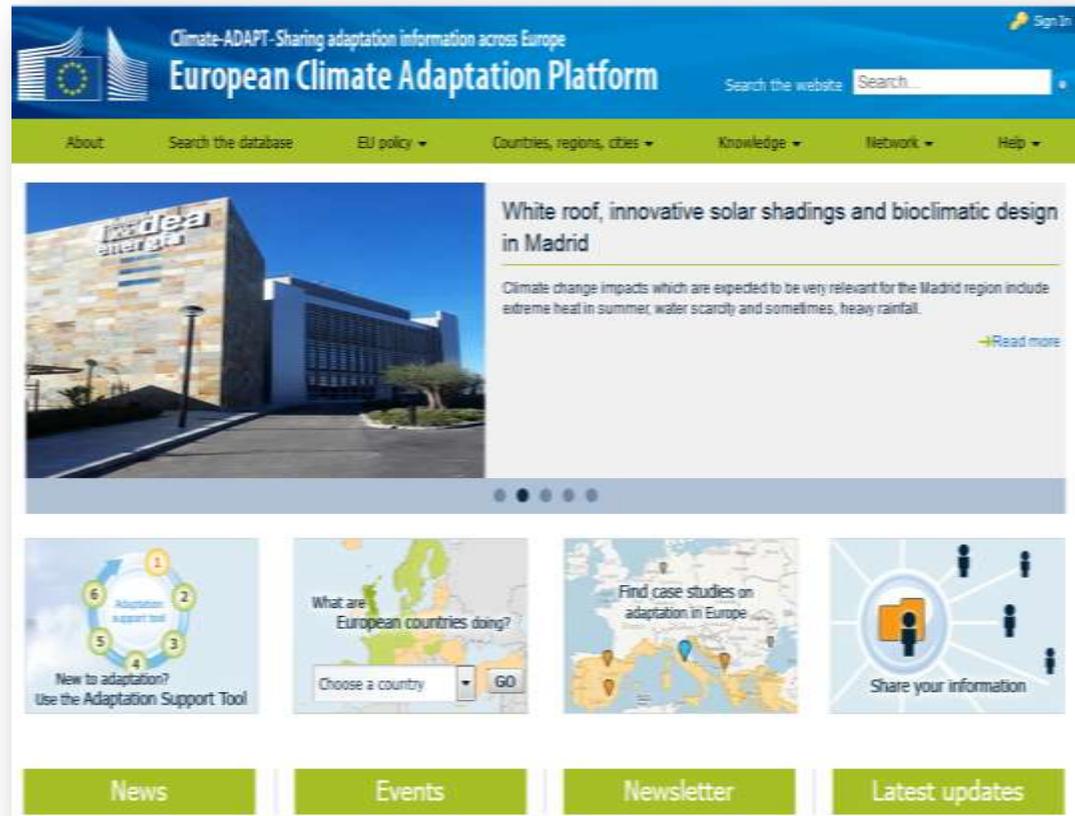
- Experts and decision makers on EU, transnational, national, sub-national levels, research institutes

Maintenance:

- Funded and carried out by EEA with DG CLIMA, supported by ETC/CCA

Dissemination, sharing, interaction with users:

- Bimonthly newsletter
- Webinars
- Conferences, workshops



<http://climate-adapt.eea.europa.eu>

European Environment Agency



Transnational actions on climate change adaptation (1)

EU strategy for the Baltic Sea Region (BSR)

Climate-ADAPT - Sharing adaptation information across Europe
European Climate Adaptation Platform

About Database EU policy Countries, regions, cities Knowledge Network Help

You are here: Home / Countries, regions and cities / Transnational regions / Baltic Sea

Baltic Sea

Detailed information including links to the most relevant documents on adaptation in the Baltic Sea Region is provided by the Baltic Sea Region (BSR) Climate Dialogue Platform.

Choose a region

Region's countries:
 Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden, Norway, Russia, Belarus

Policy framework

a. Transnational cooperation programme

The Baltic Sea Region Programme aims to strengthen integrated territorial development and cooperation for a more innovative, better accessible and sustainable Baltic Sea Region. The programme supports the implementation of the EU Strategy for the Baltic Sea Region. It belongs to the family of the INTERREG V transnational 2014-2020 programmes and forms part of the Cohesion policy of the European Union. The programme is designed to tackle issues that cannot sufficiently be dealt with by individual countries. Challenges that require a joint response by partners from several countries from the Baltic Sea Region include improving water quality and increasing maritime safety and security.

The programme will focus on the following four priorities:

1. Capacity for innovation
2. Efficient management for natural resources
3. Sustainable transport
4. Institutional capacity for macro-regional cooperation

The programme invests in the institutional capacities of public authorities, research institutions, sectoral agencies, as well as non-governmental organisations and enterprises.

Adaptation is covered under priority 2 related by water management and adaptation to climate change measures and prevention and management of climate related risks. The programme also has a number of horizontal principles including one related to adaptation - sustainable development.

b. Macro-region Strategies

The EU Strategy for the Baltic Sea Region (EUSBSR) was the first macro-regional strategy in Europe. One of the EUSBSR's sub-objectives is climate change adaptation.

Climate-ADAPT - Sharing adaptation information across Europe
European Climate Adaptation Platform

About Database EU policy Countries, regions, cities Knowledge Network Help

You are here: Home / Countries, regions and cities / Transnational regions / Baltic Sea / Adaptation / Policy Framework

Adaptation in Baltic Sea Region

General | Policy Framework | Impacts & Vulnerabilities | Adaptation Actions

Policy Framework

The European Union Strategy for the Baltic Sea Region (EUSBSR) is the first macro-regional strategy in Europe. It aims at reinforcing cooperation within the large region in order to face various challenges and promotes a more balanced development in the area. The Strategy also contributes to major EU policies.

[Read more](#)

Search Results

- Publications and reports (30)
- Information portals (2)
- Maps, graphs and datasets (1)
- Guidance (1)
- Tools (1)
- Research and knowledge projects (15)
- Case studies (1)
- Organisations (6)



Baltic Earth

Earth System Science for the Baltic Sea Region

- [Home / News](#)
- [Background](#)
- [Grand Challenges](#)
- [Working Groups](#)
- [Projects](#)
- [Publications](#)
- [Organisation](#)
- [International Baltic Earth Secretariat](#)
- [Events](#)
- [Internal](#)
- [How to participate](#)

BACC II BALTEX Assessment of Climate Change for the Baltic Sea Basin 2009-2014



BACC 2 Book:
Second Assessment of Climate Change for the Baltic Sea Basin
 Springer Open Access, 2015
[Download here...](#)

BALTADAPT STRATEGY for adaptation to climate change in the Baltic Sea Region

A proposal preparing the ground for political endorsement throughout the Baltic Sea Region



Transnational actions on climate change adaptation (2)

- **Council of the Baltic Sea States** secretariat, promotes horizontal action on climate change
- **EU Baltic Sea Region programme 2014-2020 (INTERREG)**
- **Example** of project: Integrated Storm Water management (involving also Riga)



iWater – Integrated Storm Water Management for the Baltic Sea cities

iWater - Integrated Storm Water Management project aims to improve the urban planning in the cities of the Baltic Sea Region via developing integrated storm water management system. During the years 2015-2018, common guidelines and tools of integrated storm water management will be developed in the participating cities with the involvement of local stakeholder and interest groups.

Other activities include a virtual competition for developing new innovative storm water management solutions and creating or updating urban and storm water planning processes/systems in the seven partner cities, which later will function as basis for investment plans to be realized after the project life-time.

In practice, the project partner cities (with new programmes) and approximately 35 other cities are trained to use developed methods in the region. Allstar partners are Riga and Jūrgava (LT), Söderhamn and Gäddede (SE), Tartu (EST), Helsinki and Turku (FI), Adria Univerzita (IT) and Union of the Baltic Cities Sustainable Cities Commission.



European countries adaptation policies

- Presenting information based on official **country reporting** (updated until early 2017)
- **Summary** of national policies, assessments, sectors and actions, stakeholder involvement
- Web-based template with **links** to key **national documents** and official web-pages
- Example: Estonia



The screenshot shows the 'European Climate Adaptation Platform' website. The header includes the EU flag, the text 'Climate-ADAPT - Sharing adaptation information across Europe', and the platform name. A search bar and navigation menu are also present. The breadcrumb trail indicates the user is viewing 'Country Information / Estonia'. A map of Europe highlights Estonia, with a 'Choose a country' dropdown menu below it. The main content area shows a table of adaptation policies for Estonia, last updated on 08 Mar 2017. The table has columns for 'Item', 'Status', and 'Links'. The 'Policy & legal framework' tab is selected.

Item	Status	Links
National Adaptation Strategy	Adopted	<ul style="list-style-type: none">• National Adaptation Strategy
Action Plans	Adopted	<ul style="list-style-type: none">• Climate Change Adaptation Plan
Impacts, vulnerability and adaptation assessments - National (screening NAS) - Sectoral & Other (territorial)	Being developed	
Research programs - National Programmes - Key research initiatives (added value)	Currently being undertaken	<ul style="list-style-type: none">• The Centre of Excellence in Environmental Adaptation ENVIRON was launched in August 2011 for a time period of 2011 – 2015 and supported by the EU through the European Regional Development Fund and by the Estonian Ministry of Education and Research.• Full list of programs and projects related to climate change is available in Estonia's Sixth National Communication to the UNFCCC under Chapter VIII "Research and Systematic Observations".
Climate Services / Met Office - Observation - Climate projections and services	Established/Being developed	<ul style="list-style-type: none">• Estonian Weather Service. Publishes data and climatological information on weather observations and scenarios, weather events and climate change science.



National adaptation policy processes in Europe (updated 2017)

- **Voluntary reporting** by countries to the Commission and EEA end **2016/early 2017**
- Information included on **Climate-ADAPT country pages**
- 25 EU MS and 3 EEA member countries have a **national adaptation strategy** and 16 and 2 respectively also have **action plans** (national and/or multi-sectoral)
- Some countries are in the **implementation stage**
- Some countries have systems for **monitoring and reporting** in place, but **few** have performed **evaluations**
- **Providing information and mainstreaming** in sectors are the most reported policies
- **Main policy drivers:** extreme weather events and damage costs, EU policies, research

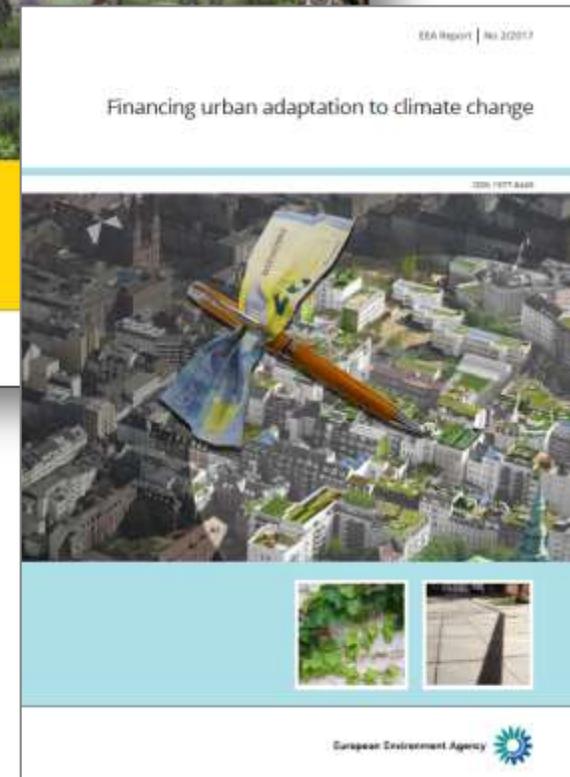
EEA countries:	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 (1)
Austria													
Belgium													
Bulgaria													
Croatia													
Cyprus													
Czech Republic													
Denmark													
Estonia													
Finland										*			
France													
Germany													
Greece													
Hungary													
Ireland													
Italy													
Latvia													
Lithuania													
Luxembourg													
Malta													
Netherlands												*	
Poland													
Portugal											*		
Romania												*	
Slovakia													
Slovenia													
Spain													
Sweden													
United Kingdom													
Iceland													
Liechtenstein													
Norway													
Switzerland													
Turkey													

white	No policy
light green	National adaptation strategy (NAS) in place
dark green	National adaptation strategy (NAS) and national and/or sectoral adaptation plans (NAP/SAP) in place

* National Adaptation Strategy (NAS) updated

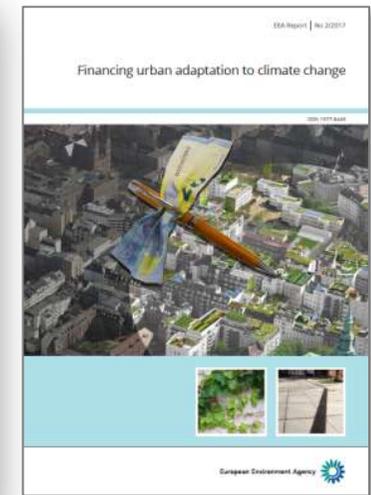
Cities have started to act (1)

- **Knowledge** on CC impacts, vulnerability and adaptation options **has rapidly increased but many cities**, especially smaller, **lack the capacity** to access knowledge and select appropriate available tools
- **Adaptation has started** in many cities; mainly at planning stage, implementation in few cases by front-runner cities
- **Low cost and ‘soft’ solutions** are predominant – cities are coping with climate variability or making incremental changes
- **Public funds** for adaptation measures are **difficult to find**
- **Integrating climate adaptation** requirements when replacing old or building new infrastructure for basic services **will save money** in the long term



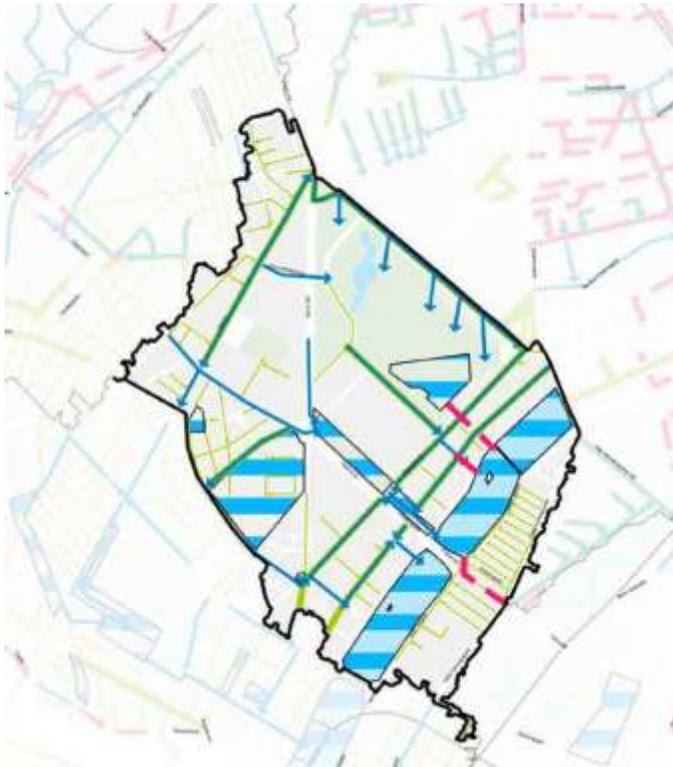
Cities have started to act (2)

- Highlighting **ecosystem-based measures** ('green infrastructure'), with multiple benefits (e.g. nature protection, recreation, adaptation). These can **increase the chance of securing funding**
- **Few cities** recognise the **need for transformative adaptation** – a long-term, systemic approach – to anticipate future climate impacts and other changes
- Key new **EU initiative Global Covenant of Mayors for Climate and Energy** provides support (as well as city networks)



Few systemic solutions, example of Copenhagen

Copenhagen **Cloudburst Plan** as backbone for **physical development** in the City



Copenhagen (Denmark) implements the next decades a cloudburst plan with 300 projects, **combining green, blue and grey solutions** costing 1.5 billion Euro

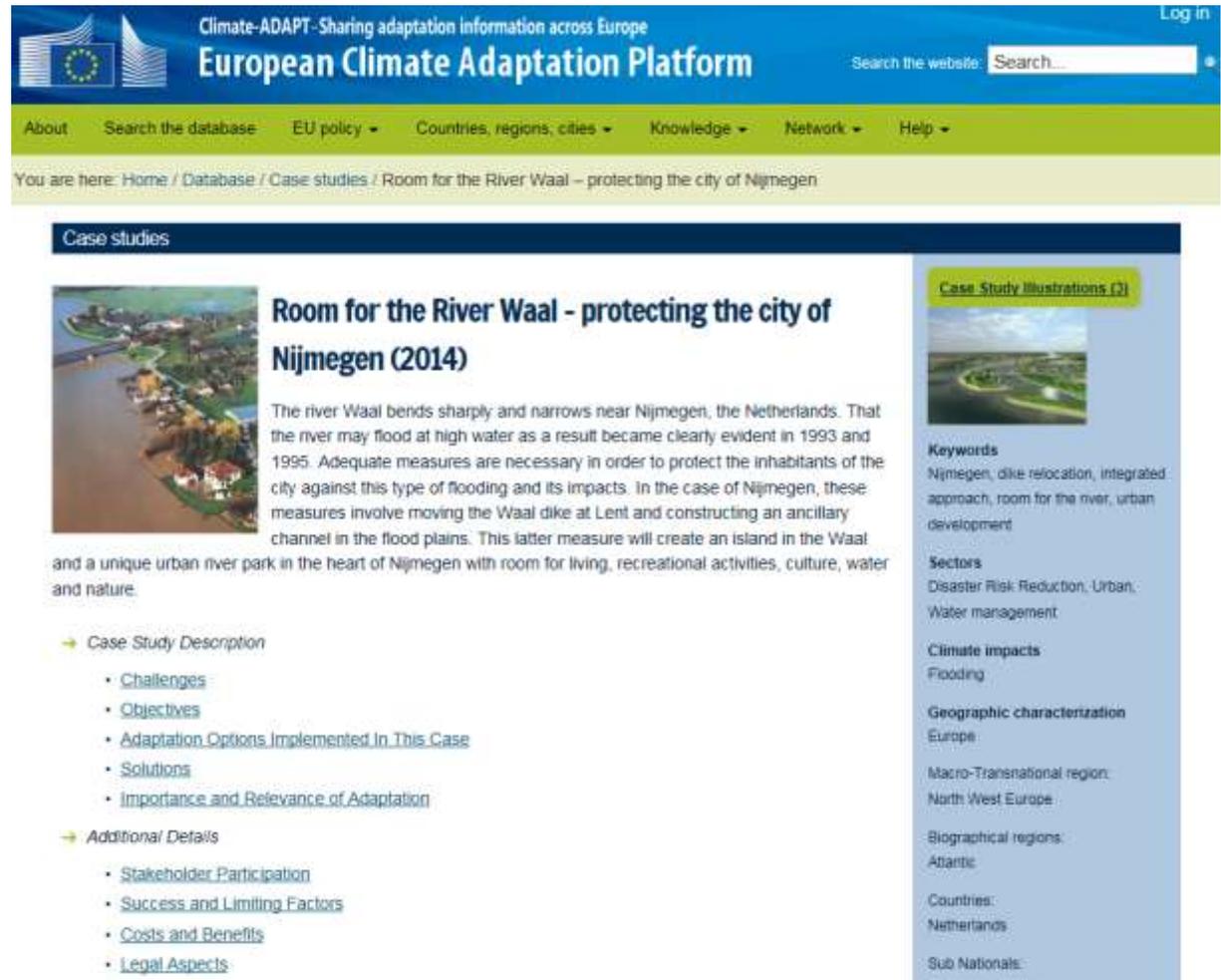
Adding more urban nature, increasing biodiversity and creating a liveable city



Storm water storage space at Tåsingeplads in Copenhagen, Denmark

Case studies

- Successful and verified **implemented adaptation approaches**
- **Metadata** sheet with easy access to all aspects of planning and implementation
- Including images and documents
- **Searchable** via filter criteria and/or an interactive map based search tool



The screenshot displays the European Climate Adaptation Platform website. The header includes the logo of the European Union and the text 'Climate-ADAPT - Sharing adaptation information across Europe'. Below the header is a navigation menu with options like 'About', 'Search the database', 'EU policy', 'Countries, regions, cities', 'Knowledge', 'Network', and 'Help'. A search bar is also present. The main content area features a case study titled 'Room for the River Waal - protecting the city of Nijmegen (2014)'. The case study includes an aerial photograph of the river and city, a brief description of the flooding problem and the implemented measures, and a list of metadata categories such as 'Case Study Description' (Challenges, Objectives, Adaptation Options, Solutions, Importance and Relevance of Adaptation) and 'Additional Details' (Stakeholder Participation, Success and Limiting Factors, Costs and Benefits, Legal Aspects). A sidebar on the right provides further details like 'Case Study Illustrations (2)', 'Keywords' (Nijmegen, dike relocation, integrated approach, room for the river, urban development), 'Sectors' (Disaster Risk Reduction, Urban, Water management), 'Climate impacts' (Flooding), 'Geographic characterization' (Europe, Macro-Transnational region, North West Europe), 'Biographical regions' (Atlantic), 'Countries' (Netherlands), and 'Sub National'.



Dissemination via the adaptation newsletter

European Climate-Adaptation Platform (Climate-ADAPT)
European Climate Adaptation Newsletter

Your update on Adaptation to
Climate change in Europe

European Environment Agency 

Issue March 22, 2016

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[Transnational, national and local activities](#) | [Events](#) | [Subscribe](#)

News

» EU policy and EEA activities

» 1. Next steps for Europe after the Paris agreement

The European Commission has presented an assessment of the implications that the new global climate agreement, adopted in Paris in December 2015, will have for the European Union.

» [Read more](#)



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» 2. Foreign Affairs Council calls for continuing European climate diplomacy following landmark Paris deal

The European Union's Foreign Affairs Council has welcomed the global climate agreement, reached in Paris in December 2015, as a landmark achievement for combatting climate change and for multilateralism.

» [Read more](#)



Climate-ADAPT

» 5. Sharing knowledge on adaptation in Europe - a new case study

As a result of the collaboration between the EEA and its member countries, in the frame of the European Environment Information and Observation Network (Eionet), a new case study has been published on Climate-ADAPT. The development of green roofs in Basel as a combined mitigation and adaptation measure has been proposed by Switzerland as an inspiring case study. Using a participatory approach, incentives were developed to enhance green roof coverage in Basel, with a view to providing a climate change adaptation function through limiting surface water runoff and reducing temperature in urban areas.

» [Read more](#)



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EU research

» 6. Resilience of infrastructure

This work by the European Commission's Joint Research Centre provided insight into current and future impacts of climate extremes on the present stock of critical infrastructures in Europe. It also considered regional investments under the EU Cohesion Policy for the 2007-2013 programming period.

» [Read more](#)



© Knowledge for Climate programme

» 7. ERA-NET Cofund for Climate Services officially launched at kick-off meeting in Paris



European Research Area

Dissemination of Climate-ADAPT news

