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

European Environment Agency

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

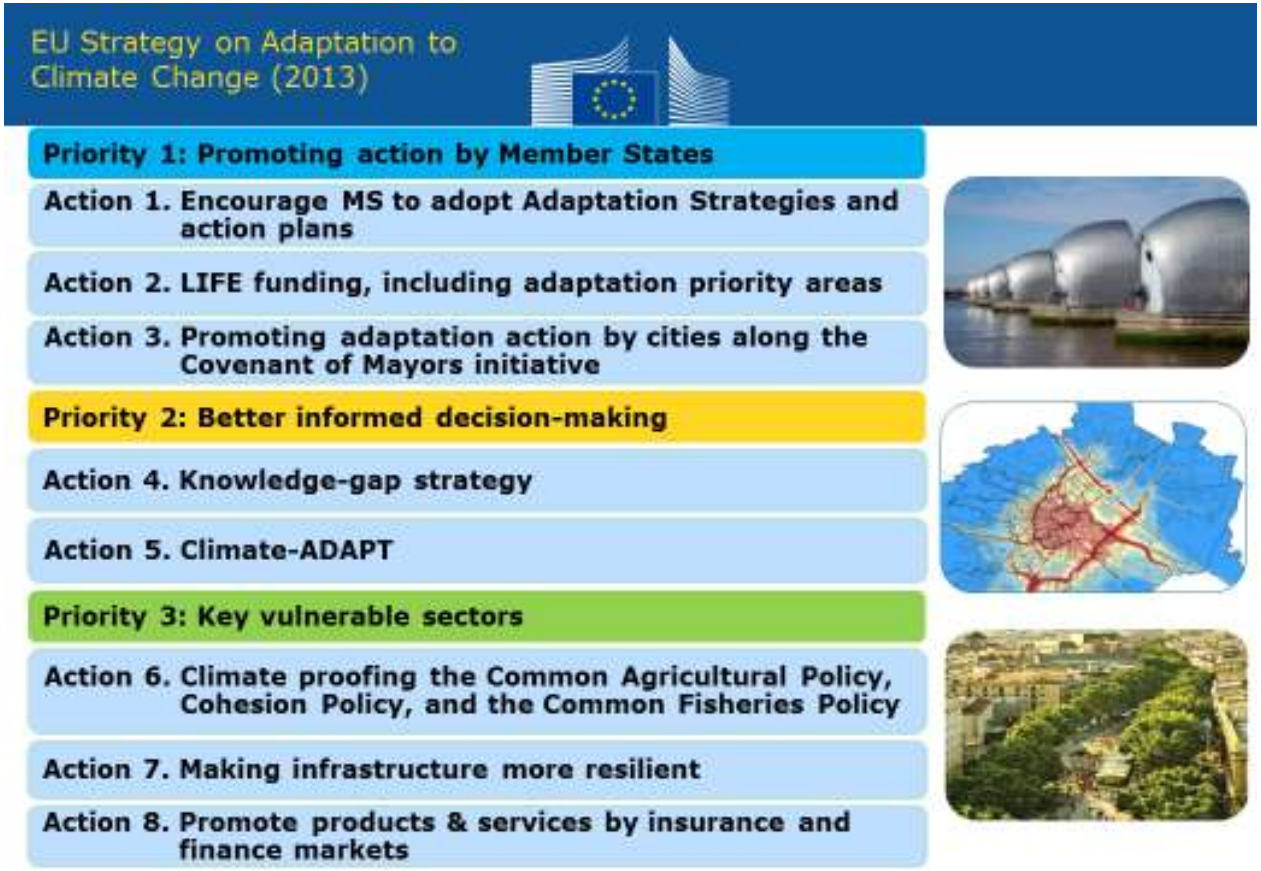
EU Action Plan on Sendai Framework for Disaster Risk Reduction

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

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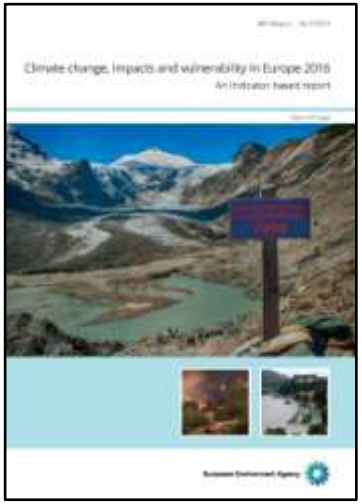
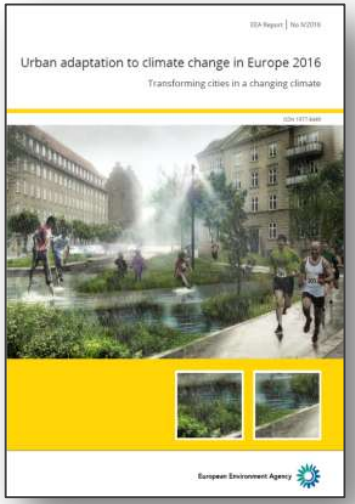
EEA main products and services on CC IVA 2016 – 2017

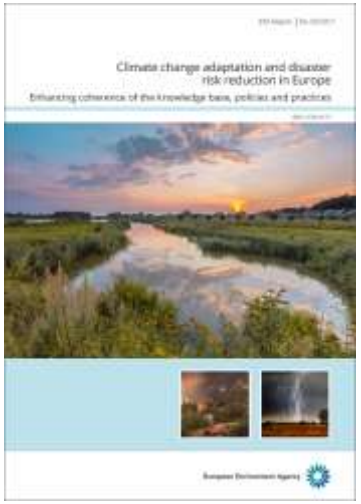
Impacts and vulnerability, Jan 2017



Urban adaptation (2016, 2017)



Adaptation and disaster risk reduction (2017)



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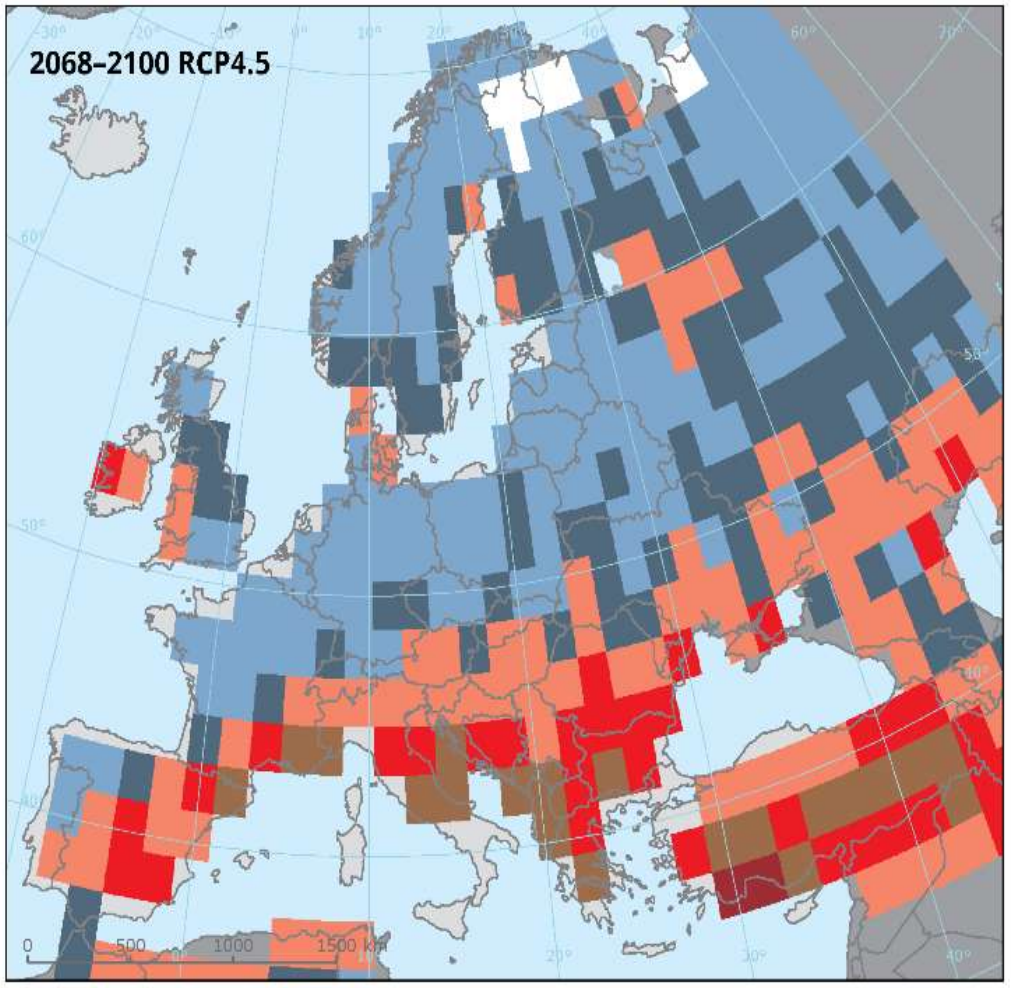
Climate change is affecting all European regions – but adaptation needs differ across regions

- **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

European Environment Agency

The number of extreme heatwaves will increase



Source: JRC, Russo et al, 2014

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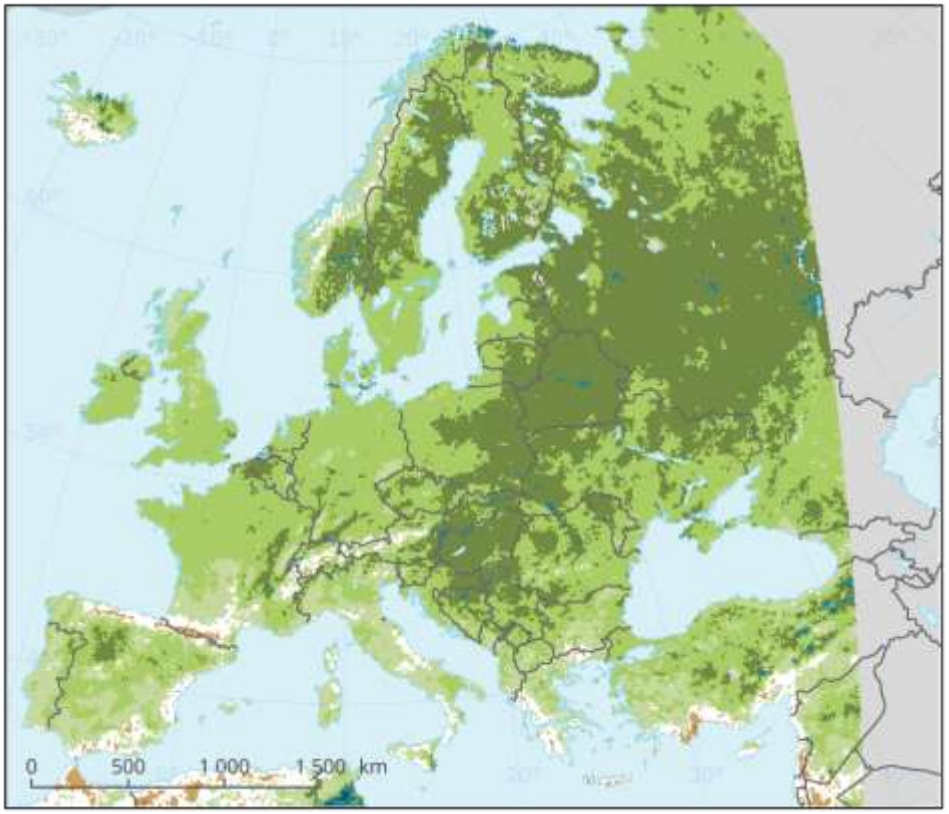
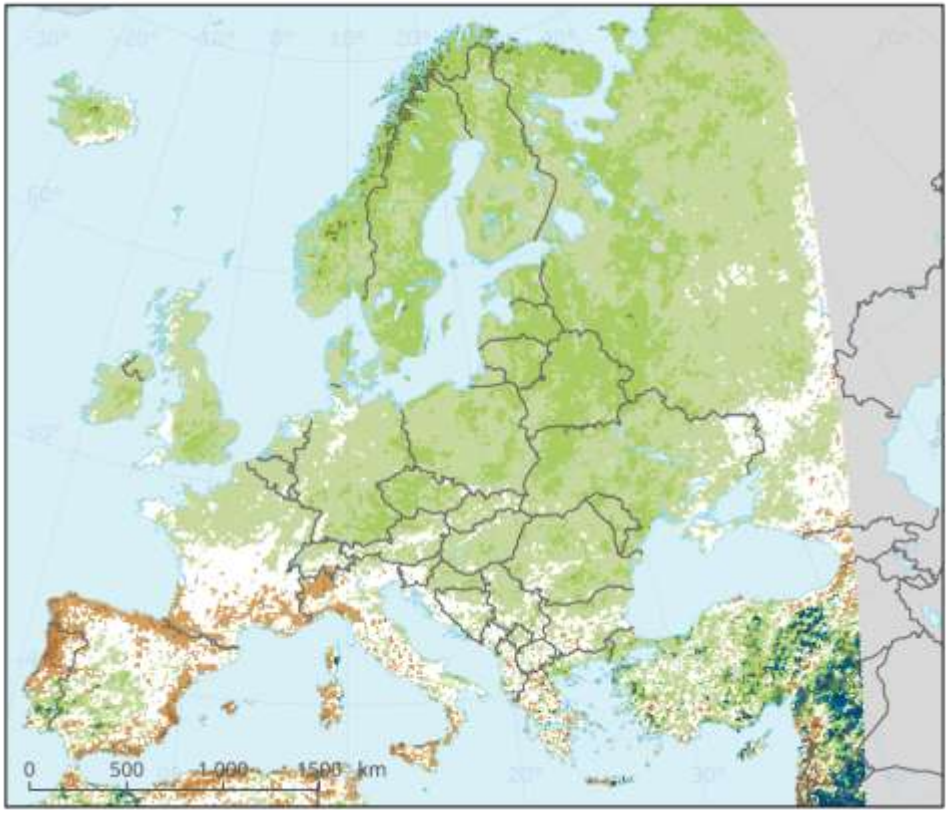
Heavy rain projections 2071-2100

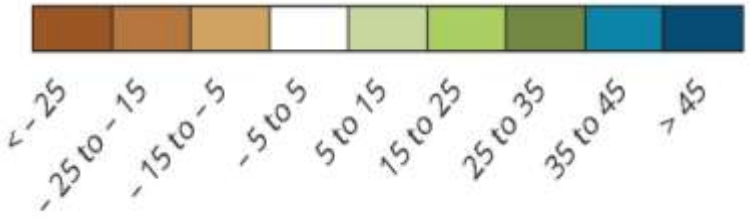
Winter 2071-2100



Summer 2071-2100



Change in heavy rain amount (%)



Source: EURO-CORDEX, 2015

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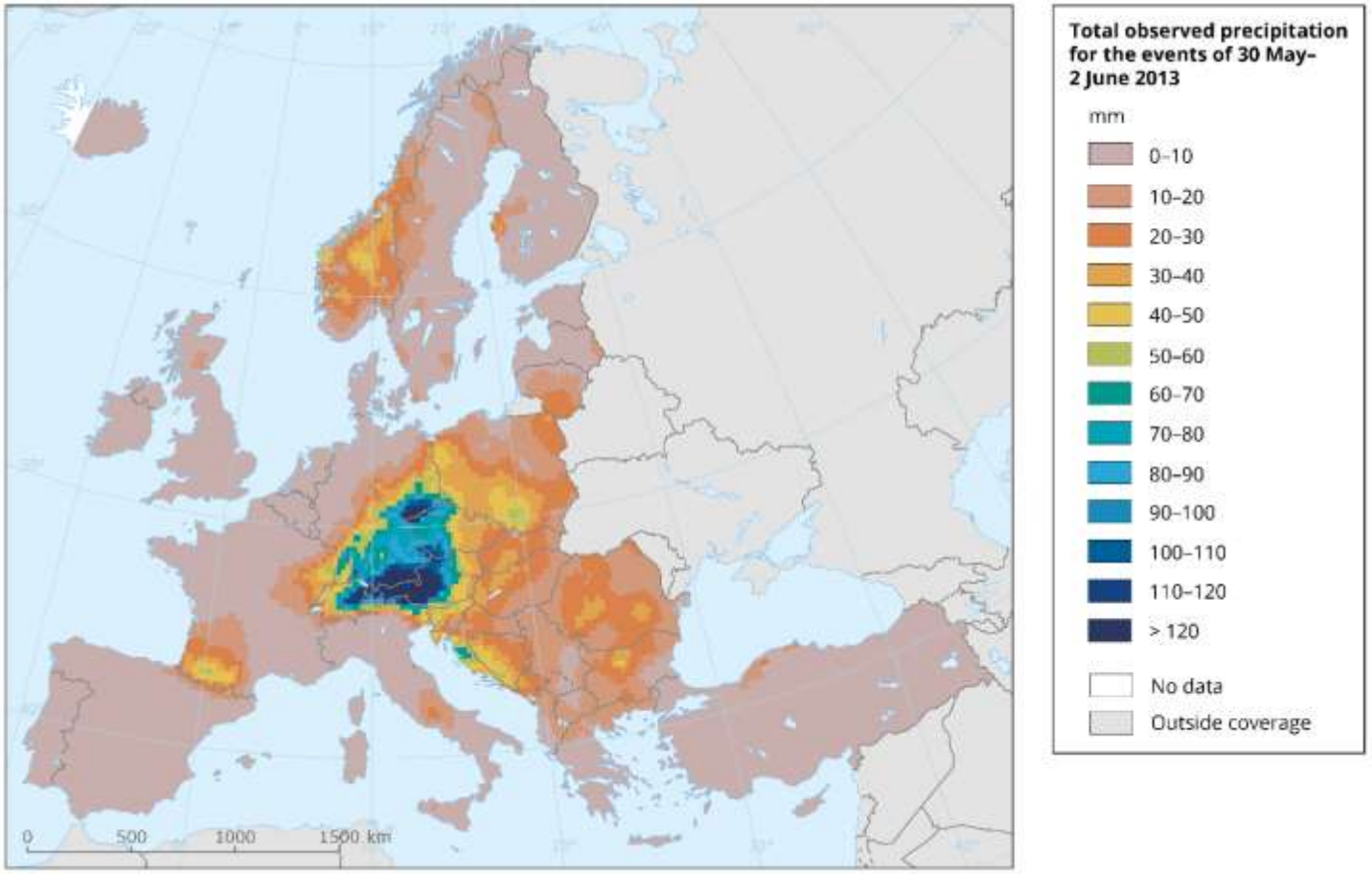
Heavy rain in June 2013 triggered floods in central Europe



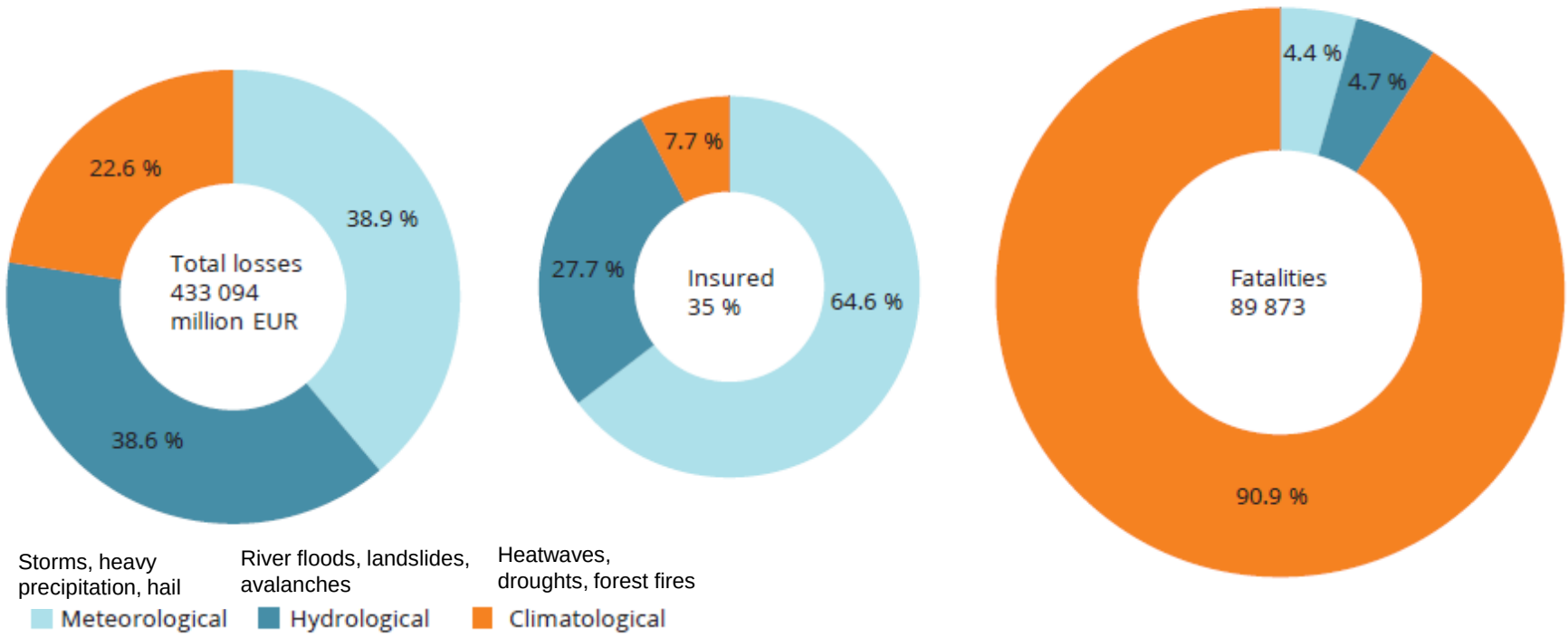
Total losses in Germany, Austria, Czech Republic and Switzerland amounted to EUR 10 billion

Source: ECA&D, 2017; Munich Re, 2017

European Environment Agency

Extreme climate events are costly and life-threatening

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

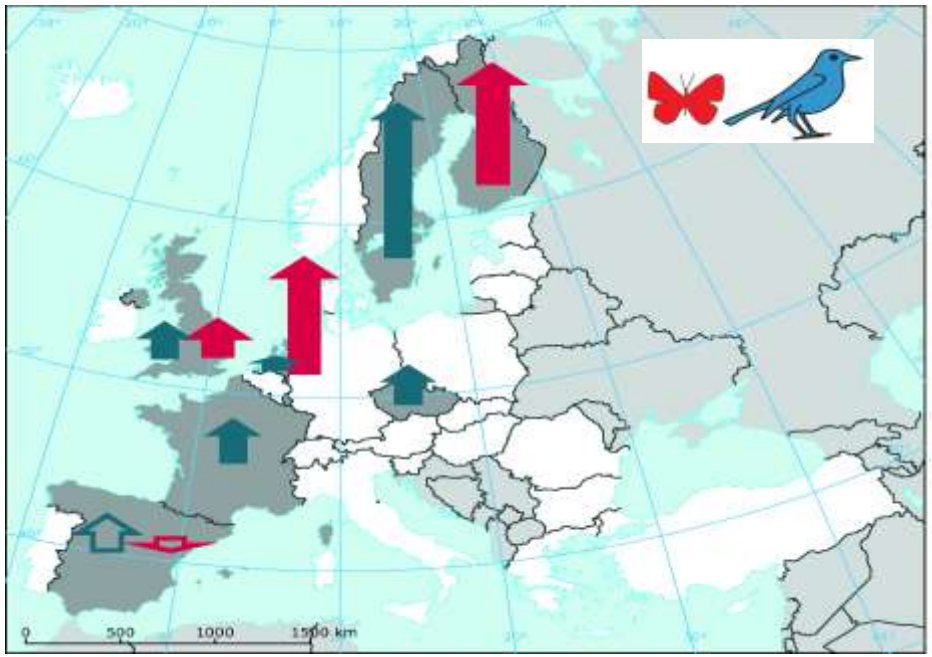


Note: Diagrams show total economic losses (expressed in 2015 values), insured losses and fatalities in EEA member countries over the period 1980–2015. Hazard categories: meteorological events, hydrological events and climatological events.

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)



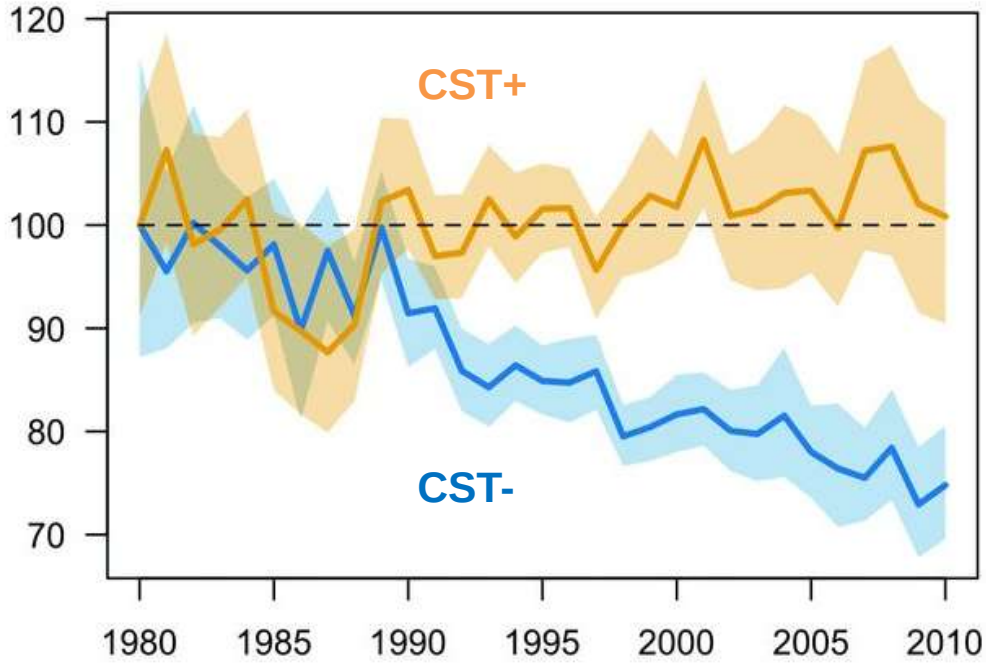
9490 bird communities:
37 km „northward“ on average

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)

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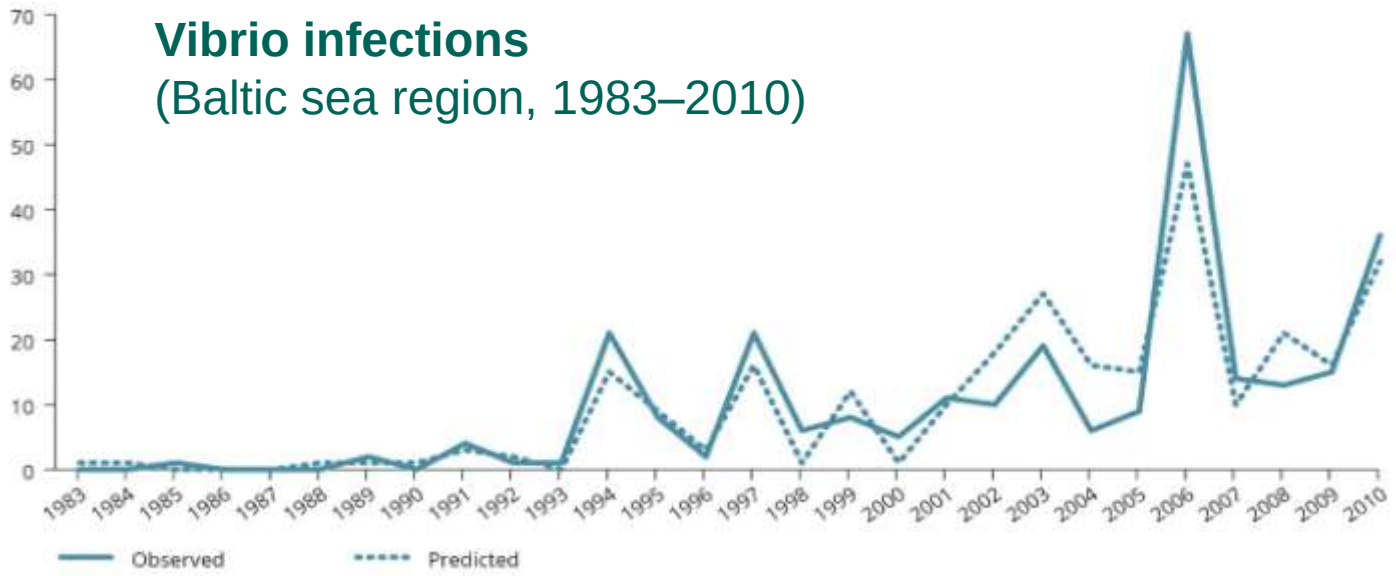
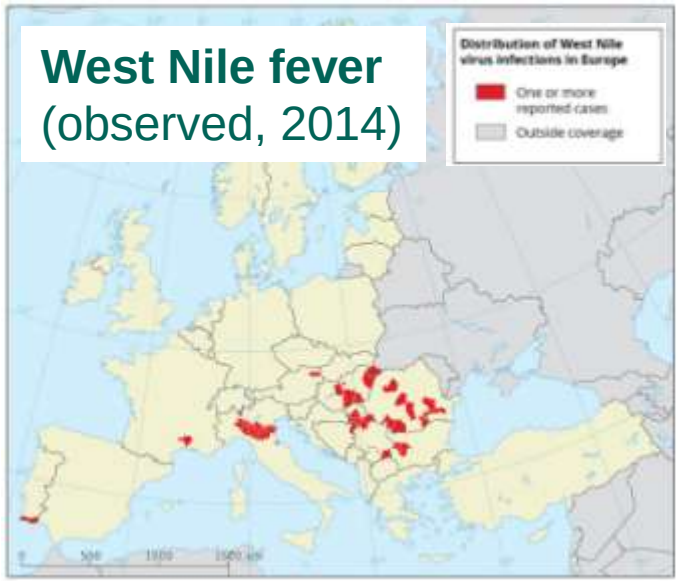
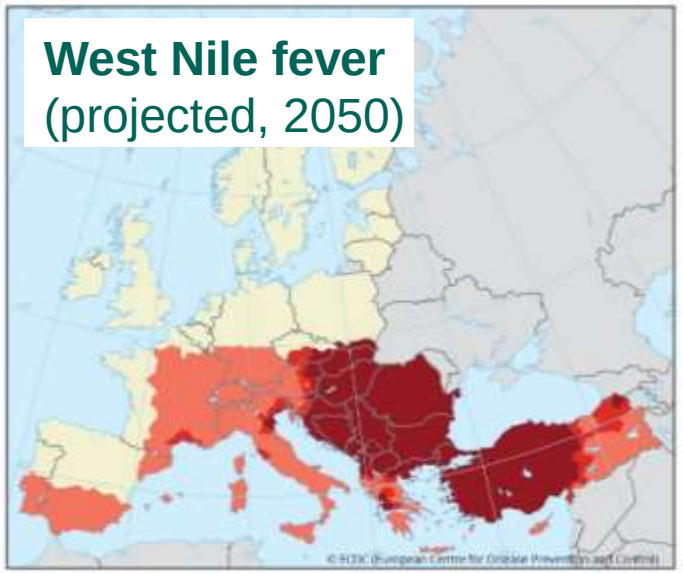
Climate change is facilitating the spread of infectious diseases



Source:
Baker-Austin et al. 2012





Source: ECDC
(Semenza et al. 2014)

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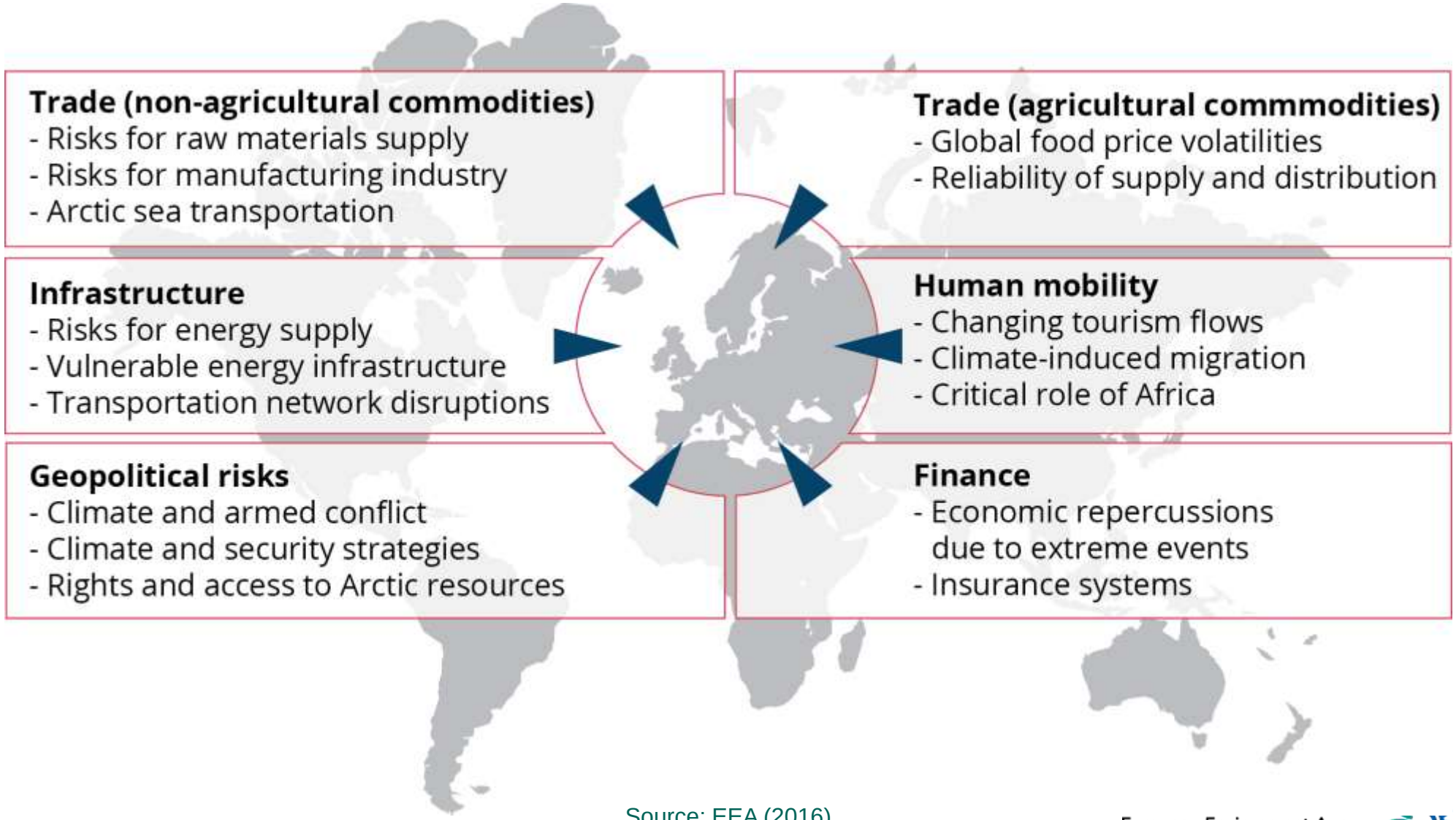
Europe is also vulnerable to climate change impacts outside Europe



Source: EEA (2016)

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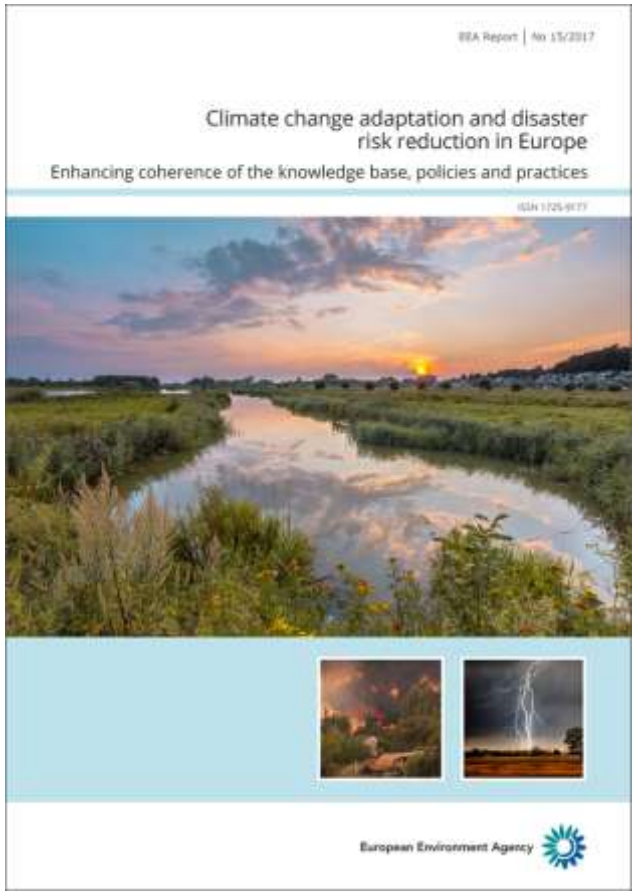
Climate change adaptation and disaster risk reduction in Europe 'Enhancing coherence of the knowledge base, policies and practices' (17 Oct. 2017)



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

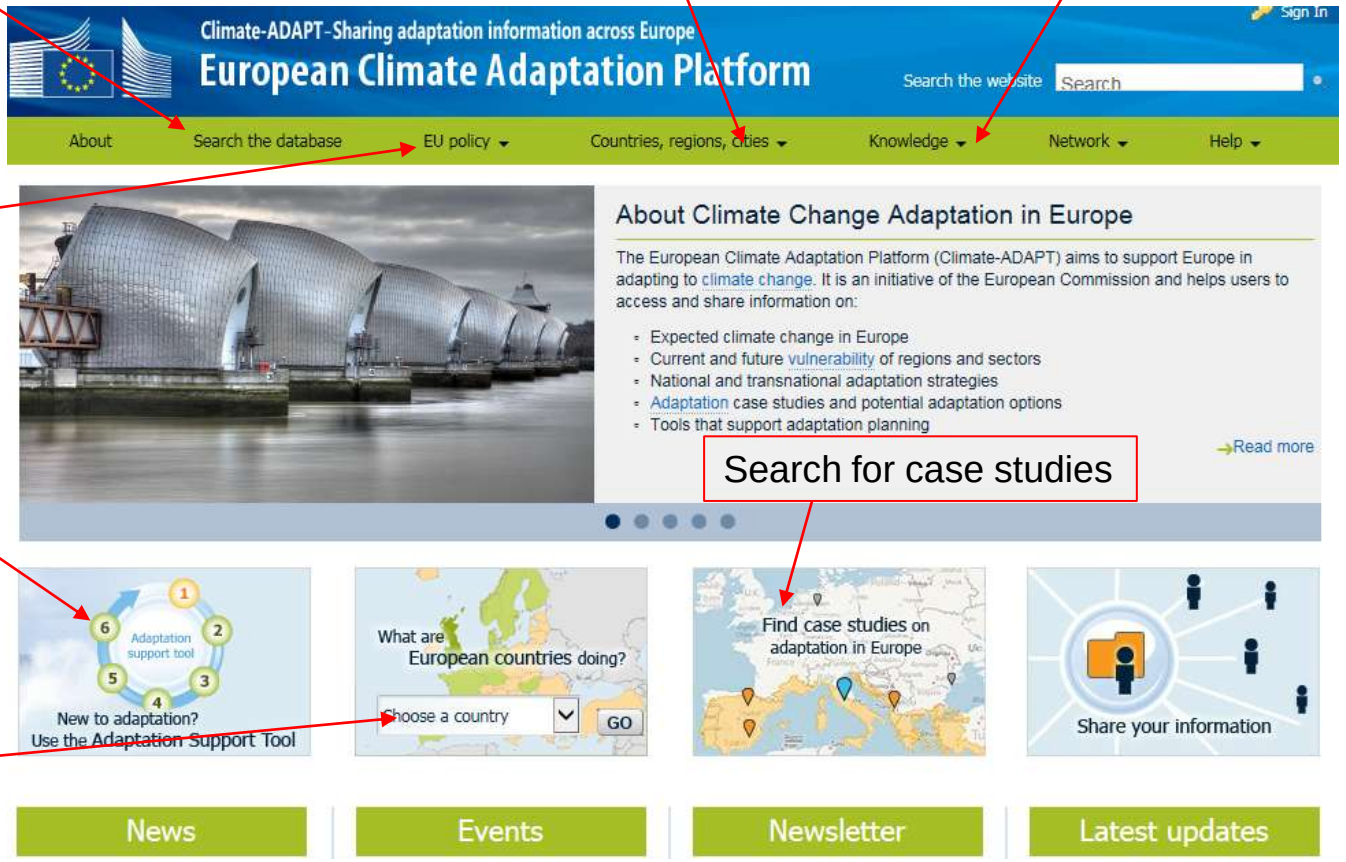
Tools

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:

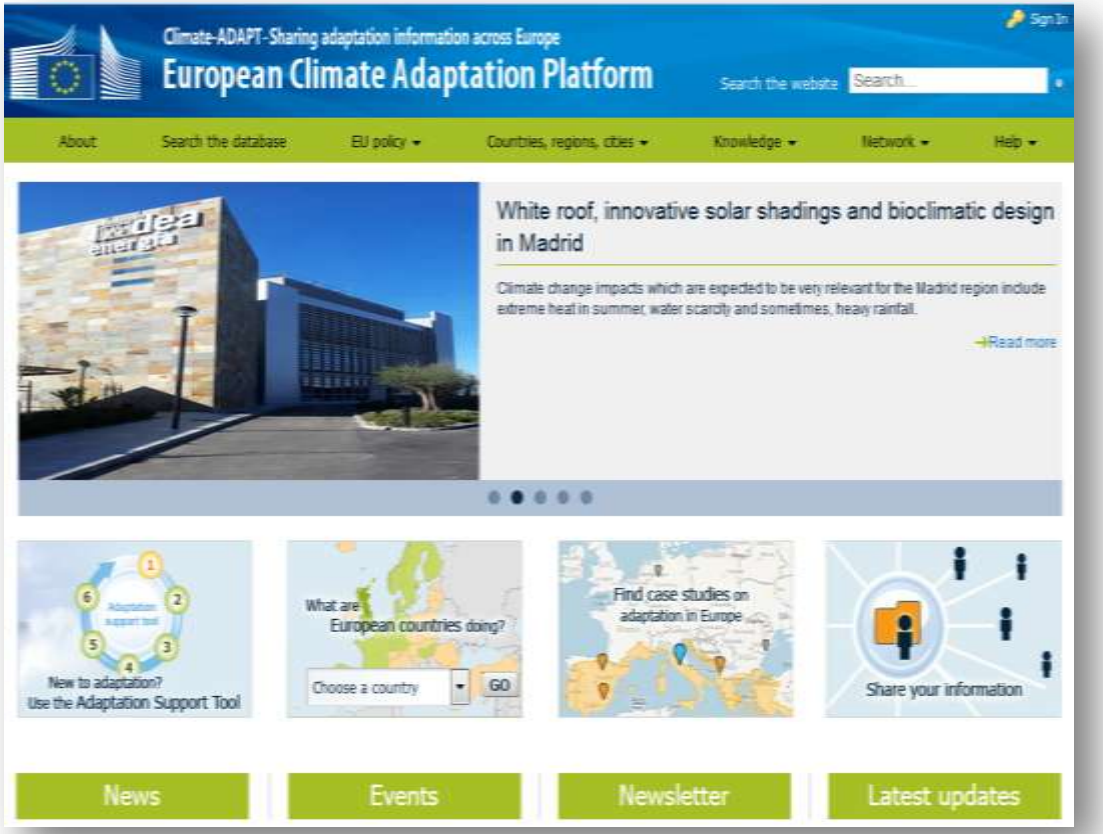
- Experts and decision makers on EU, transnational, national, sub-national levels, research institutes

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)

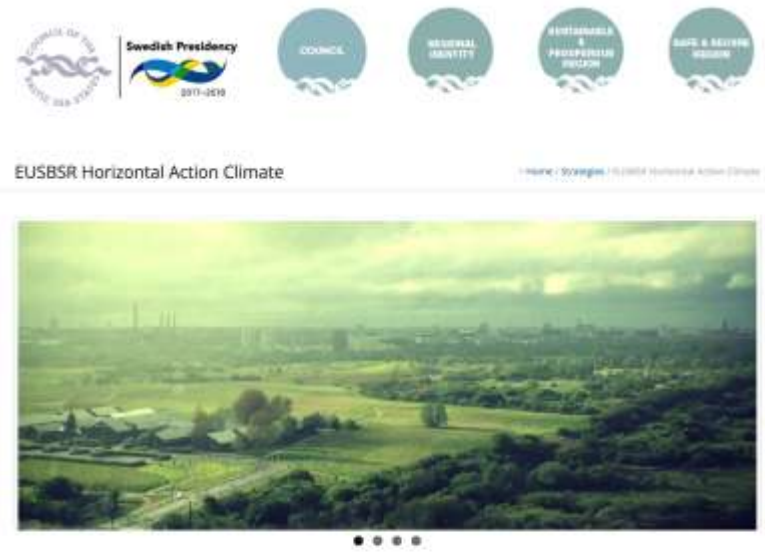
EU strategy for the Baltic Sea Region (BSR)

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)



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

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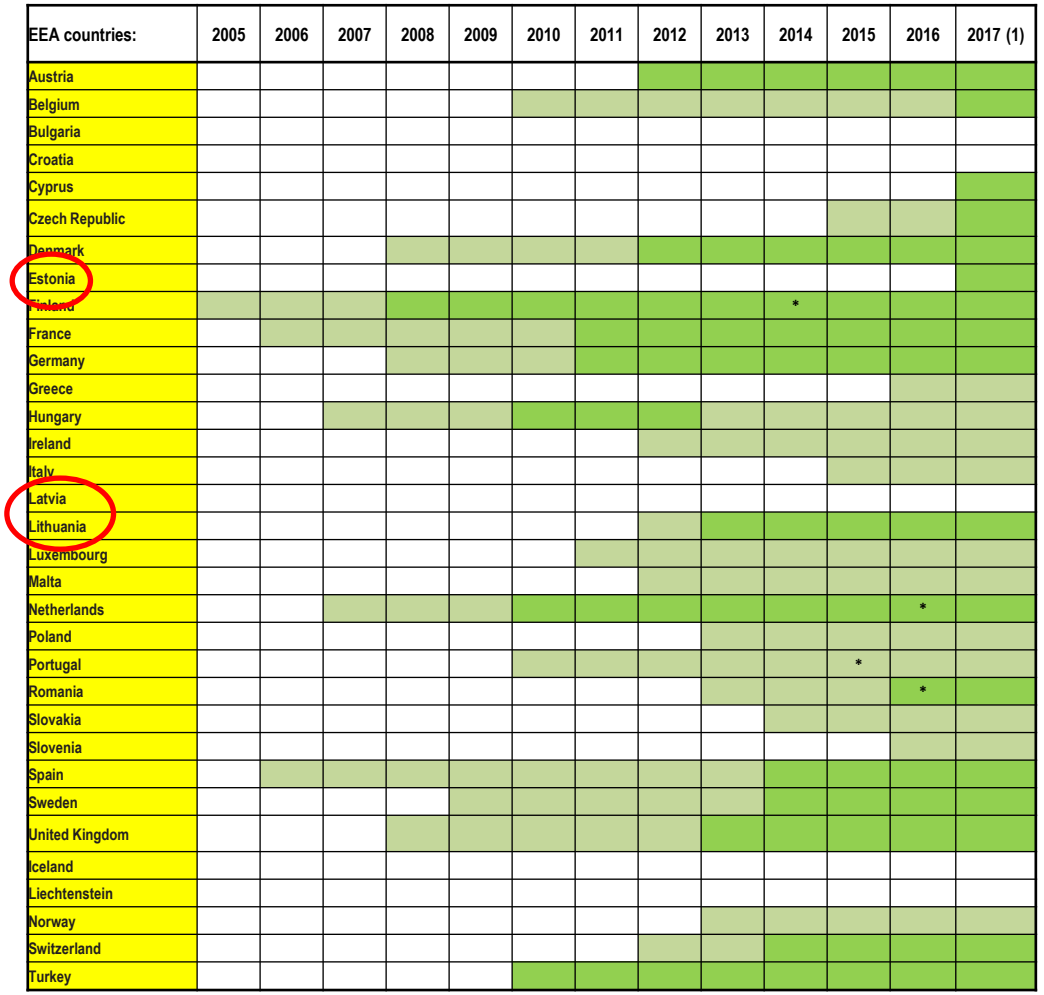
National adaptation policy processes in Europe (updated 2017)

- **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



white — No policy

National adaptation strategy (NAS) in place

National adaptation strategy (NAS) and national and/or sectoral adaptation plans (NAP/SAP) in place

* National Adaptation Strategy (NAS) updated

European Environment Agency

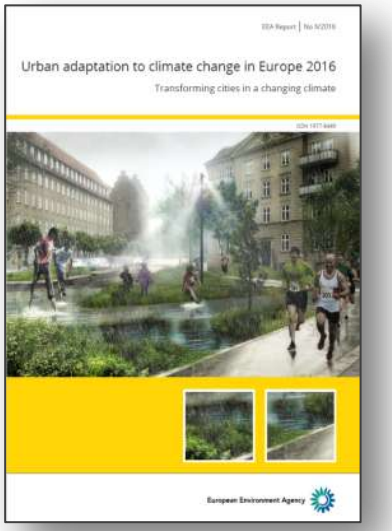
Cities have started to act (1)

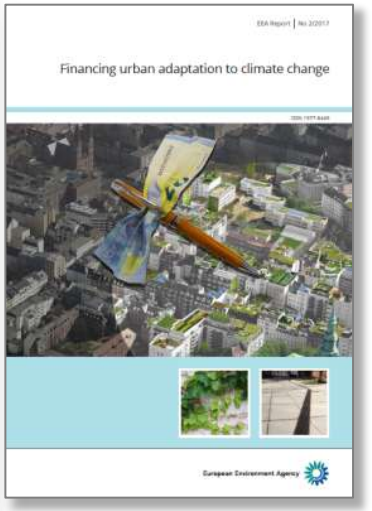
- **Knowledge** on CC impacts, vulnerability and adaptation options **has rapidly increased but many cities,** especially smaller, **lack the capacity** to access knowledge and select appropriate available tools
- **Adaptation has started** in many cities; mainly at planning stage, implementation in 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

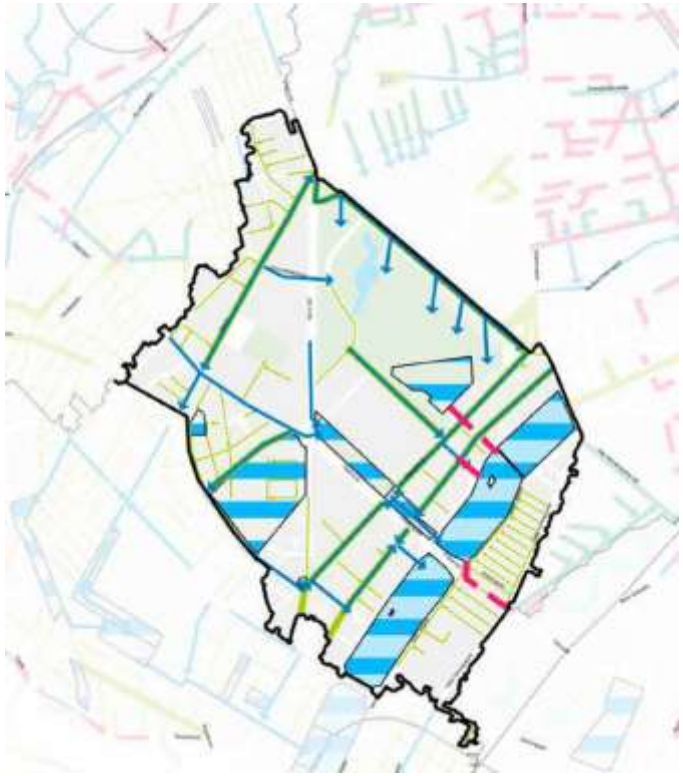




- Key new **EU initiative Global Covenant of Mayors for Climate and Energy** provides support (as well as city networks)

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

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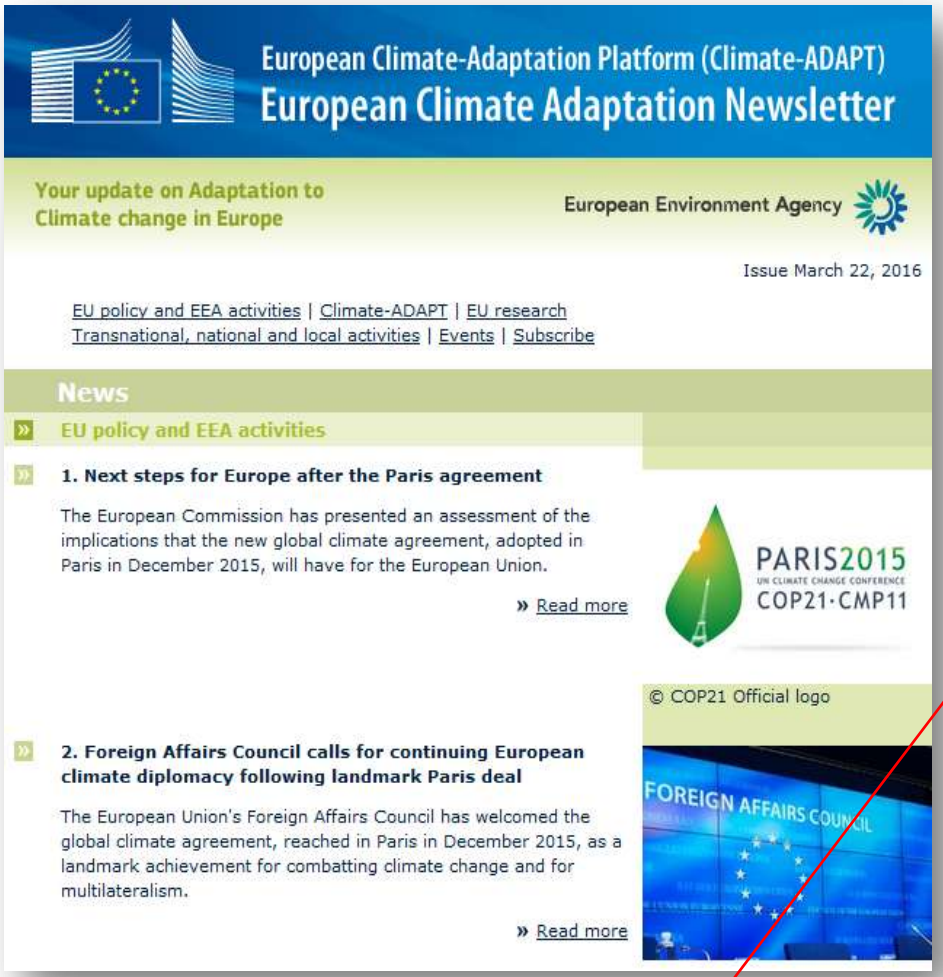
Dissemination via the adaptation newsletter



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

EU policy and EEA activities | Climate-ADAPT | EU research
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

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

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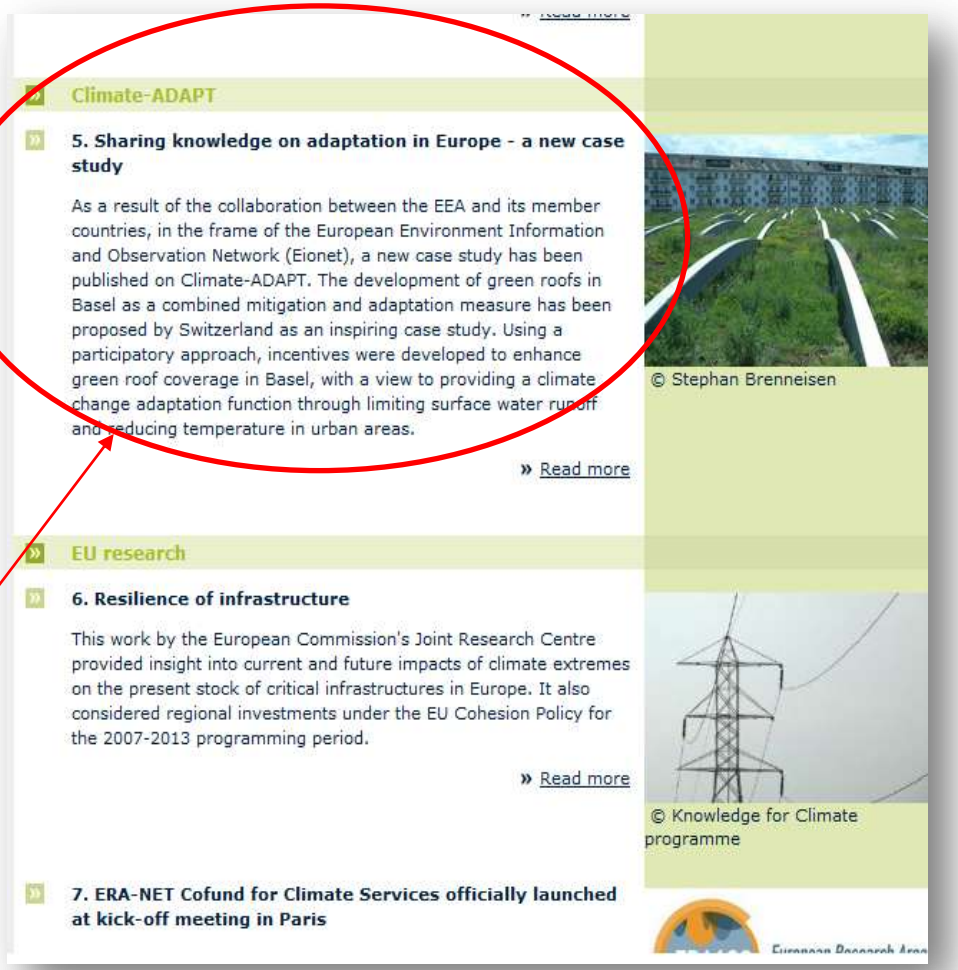
2. Foreign Affairs Council calls for continuing European climate diplomacy following landmark Paris deal

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

Dissemination of Climate-ADAPT news