

# **EEA information on climate change impacts, vulnerability and adaptation**

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**EEA Group**

**Climate change impacts, vulnerability and adaptation**

Carpathian Convention Working Group on Adaptation to Climate Change 4<sup>th</sup> Meeting, 1 October 2015

# EEA multi annual work programme 2014-2018

- To be the prime source of knowledge at European level **informing the implementation of European and national environment and climate policies**;
- To be a leading knowledge centre on the knowledge needed to **support long term transition** challenges and objectives;
- To be the lead organisation at European level facilitating **knowledge-sharing and capacity - building** in the field of environment and climate.

Strong connection to the 'Environment Action Programme to 2020 (7th EAP),  
*'Living well, within the limits of our planet'.*

See: <http://www.eea.europa.eu/publications/multiannual-work-programme-2014-2018>



# THE EUROPEAN ENVIRONMENT STATE AND OUTLOOK 2015



European Environment Agency



## Protecting, conserving and enhancing natural capital

SYNTHESIS REPORT	GLOBAL MEGATRENDS	EUROPEAN BRIEFINGS	COUNTRY COMPARISONS	COUNTRIES & REGIONS
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	5–10 year trends	20+ years outlook	Progress to policy targets
➤ <b>Terrestrial and freshwater biodiversity</b>			☐
➤ <b>Land use and soil functions</b>			No target
➤ <b>Ecological status of freshwater bodies</b>			☒
➤ <b>Water quality and nutrient loading</b>			☐
➤ <b>Air pollution and its ecosystem impacts</b>			☐
➤ <b>Marine and coastal biodiversity</b>			☒
➤ <b>Climate change impacts on ecosystems</b>			No target

Improving trends dominate ■ Largely on track  ☑  
 Trends show mixed picture ■ Partially on track  ☐  
 Deteriorating trends dominate ■ Largely not on track  ☒

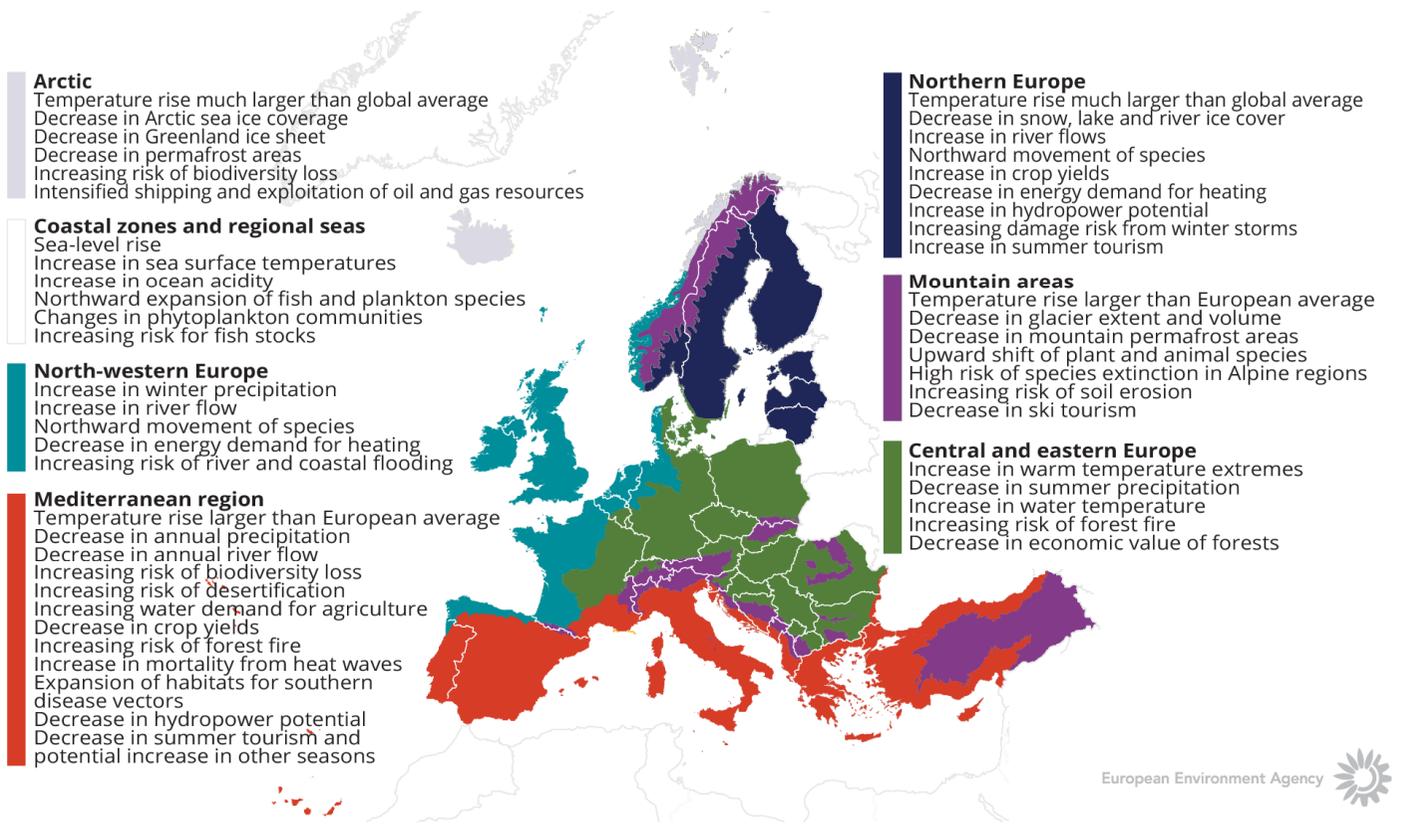
Overall summary table	Summary table 2/3	Summary table 3/3
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Source: EEA, SOER 2015 Synthesis report.

Related content

## Key observed and projected impacts from climate change for the main regions in Europe

SYNTHESIS REPORT	GLOBAL MEGATRENDS	EUROPEAN BRIEFINGS	COUNTRY COMPARISONS	COUNTRIES & REGIONS
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Climate change impacts on ecosystems	Water use and water stress	Urban systems and grey infrastructure	Climate change & related envi. health risks
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Source: EEA (2012), Climate change, impacts and vulnerability in Europe 2012. An indicator-based report, EEA Report No 12/2012, European Environment Agency, Copenhagen, Denmark.

Related content



## The EU CC adaptation strategy (2013)

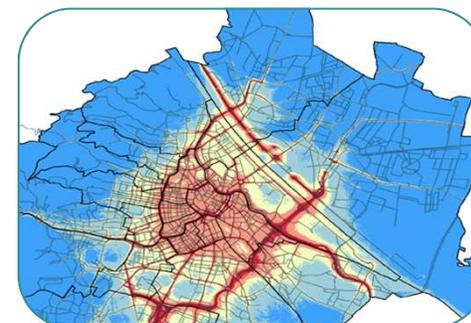
### Priority 1: Promoting action by Member States

- Action 1.** Encourage MS to adopt Adaptation Strategies and action plans
- Action 2.** LIFE funding, including adaptation priority areas
- Action 3.** Promoting adaptation action by cities along the Covenant of Mayors initiative



### Priority 2: Better informed decision-making

- Action 4.** Knowledge-gap strategy
- Action 5.** Climate-ADAPT

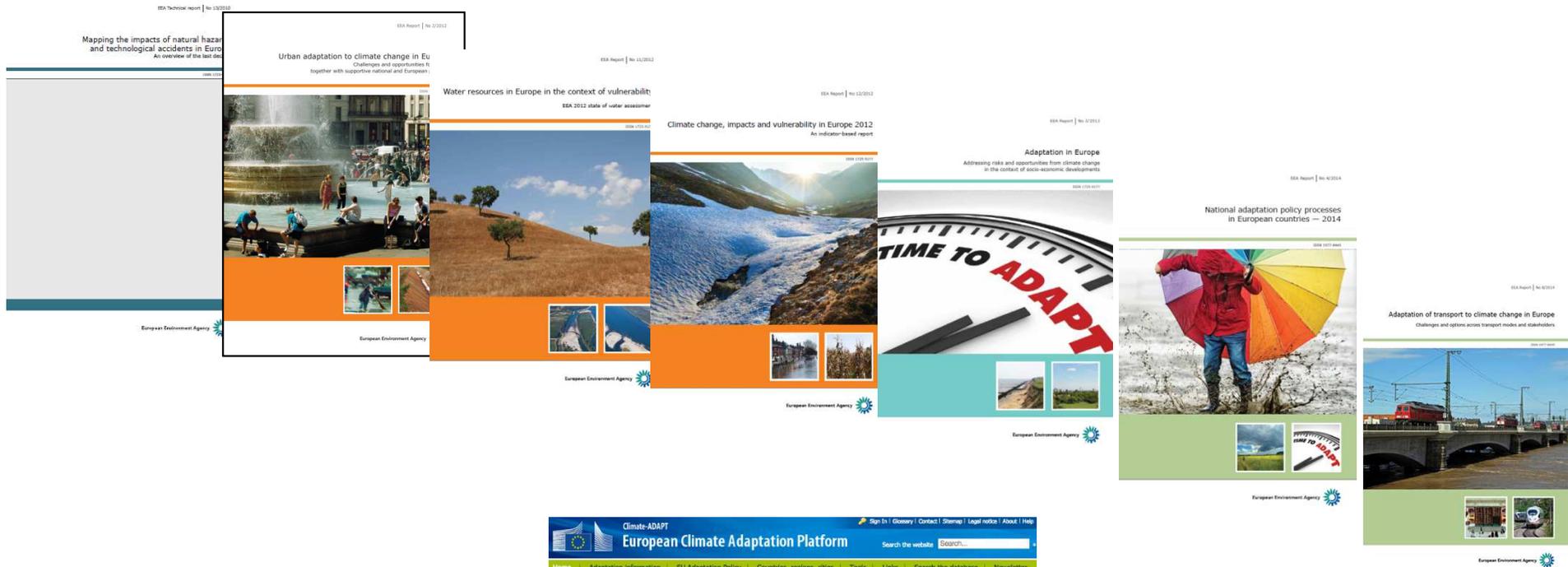


### Priority 3: Key vulnerable sectors

- Action 6.** Climate proofing the Common Agricultural Policy, Cohesion Policy, and the Common Fisheries Policy
- Action 7.** Making infrastructure more resilient
- Action 8.** Promote products & services by insurance and finance markets



# EEA activities on climate change impacts, vulnerability and adaptation



Supported by a European Topic Centre, see: <http://cca.eionet.europa.eu/>

**Climate-ADAPT**  
European Climate Adaptation Platform

Home | Adaptation Information | EU Adaptation Policy | Countries, regions, cities | Tools | Links | Search the database | Newsletter

**About Climate Change Adaptation in Europe**  
The European Climate Adaptation Platform (Climate-ADAPT) aims to support Europe in adapting to climate change. It is an initiative of the European Commission and helps users to access and share information on:

- Expected climate change in Europe
- Current and future vulnerability of regions and sectors
- National and transnational adaptation strategies
- Adaptation case studies and potential adaptation options
- Tools that support adaptation planning

**News**

- 11 Feb 2015 High Climate Action Bill includes adaptation measures
- 11 Feb 2015 Adaptation indicators for Catalonia now published
- 10 Feb 2015 Guidelines on better water reuse in Europe

**Events**

- 3 Mar 2015, Be prepared: reducing the impact of extreme weather on people's lives, Brussels, Belgium
- 5 Mar 2015, Invasive plants & algae in our changing environment, Brussels, Belgium
- 16 Mar 2015, Launch of URFACT II programme, Brussels, Belgium

**EU sector policies**

- Agriculture & Forestry
- Water management

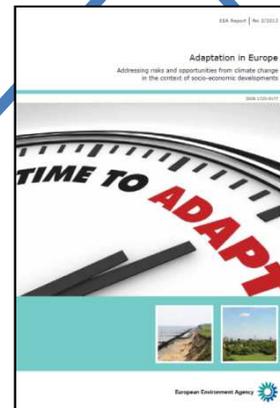
**EU information systems**

- MATORS ADAPT
- WISE
- Biodiversity

# Adaptation in Europe – EEA reports

Policy effectiveness / Transitions pathways (EEA Multi-annual workprogramme 2014 - 2018)

Policy developments

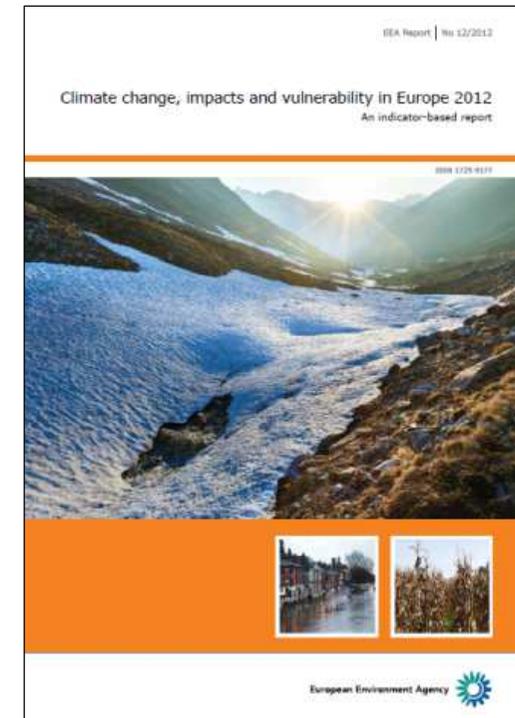


Analytical and assessment methods

Availability of data and information

# 2012 EEA indicator report on climate change, impacts and vulnerability

- **Coordination** by EEA
- **Authors and contributors (total 90):**
  - EEA and 3 European Topic Centres (CCA, ICM, BD)
  - Joint Research Centre (European Commission)
  - World Health Organisation (Regional Office for Europe)
  - European Centre for Disease Prevention and Control
  - Other organisations
- **External Advisory Group:**  
EC, EEA SC, WHO, ECMWF, IPCC, AMAP/SWIPA, etc.
- **Content:**  
Focus on indicators, but including additional information that is not suitable as EEA indicator
- **Data sources:**  
International databases, European and other research projects, academic publications
- **Extent:**  
300 pages, 42 indicators, >120 maps and figures



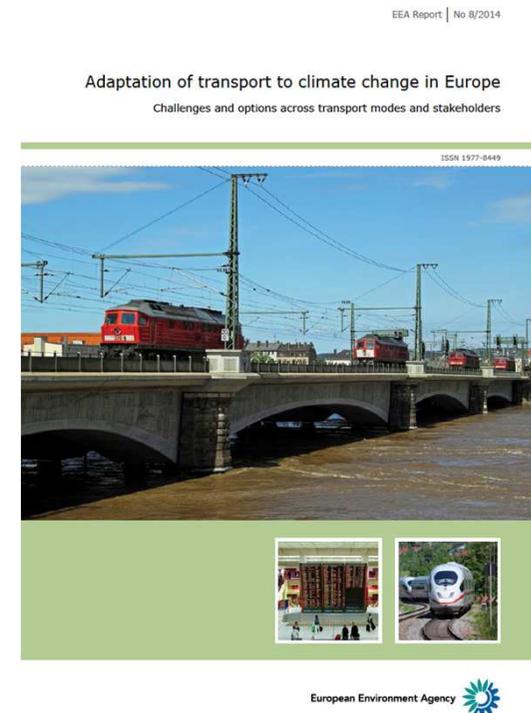
*To be updated and new report published in 2016*

# Climate change, impact and vulnerability indicators on EEA web site (many updated 2013/2014)

Category	Indicators	Category	Indicators
<b>Key climate variables</b>	<ul style="list-style-type: none"> <li>• Global and European Temperature</li> <li>• Temperature extremes</li> <li>• Mean precipitation and Precipitation extremes</li> <li>• Storms</li> </ul>	<b>Soil</b>	<ul style="list-style-type: none"> <li>• Soil organic carbon</li> <li>• Soil erosion</li> <li>• Soil moisture</li> </ul>
<b>Cryosphere</b>	<ul style="list-style-type: none"> <li>• Snow cover</li> <li>• Greenland ice sheet</li> <li>• Glaciers</li> <li>• Permafrost</li> <li>• Arctic and Baltic sea ice</li> </ul>	<b>Agriculture</b>	<ul style="list-style-type: none"> <li>• Growing season for agricultural crops</li> <li>• Agrophenology</li> <li>• Water-limited crop productivity</li> <li>• Irrigation water requirement</li> </ul>
<b>Oceans, marine environment, coastal areas</b>	<ul style="list-style-type: none"> <li>• Ocean acidification</li> <li>• Ocean heat content</li> <li>• Sea surface temperature</li> <li>• Phenology of marine species</li> <li>• Distribution of marine species</li> <li>• Global and European sea level rise</li> </ul>	<b>Forests and forestry</b>	<ul style="list-style-type: none"> <li>• Forest growth</li> <li>• Forest fires</li> </ul>
<b>Freshwater quantity and quality</b>	<ul style="list-style-type: none"> <li>• River flow</li> <li>• River floods</li> <li>• River flow drought</li> <li>• Water temperature</li> <li>• Lake and river ice cover</li> </ul>	<b>Human health</b>	<ul style="list-style-type: none"> <li>• Floods and health</li> <li>• Extreme temperatures and health</li> <li>• Air pollution by ozone and health</li> <li>• Vector-borne diseases</li> </ul>
<b>Terrestrial biodiversity and ecosystems</b>	<ul style="list-style-type: none"> <li>• Plant and fungi phenology</li> <li>• Animal phenology</li> <li>• Distribution of plant species</li> <li>• Distribution and abundance of animal species</li> <li>• Species interactions</li> </ul>	<b>Energy</b>	<ul style="list-style-type: none"> <li>• Heating degree days</li> </ul>
		<b>Vulnerability/risks</b>	<ul style="list-style-type: none"> <li>• Damages from weather and climate events</li> </ul>

# Adaptation of transport to climate change in Europe (EEA assessment report, Dec 2014)

- **Content:**
  - Main challenges
  - State of action in countries
  - Examples of initiatives
  - Potential way forward
- **Information basis:** questionnaire to EEA member countries, Climate-ADAPT, literature review, case studies from stakeholders
- Initial report to **stimulate exchange of experiences**; not a comprehensive overview



# National adaptation policy processes in Europe (EEA report published 14 Oct 2014)

- **Self-assessment** of 44 questions; 30 EEA member countries responded
- Mid 2013-mid 2014; two consultation processes of countries
- Key findings clustered around 8 Key Topics :
  - Public and policy awareness of the need for adaptation
  - Knowledge generation and use
  - Planning adaptation
  - Coordination of adaptation
  - Stakeholders involvement
  - Implementation of adaptation
  - Transnational cooperation
  - Monitoring, reporting and evaluation

EEA Report | No 4/2014

National adaptation policy processes  
in European countries – 2014



European Environment Agency 

## **The national perspective – added value of the report?**

- Most comprehensive overview of national/sub-national adaptation activities to date: unique collection of information (30 countries returned their self-assessment)
- Summary information in easy-to-read 8 Key Topics
- Complements Climate-ADAPT, provides up-to-date and European-wide information and enhances exchange of information between countries (good practices)
- Support countries, both in connection with their own activities and having an European wide perspective
- Supports the Commission and the EU Adaptation Strategy implementation

# Future directions for national adaptation in Europe

Agenda-setting issues:

- Countries have taken similar pathways in addressing climate change adaptation.
- Further improve understanding of governance approaches and of implementation processes at national, regional and local levels.
- A more standardised basis for monitoring, reporting and evaluation schemes and for appraisal methods facilitates learning across countries, sectors and public and private actors.
- Capacity building and advanced communication methods are key elements to foster adaptation policy at all levels.

# Overview of climate change adaptation platforms in Europe (EEA technical report, May 2015)

- **Aim** is to share experiences and learn from existing practices
- **Content:**
  - Overview of existing platforms:
    - 14 countries, transnational (Pyrenees, Alpine region, Baltic Sea Region), European (Climate-ADAPT)
  - Challenges and lessons learned:
    - Funding
    - Engaging with users
    - Identifying relevant information/knowledge
    - Presentation information/knowledge
    - Design and technical aspects
    - Linking across sectors and scales
    - Monitoring and evaluation
  - Links with disaster risk reduction platforms and climate change services
- **Information basis:** expert meetings and workshops held in 2013 and 2014



# Monitoring and evaluation climate change adaptation policies at national level *(EEA Technical Report, to be published Dec 2015)*

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## Scope and added value of this report

- describe how M&E activities can inform policy making and facilitate shared learning on national level M&E approaches across member countries
- A workshop-based approach, 24-25 March 2015: pre-workshop questionnaire and experts from the 13 countries implementing and developing MRE schemes (Austria, Belgium, Finland, France, Germany, Lithuania, Malta, Norway, Slovak Republic, Spain, Switzerland, The Netherlands, UK)

## A series of key topics:

- Understanding of M&E
  - Purpose and objectives of M&E
  - Governance and participation
  - Methods
  - Application of results in policy and practice
  - Reflection and future plans
- **EIONET country consultation in September 2015**
  - **Publication in December 2015**

# EEA other products 2014-2015

**August 2014: updated indicators on climate change and impacts** (e.g. temperature, precipitation, ocean acidification and heat content, sea level, snow cover, ice sheets, sea ice and glaciers, agriculture, human health, terrestrial species)

**June 2015 Urban vulnerability map book** (indicators on exposure, sensitivity and response capacity)



European Environment Agency

Topics Data and maps Indicators Publications

You are here: Home / News / Europe's climate continues to change

### Europe's climate continues to change

Highlight Published 06 Aug 2014 Last modified 06 Aug 2014, 03:16 PM

Topics: Climate change Various other issues Water

The period from 2004-2013 was the warmest decade on record in Europe. Many other changes significant for Europe have been observed across the climate system, including warming oceans, rising sea level and shrinking snow cover, ice sheets, sea ice and glaciers.



Image © Arthur Girling/EEA

In the last decade global near-surface average annual temperature was 0.75 - 0.81 °C warmer than the pre-industrial average. Other records have been broken in recent months - global average temperatures in May and June 2014 were the highest monthly averages ever



Climate-ADAPT European Climate Adaptation Platform

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- General
- Uncertainty guidance
- Time series tool
- Adaptation support tool
- Guidelines for project managers
- Case study search tool
- Urban vulnerability mapbook
- Map viewer
- Urban adaptation support tool

Introduction Maps per climatic threat Maps of response capacity Explore further Site overview

### Urban vulnerability to climate change in Europe – a map book (Pilot version)



**Cities affected by climate change**

Climate change is happening, and is projected to continue, posing serious challenges to cities. Climate change is expected to result in more frequent and intense heatwaves, droughts, fires and floods across Europe.

Read more: [european-adaptation.eu/climate-change-in-europe](http://european-adaptation.eu/climate-change-in-europe)

**A map book**

This map book aims to provide a Europe-wide overview of the potential vulnerability of major cities to climate change. The maps present possible weaknesses or strengths of cities.

**Options to use the maps ...**

As a starting point, the indicated vulnerabilities will encourage stakeholders at European, national and city level to explore each situation in further detail, with more and local information. Furthermore, the map book enables cities to locate other cities with similar circumstances as a starting point for sharing knowledge and experience. It shows clusters and hotspots for which national and European level action can develop more tailored support. Finally, the map book provides a simple framework for urban vulnerability indicators, and indicates where further information is needed at local level, in order to make more detailed specific assessments.

... while recognising their limitations

The map book cannot provide a full and comprehensive picture, and the following

# Information for cities

Key activity: DG CLIMA funded initiative launched in 2014 ‘Mayors adapt’; conference 16 Oct 2014 with more than 100 cities <http://mayors-adapt.eu/>



Climate-ADAPT <http://climate-adapt.eea.europa.eu/cities> (will include city profiles from MayorsAdapt from end of 2015)



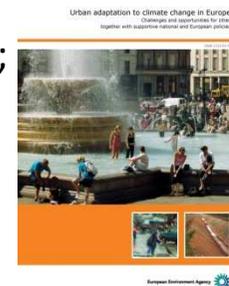
*European cities adapt to climate change, Open European Day (Bonn, May 2014)*

<http://resilient-cities.iclei.org/bonn2014/open-european-day/>



*EEA report 2012 (vulnerabilities; planning urban adaptation; multi-level governance)*

*New report due in 2016*



# Summary of main relevant EEA products 2015/2016

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- **2015 Reports:**
  - Overview and analysis of **adaptation platforms** (March 2015)
  - **Monitoring and evaluation** of adaptation policies at national level (end 2015)
- **2016 Reports:**
  - Climate change **impacts and vulnerability** (Sep)
  - **Urban** adaptation (May/June)
  - **Disaster** Risk Reduction (End 2016)
- Updating and improving **Climate-ADAPT** (e.g. national strategies, based on MMR and city information)

# EEA networking and dissemination in 2015

- Annual **EIONET workshop** with all member (and collaborating) countries (Copenhagen, e.g. 15-16 June 2015)
- **Webinars** on Climate-ADAPT (27 April 2015)
- Dissemination of European Climate Adaptation **Newsletter** since Jan. 2015
- **Expert meetings** (e.g. on extreme weather and climate related events and on monitoring and evaluation of policies)
- Participation in the **second European Climate Change Adaptation Conference** 12-14 May 2015, Copenhagen, DK (<http://www.ecca2015.eu/>)
- Participation in and support to other networks, e.g. **ECRAN** (<http://www.ecranetwork.org/Climate/Adaptation>) (aims at assisting West Balkan countries and Turkey in their progress in the transposition and implementation of EU environmental and climate legislation).



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The screenshot shows the EEA subscription page. At the top, there is a green header with the text "European Environment Agency" and the EEA logo. Below the header is a horizontal bar with five small images: a smokestack emitting smoke, a frog, a bird, a landscape with a river, and a waterfall. The main content area is divided into two sections. On the left, there is a "SIGN UP NOW!" section with a stack of newsletters and a "Click here to subscribe" button. On the right, there is a "LOG IN" section with input fields for "E-mail" and "Password", a "Request new password" link, and a "Log in" button.

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

<http://www.eea.europa.eu/soer>

