ECMWF Climate Change Service Workshop, 17-18 February 2014

Sectoral information: Policy needs and Climate-Adapt

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Key issues to consider for CC impacts, vulnerability, risk assessments

What, who is ***affected*** and how (***multi-sectoral***):

- People
- Infrastructure
- Ecosystems

Geographical **scales**:

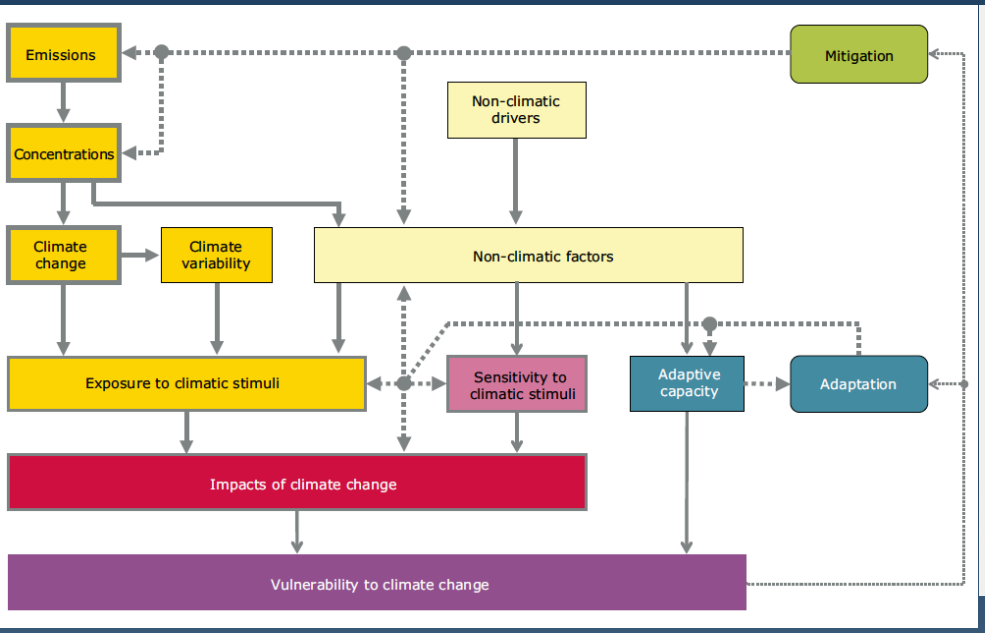
- Administrative and governance: EU, trans/cross-national, national, sub-national, city
- Environmental assessment: river catchment, bio-geographical region, sea basin

Impact, risk and vulnerability ***methods*** (combine and integrate):

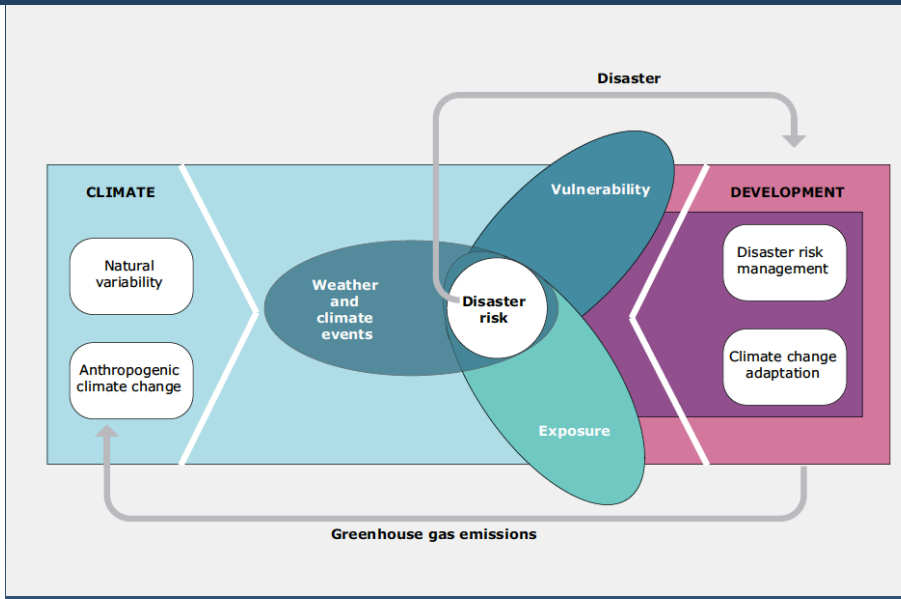
- Climate data (satellite, in-situ ***observations, re-analyses*****)**
- ***Climate scenarios*** (model output)
- ***Socio-economic***, including demographic, data/scenarios

Dealing with ***uncertainties***

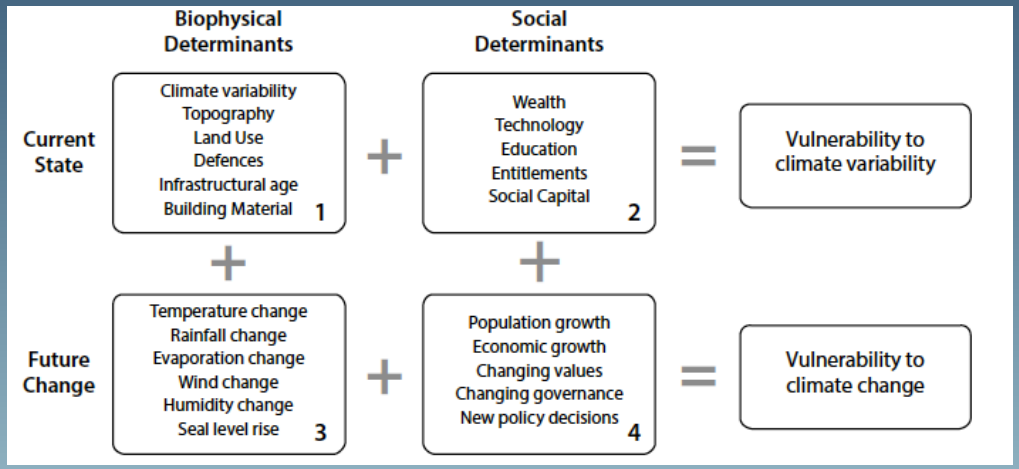
Climate change impacts, vulnerabilities and risks



Source: IPCC, fourth assessment report (2007)

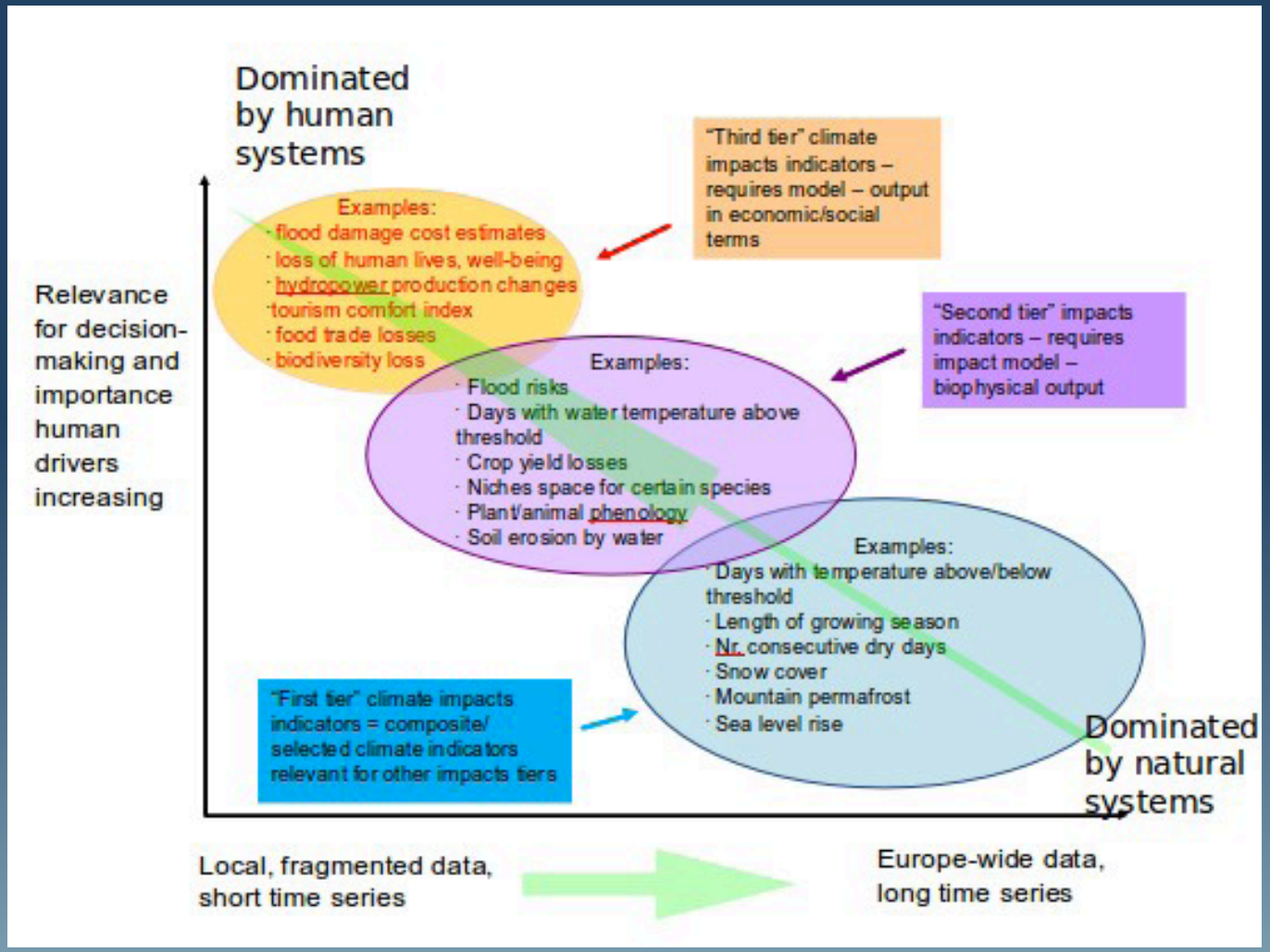


Source: IPCC, Special Report Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)



Source: UNEP/Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation(PROVIA), Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change (2013)

Typology of climate change impact/risk/vulnerability indicators



Source: CLIP-C project

Climate change, impacts and vulnerability in Europe
(EEA indicator based report, Nov 2012)

Indicators:

*Changes in the **climate system***

- Climate variables
- Cryosphere (glaciers, snow and ice)

*Climate impacts on **environmental systems***

- Marine environment and biodiversity
- Coastal zones
- Inland waters (quantity and quality, biodiversity
- Terrestrial ecosystems and biodiversity
- Soil

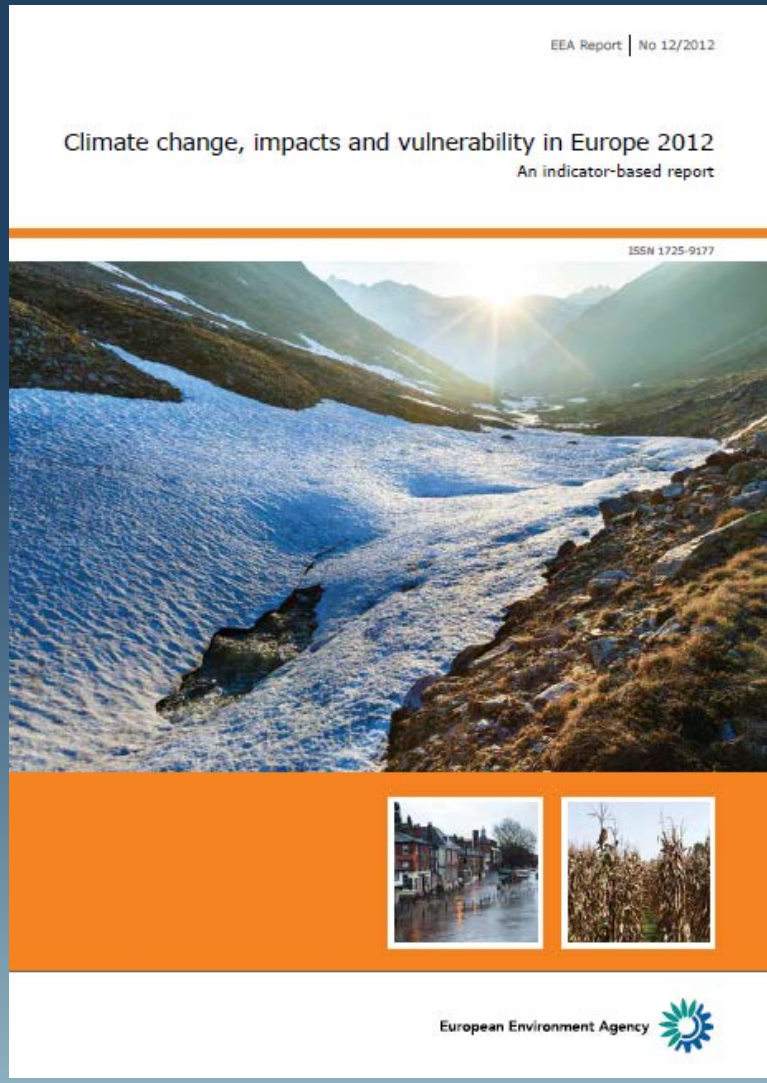
*Climate impacts on **socio-economic systems and health***

- Agriculture
- Forestry/forests
- Energy
- Transport, fisheries (no indicators)
- Human health

Vulnerability indices

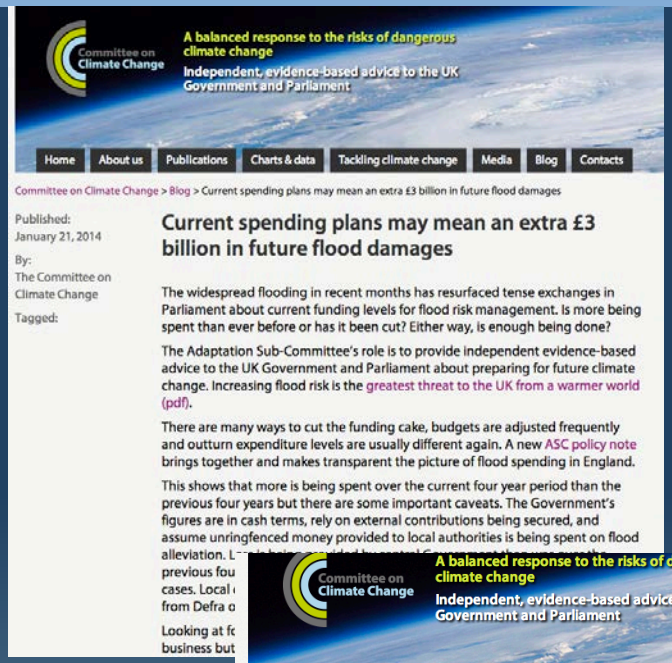
Preparation: European Topic Centres, WHO, ECDC, JRC (about 90 experts), data from research projects and international databases

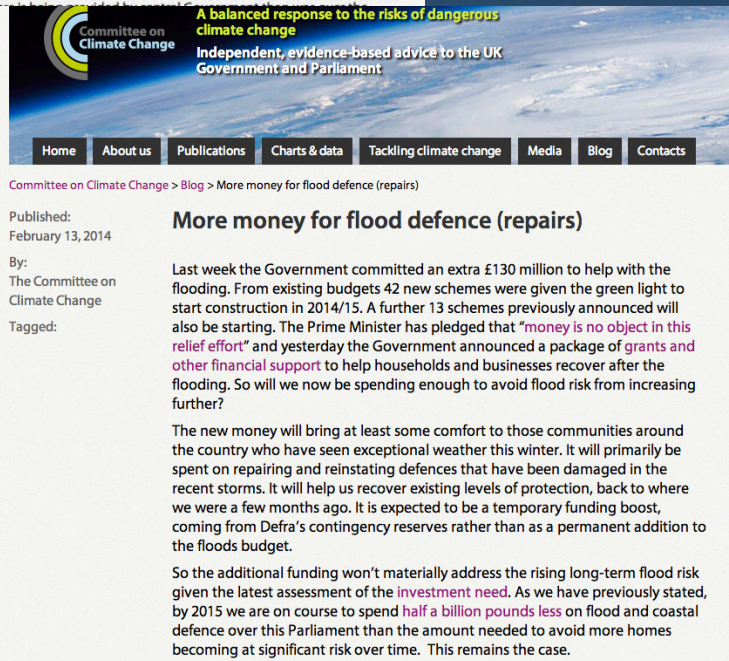
Next steps: Selected indicators on the EEA web site, to be updated after publication of IPCC WGI/II reports in 2013/2014



Example: Flooding in UK

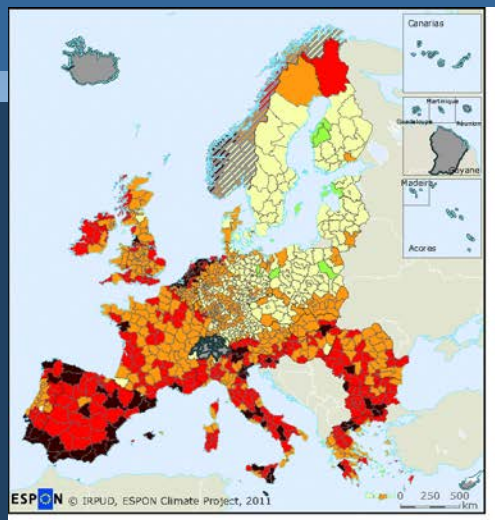
- ***Exceptional winter storms*** and serious coastal damage and widespread, persistent flooding in ***UK (winter 2014)***
- ***No definitive answer*** yet on the possible ***contribution of climate change***
- Recent studies suggest an ***increase in the intensity of Atlantic storms taking a more southerly track***
- Increasing evidence that ***extreme daily rainfall rates are becoming more intense***; rate of increase is consistent with what is expected from a warming world
- ***More research*** is needed

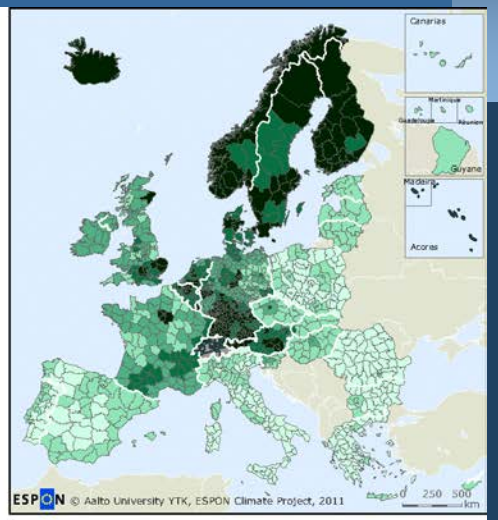




Example: Aggregated vulnerability

- Economic, technical, and institutional ***capacity to adapt*** to climate change ***differs across Europe***.
- When impacts of climate change affect regions with low adaptive capacity, the **consequences** can be severe.
- **Territorial cohesion** may be **negatively affected** by deepening existing socio-economic imbalances.



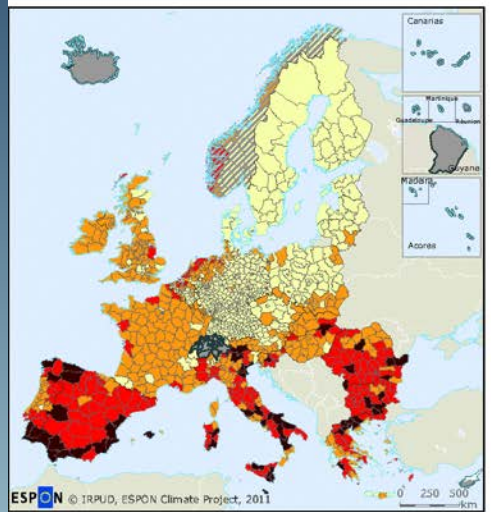


Aggregate potential impact of climate change

- Highest negative impact
- Medium negative impact
- Low negative impact
- No/marginal impact
- Low positive impact
- No data
- Reduced data

Overall capacity to adapt to climate change

- Highest capacity
- High capacity
- Medium capacity
- Low capacity
- Lowest capacity
- No data

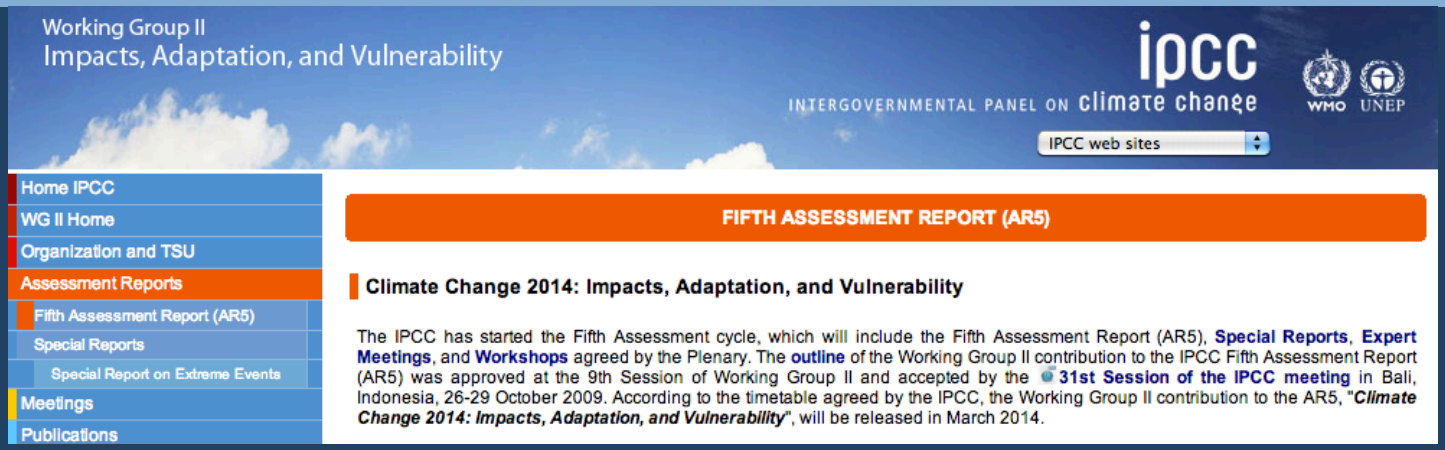


Potential vulnerability to climate change

- Highest vulnerability
- Medium vulnerability
- Low vulnerability
- No/marginal vulnerability
- No data
- Reduced data

Source: ESPON Climate

IPCC AR5, WGII, Chapter 23 - Europe



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Chapter 23. Europe

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Availability of national CCIV assessments

Country	Date	Name	Comment
Austria	2010	Klimaänderungsszenarien und Vulnerabilität	Qualitative; part of the NAS
Switzerland	2007	Climate Change and Switzerland 2050: Expected Impacts on Environment, Society and Economy	Mostly qualitative; uncertainty is discussed qualitatively
Germany	2005	Climate Change in Germany. Vulnerability and Adaptation of climate sensitive Sectors	Quantitative; uncertainty resulting from different emissions scenarios and climate models is shown
	2008	Deutsche Anpassungsstrategie an den Klimawandel	Qualitative; part of the NAS
Spain	2005	ECCE - A preliminary General Assessment of the Impacts in Spain Due to the Effects of Climate Change	Quantitative; based on a comprehensive review of available studies; uncertainty is addressed differently depending on the underlying study
Finland	2012	Miten väistämättömään ilmastonmuutokseen voidaan varautua (ISTO)	Mostly qualitative
Ireland	2008	CLIMATE CHANGE: Refining the Impacts for Ireland	Quantitative; many uncertainties are presented quantitatively
	2009	A Summary of the State of Knowledge on Climate Change Impacts for Ireland	Qualitative; based on literature review
Netherlands	2012	Effecten van klimaatverandering in Nederland 2012	Quantitative; uncertainties covered by 4 KNMI'06 scenarios
Norway	2010	Adapting to a changing climate: Norway's vulnerability and the need to adapt to the impacts of climate change	Mostly qualitative; uncertainties are mentioned in the text
Poland	2010	Opracowanie wskaźników wrażliwości sektora transportu na zmiany klimatu	Only one sector; semi-qualitative; consideration of uncertainties not known
United Kingdom	2012	The first UK Climate Change Risk Assessment	Comprehensive; quantitative; probabilistic (; legally mandated every 5 years

Source: Forthcoming CIRCLE2 book (2014)

Involving networks of end users

Expert Meetings on 'Adaptation Platforms' (19 June 2013, EEA, Copenhagen and with CIRCLE2 7/8 Nov 2013, Vienna)

First "Open European Day" and "EU Cities Adapt" final conference, 3 June 2013, Bonn

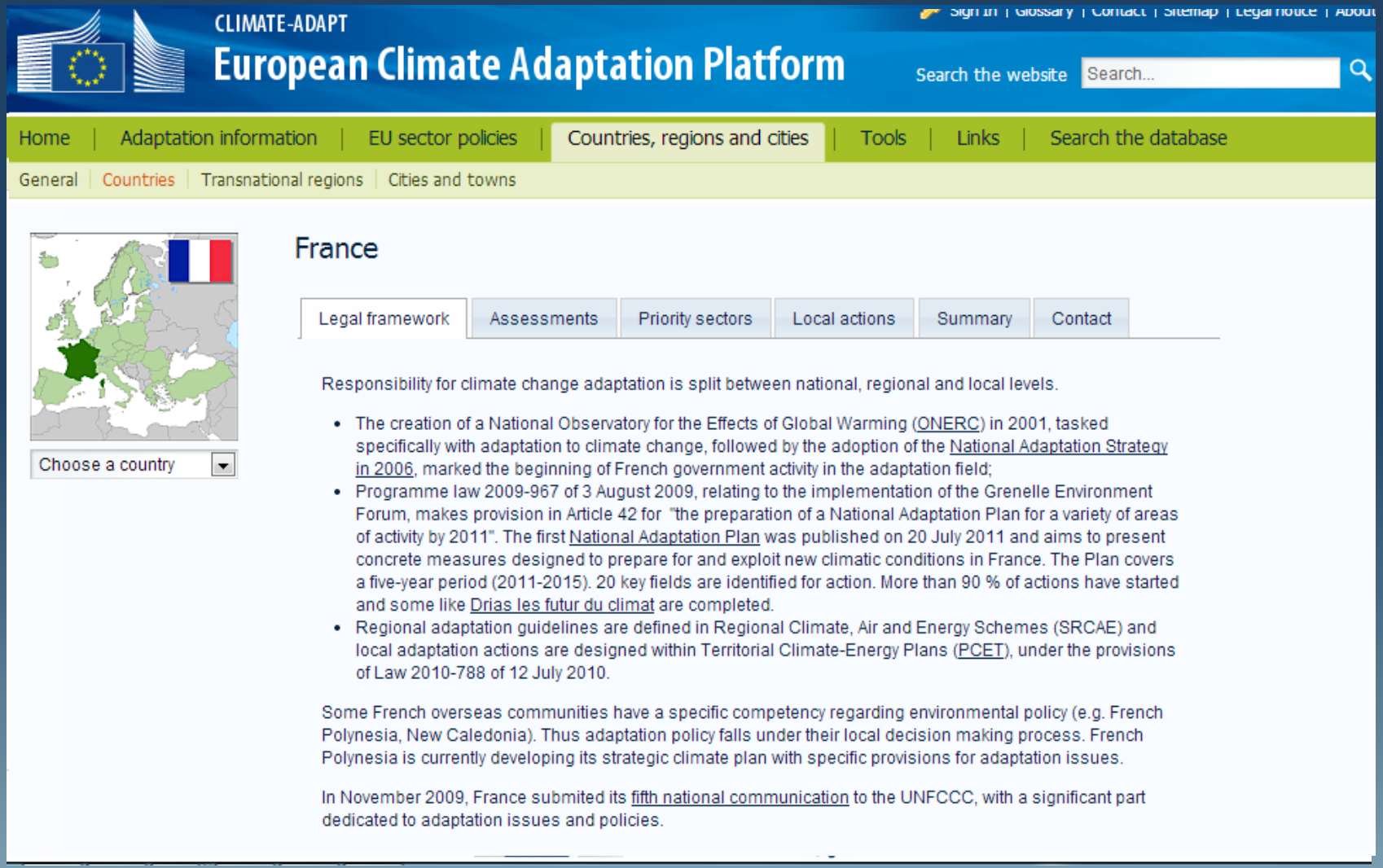
- (Trans-)**national level** Adaptation Platforms contain climate data/indicators, info on policy actions, guidance, experiences from implemented actions, results of adaptation research
- Interest to **share knowledge, lessons learnt, challenges** and explore good practices
- Involving EEA/EIONET **national experts** on climate change adaptation (and others on water, biodiversity, marine etc)
- Working also with **city networks**
- Other key networks, e.g.:
  - **Human health**: WHO Europe, ECDC
  - **Disaster risk** management: ISDR Europe

European Climate Adaptation Platform Climate-ADAPT

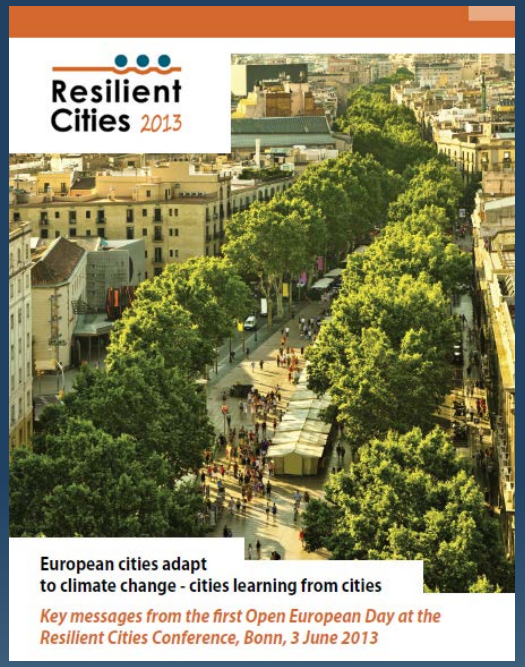
- Supports governmental decision-makers developing/implementing ***climate change adaptation strategies, policies and actions***
- ***Launched 2012*** (DG CLIMA, EEA)
- EEA maintains, with Commission, and supported by ETC CCA

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

Information on/for countries adaptation strategies



Information on/for cities



- First "Open European Day" and "EU Cities Adapt" final conference, 3 June 2013, Bonn
- ***Second city conference planned for 2 June 2014, Bonn***
- ***DG CLIMA funded projects on CC adaptation in cities*** (EU Cities Adapt project finalised in 2013, and second to be launched in March 2014)

CC impacts/vulnerability/risk indicators in the Copernicus climate change service

- Which ***climate change observations and scenarios*** will be selected and at which ***geographical* scales**?
- Will ***complex indicators*** be included and what is the ***selection*** process?
- How to integrate ***socio-economic*** including demographic data/scenarios?
- How to achieve ***consistency*** in use of ***climate change scenarios*** in assessments ***across countries and cities***?
- How will '***scientific users'*** (e.g. biophysical, economic and social modelling) and ***'end users***' be involved?
- **Which main 'end-users**' will be addressed and ***how***?
  - Countries, cities
  - Sectors : Biodiversity (terrestrial), Marine environment, Coastal, Water management (floods, droughts, quality), Agriculture, Forestry, Infrastructure (energy, transport), Human health, Businesses
- What ***links*** are planned with ***climate adaptation web based information platforms*** (national and EU-wide, Climate-ADAPT)?

Thank you for your attention

http://www.eea.europa.eu/themes/climate
http://climate-adapt.eea.europa.eu