

CMCC - SISC Webinar

**Adapting to climate change in Europe:
linking knowledge, policies and practices**

Presenter: Sergio Castellari
European Environment Agency (EEA)

Moderator: Carlo Barbante
Institute for the Dynamics of Environmental Processes (IDPA), CNR;
Italian Society for Climate Sciences (SISC)

21 March 2018



Q&A session



To participate in the Q&A Session, please use the chat room provided by the Go-to-Webinar system



Outline:

- European Environment Agency (EEA)
- The recent EEA report: *“Climate change adaptation and disaster risk reduction in Europe report - Enhancing coherence of the knowledge base, policies and practices”*
- Climate change adaptation and Disaster Risk Reduction
- Some relevant natural hazards in Europe
- The economic losses from weather and climate natural hazards in Europe
- Case Studies and Good Practices
- How to improve the relationship between CCA and DRR



EEA mission/mandate:

The EEA aims to support sustainable development and to help achieve significant and measurable improvement in Europe's environment through the provision of timely, targeted, relevant and reliable information to policy makers and the public"

To provide a sound decision basis for the EU and member countries' environmental policies, by producing:

- ***European, regional and global environment-related data and indicator sets***
- ***Integrated environmental assessments***
- ***Thematic environmental analyses***

Main target audience:

- **Policymakers** at European and National level

EEA:

- does not formulate or propose new EU legislation;
- Doesn't implement environmental actions;
- Is not a financing body
- non è un ente finanziatore.



EEA networking with member countries (Eionet)

EEA coordinates the *European Environment Information and Observation Network (EIONET)*:

- 33 member countries and 6 cooperating countries
- About 300 national institutions
- NFP (National Focal Point)
- NRC (National Reference Center)
- 6 European topic centres

European Topic Centers:

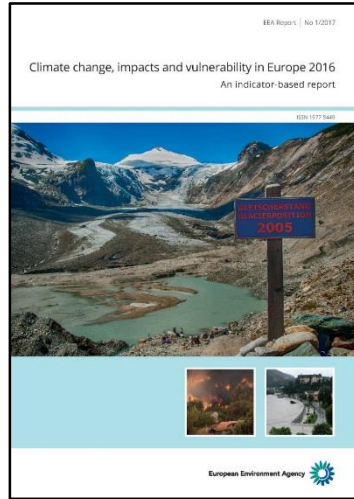
European Consortia under EEA contract:

1. *Air Pollution and Climate Change Mitigation*
2. *Biological Diversity*
3. **Climate Change Impacts, Vulnerability and Adaptation** (under CMCC coordination)
4. *Inland, Coastal and Marine Waters*
5. *Urban, Land and Soil Systems*
6. *Waste and Materials in a Green Economy*

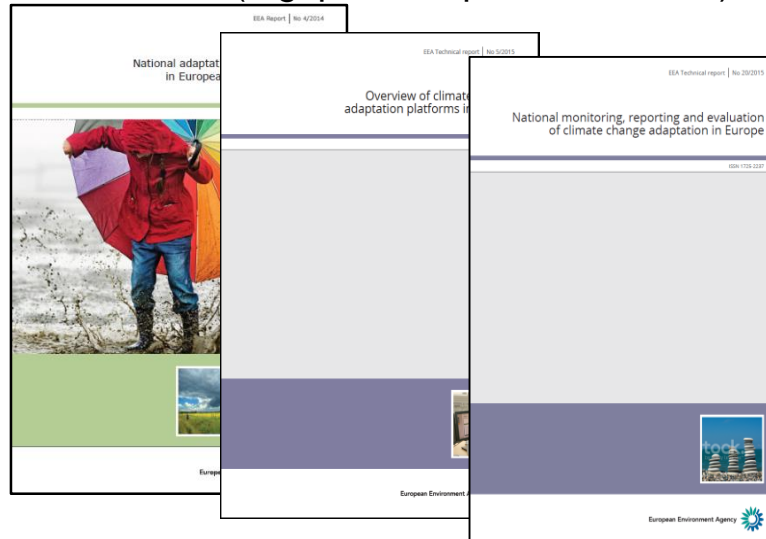


EEA reports on CCIVA and DRR

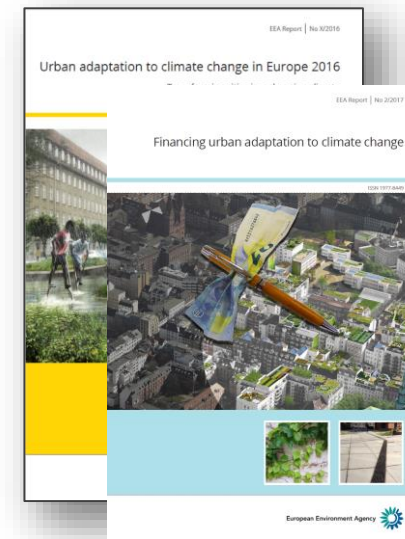
Impacts and vulnerability



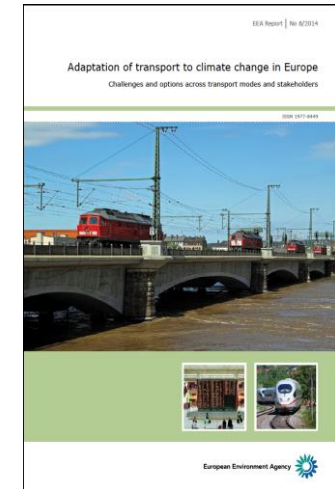
National adaptation (e.g. policies, platforms, MRE)



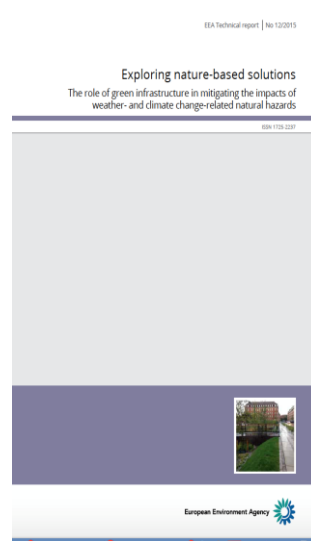
Urban adaptation



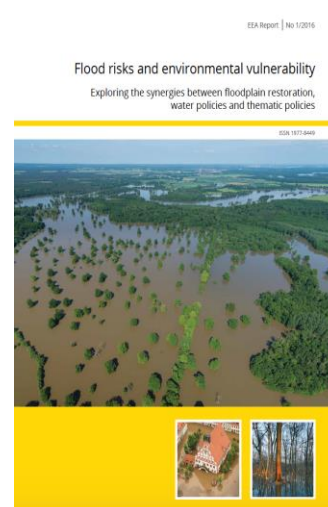
Sectoral adaptation



Nature-based solutions



Flood risks



Impacts of natural disasters and technological accidents



Weather-and climate-related extreme events in 2017

the guardian

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Natural disasters and extreme weather

Climate change made Lucifer heatwave far more likely, scientists find

Without action to tackle global warming, deadly summer temperatures of 40C in Europe could be normal by 2050

Wednesday 27 September 2017 05.01 BST

740 378

Damian Carrington
Environment editor
@dpcarrington



BBC NEWS

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Italy flooding kills six people in Livorno

10 September 2017 | Europe

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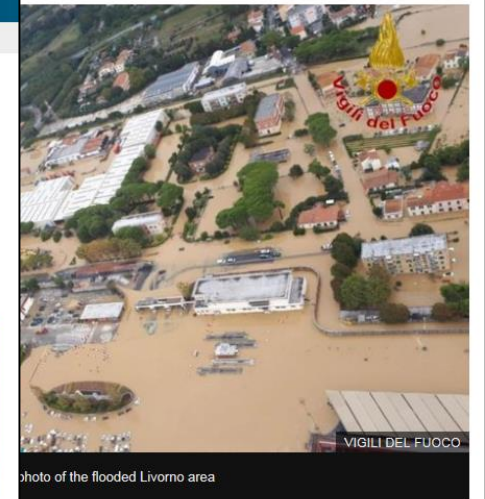

Home > News > World > Forest fires hit Portugal again

PORTUGAL

Forest fires hit Portugal again

By Euronews Follow @euronews last updated: 24/07/2017

Some 64 people were killed in June in the deadliest forest fires in Portugal's recent history.



n killed after heavy rainstorms and flooding in

e killed when their basement apartment flooded.
ports that two parents and their son died.

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News > World > Americas

Hurricane Maria: British Virgin Islands braced for another 'potentially catastrophic' battering in wake of Irma

UK overseas territories Montserrat and Anguila also in path of storm's 160mph winds and rain

Georgina Stubbs | Tuesday 19 September 2017 09:11 BST | 1 comment

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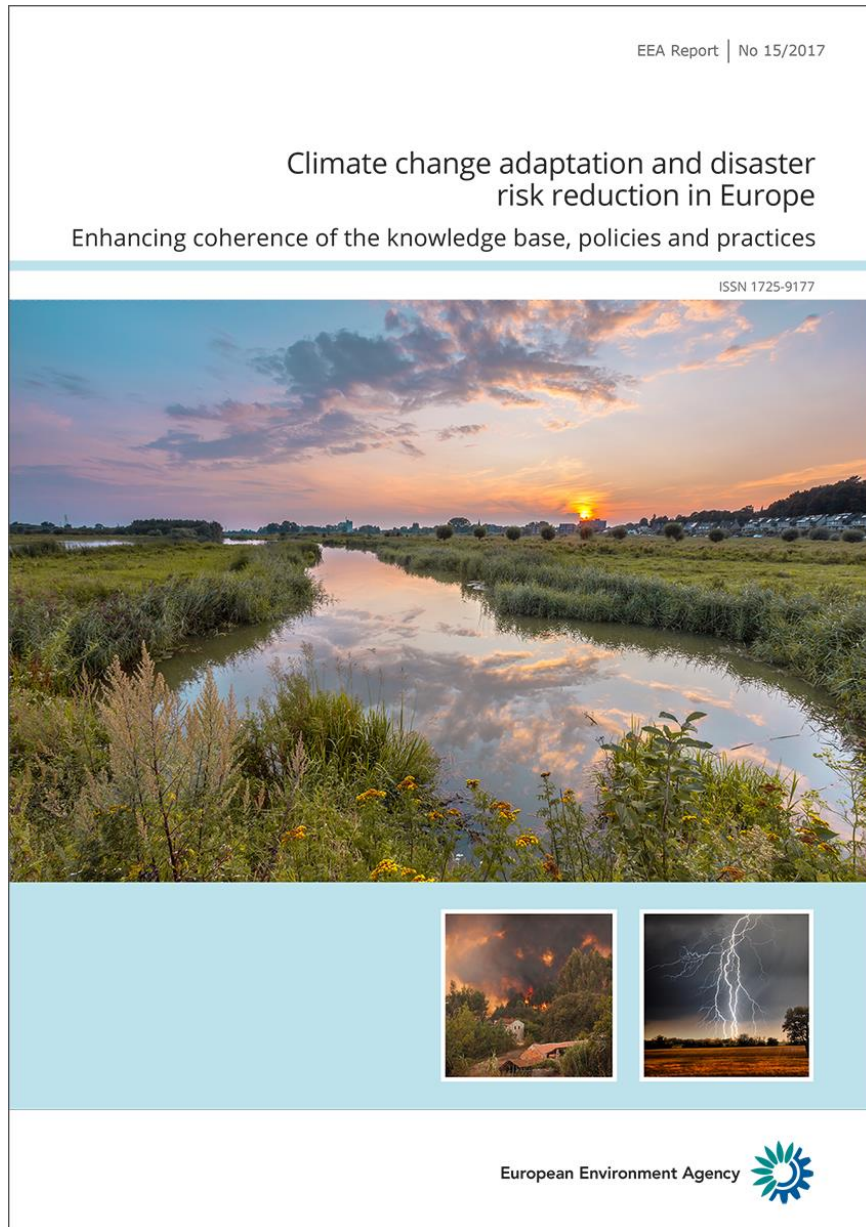
European Environment Agency



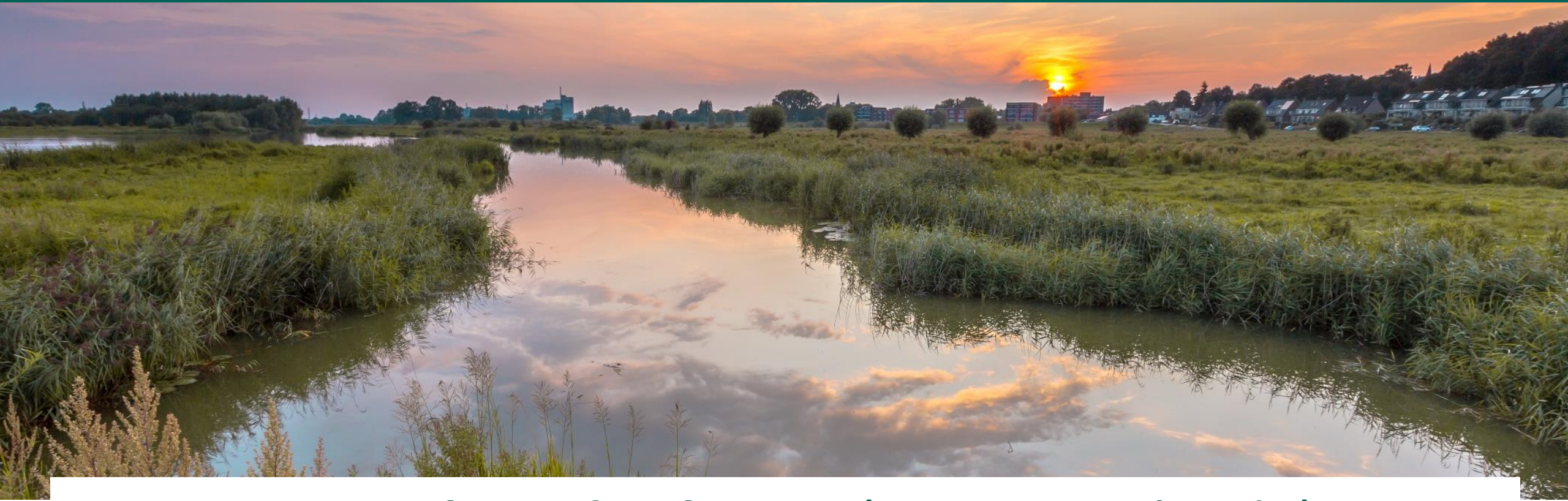
‘Climate change adaptation and disaster risk reduction in Europe - Enhancing coherence of the knowledge base, policies and practices’

The report presents:

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



This report aims to look at solutions as well as the extreme weather and climate events that cause the problems we are increasingly having to face and react to.



Nature-based solution (Betuwe, Olanda):
Renaturalization of a river to prevent flooding
(near to Wageningen).

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

17/10/2017 – Report presented at Committee of the Regions (Brussels) from Hans Bruyninckx (EEA Executive *Director*) along with DG CLIMA and DG ECHO

- **Coordinators of this report:**

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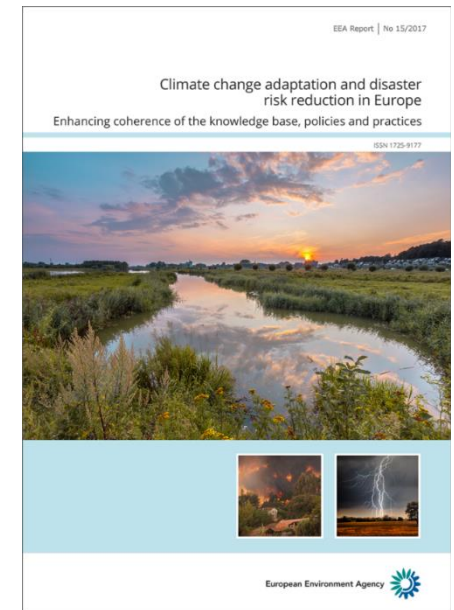
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- **Reviewers:**

EC (DG CLIMA, DG RTD, DG ENV, DG ECHO, JRC), OECD, UNISDR. Eionet NRCs, EEA member countries (Austria, Germany, Greece, Italy, Norway, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey), 12 experts



15/11/2017 – EU Side Event. COP23 (Bonn, Germany)

EU SIDE EVENT

'Coherence between climate change adaptation and disaster risk reduction'

Organizers:

European Environment Agency (EEA)

European Commission Directorate-General Joint Research Centre (DG JRC)

Moderator: Sergio Castellari

Speakers:

- **Elena Višnar Malinovská**
European Commission, Directorate-General for Climate Action (DG CLIMA)
- **Lisa Janishevski**
Secretariat of the Convention on Biological Diversity (CBD)
- **Sergio Castellari**
European Environment Agency (EEA)
- **Tom De Groeve**
European Commission, Directorate-General Joint Research Centre (DG JRC)

Round table and discussion

Q&A with audience



Benefits in enhancing coherence between CCA and DRR

Climate change adaptation (CCA)

Disaster Risk Reduction (DRR)



Focus on past trends and future projections and addressing uncertainty

Origin and culture in science

Environment ministries and agencies

Reducing vulnerability and increasing resilience of societies

Focus on present and addressing existing risks and all hazards

Origin and culture in humanitarian assistance and civil protection

Civil protection ministries and agencies

Benefits

Enhanced knowledge base

More effective and efficient policies

Stronger collaboration

More efficient use of resources

Better prevention and preparedness



Global and European policy context

CCA and DRR are central to the sustainable development agenda both in Europe and globally.



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



10 natural hazards in Europe selected for this report:

Table 1.2 Classification of the 10 natural hazards selected for this report, taking into consideration that some natural hazards can be allocated to more than one category (e.g. heat waves are both meteorological and climatological)

Category of hazards	Specific natural hazard
Hydrological	River flood
	Landslide
	Avalanche
Meteorological	Heat wave
	Heavy precipitation
	Windstorm
	Storm surge
	Hail
Climatological	Drought
	Forest fire

Source: Based on Integrated Research on Disaster Risk classifications (IRDR, 2014).

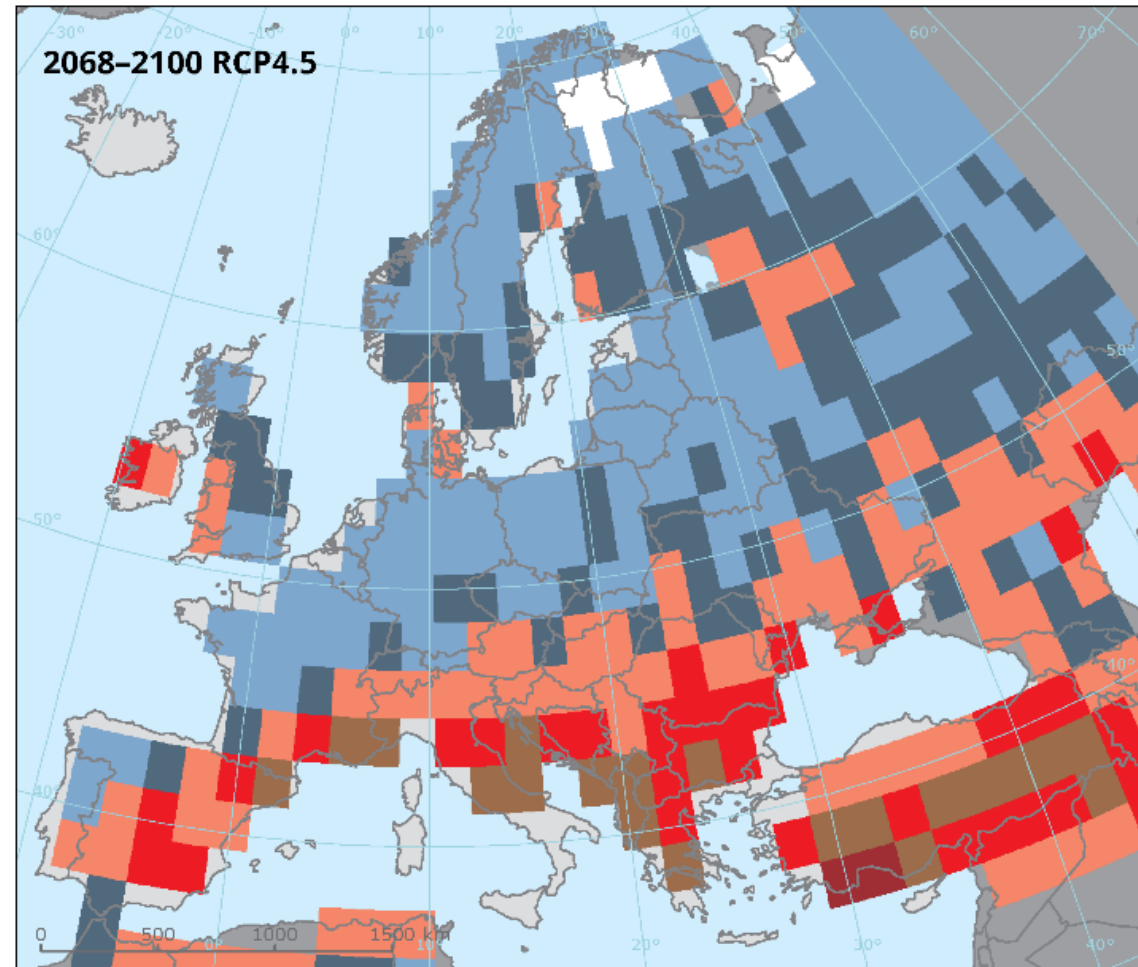
The number of extreme heatwaves will increase

2020-2052:

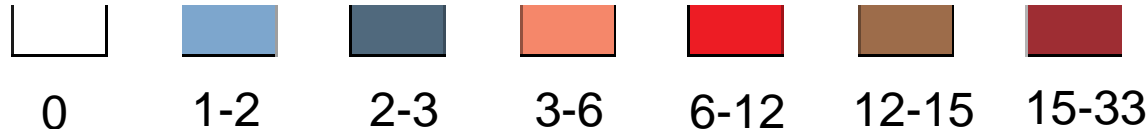
the number of projected extreme heatwaves will be highest in southern Europe with **3-6 extreme heatwaves over 33 years** (i.e. **one every 5-10 years**).

2068-2100:

12-15 extreme heatwaves over 33 years (i.e. **one every 2-3 years**) in some parts of Southern Europe



Number of extreme heatwaves over 33 years



Extreme heatwaves are defined as having a heat wave magnitude index (HWMI) above 8.

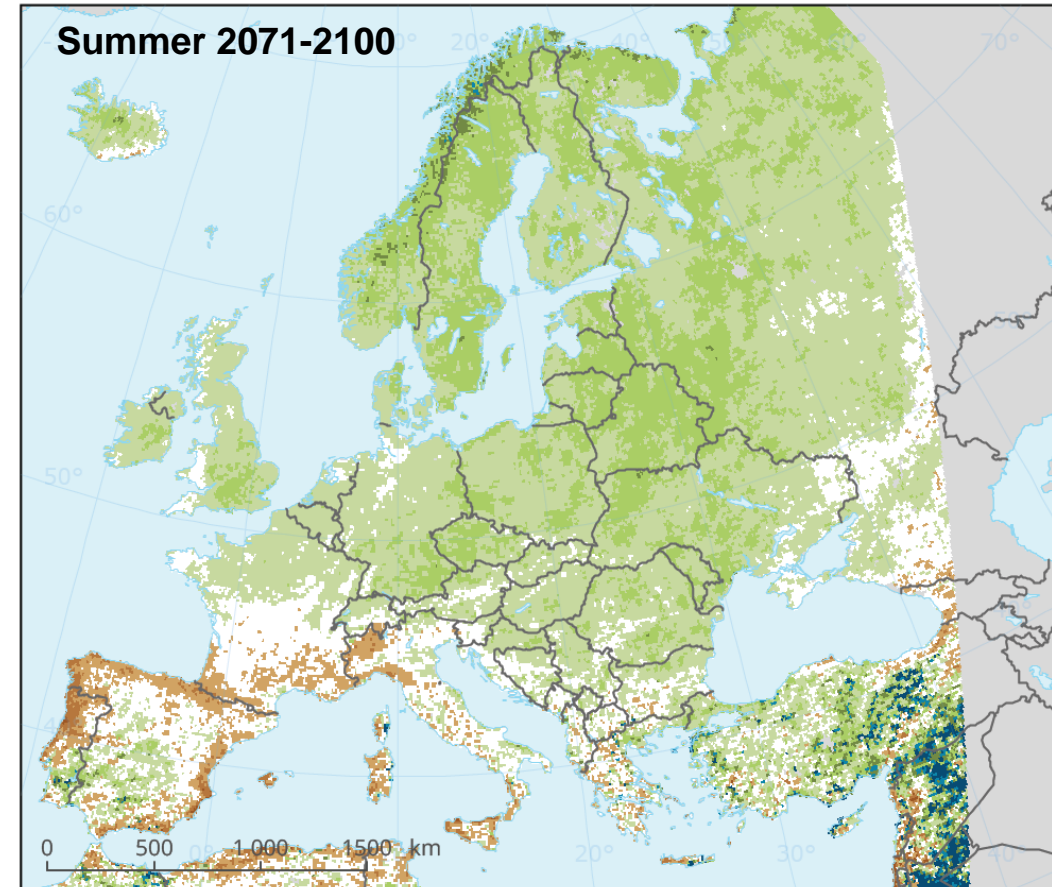
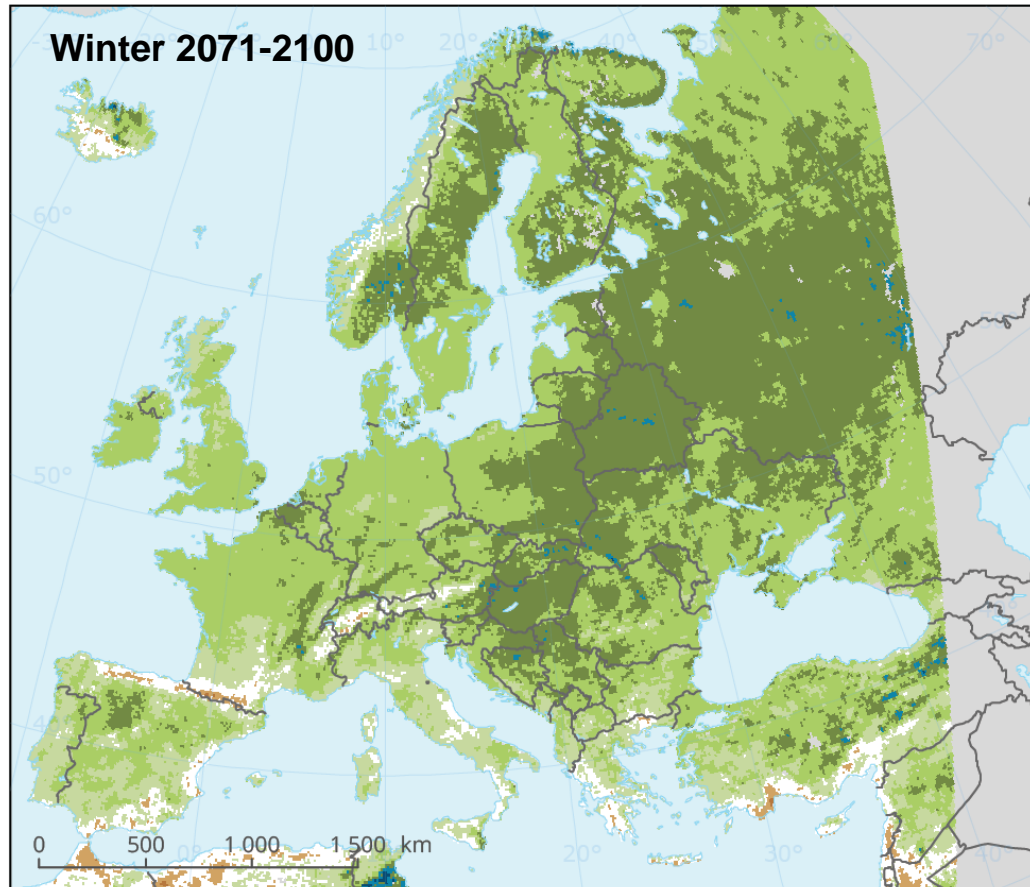
In Europe only two heatwaves during the period 1980-2012 have had a HWMI index rating close to 8.:

1. the **2003 heatwave** in France;
2. the **2010 heatwave** in eastern Europe/Russia.

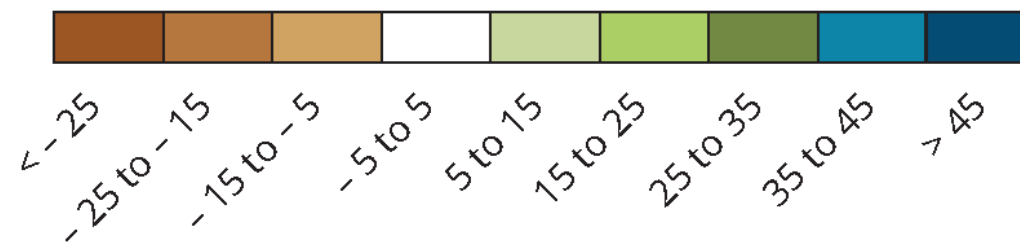
Heat Wave Magnitude Index (HWMI) is based on the magnitude and length of heat waves in a year, where heat waves are periods of at least 3 consecutive days with maximum temperature above the threshold for the reference period 1981-2010.



Heavy rain projections – 2071-2100



Change in heavy rain amount (%)



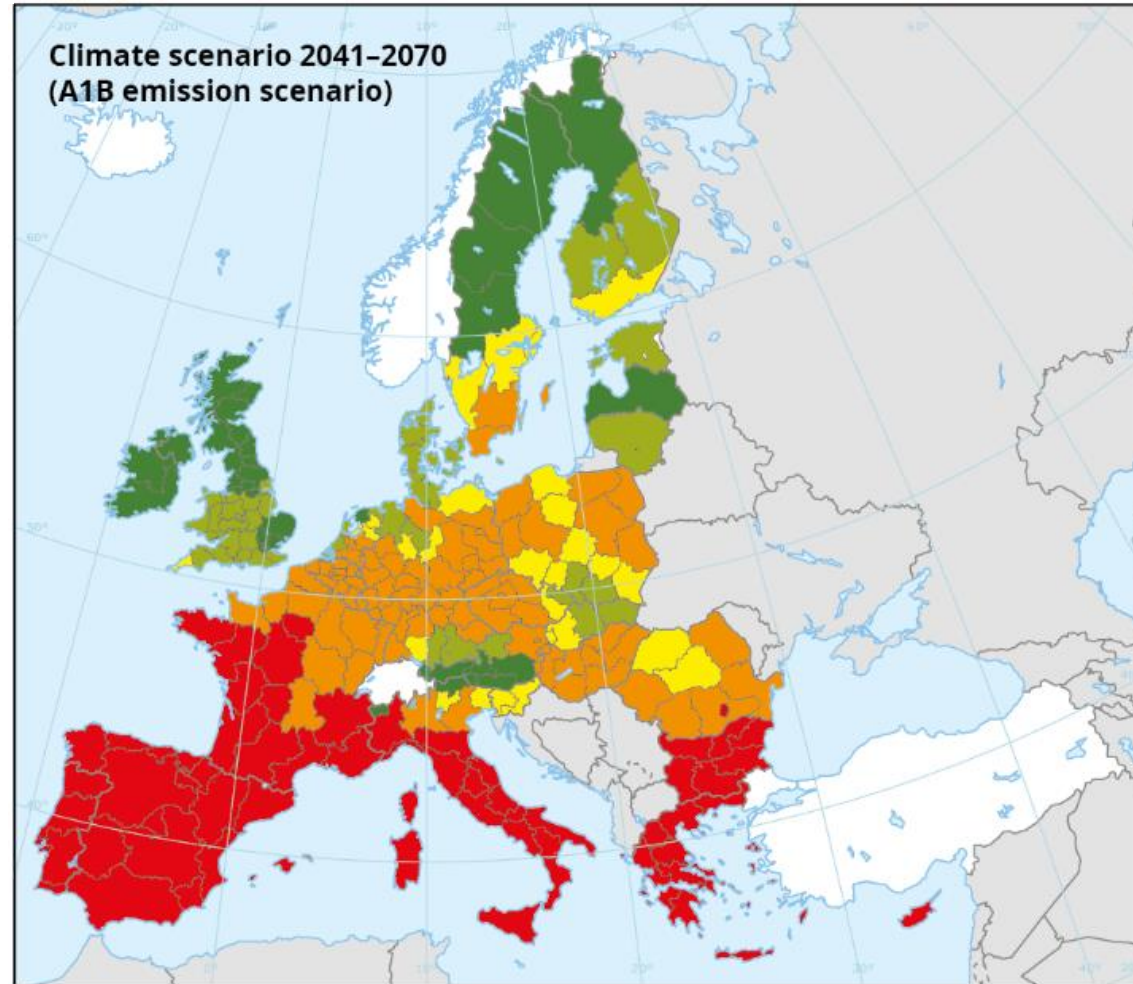
Source: EURO-CORDEX, 2015



Risk of forest fires moving northward

Central Europe and South Scandinavia will be under **medium and high risk**.

South Europe remains under **very high risk**.



Forest fire risk is a combination of climatic drivers (heat extremes), population density, fire exposure, and fire sensitivity.

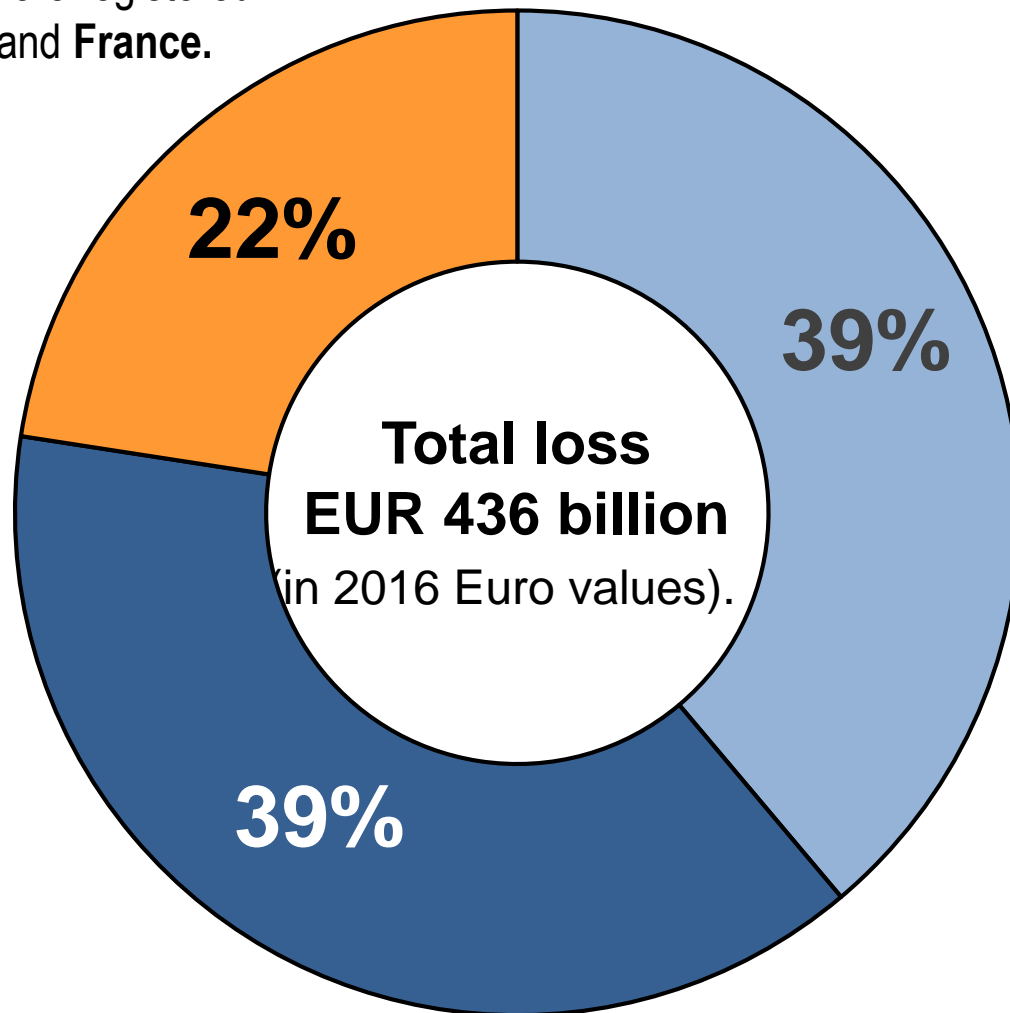
Forest fire risk



Source: JRC, Lung et al, 2013

1980 – 2016: Economic losses in Europe (EEA MSs)

The highest overall economic losses in absolute terms were registered in **Germany, Italy and France**.



1980 - 2016: natural disasters caused by weather and climate-related extremes accounted for some **83%** of the monetary losses in **EU Member States**.

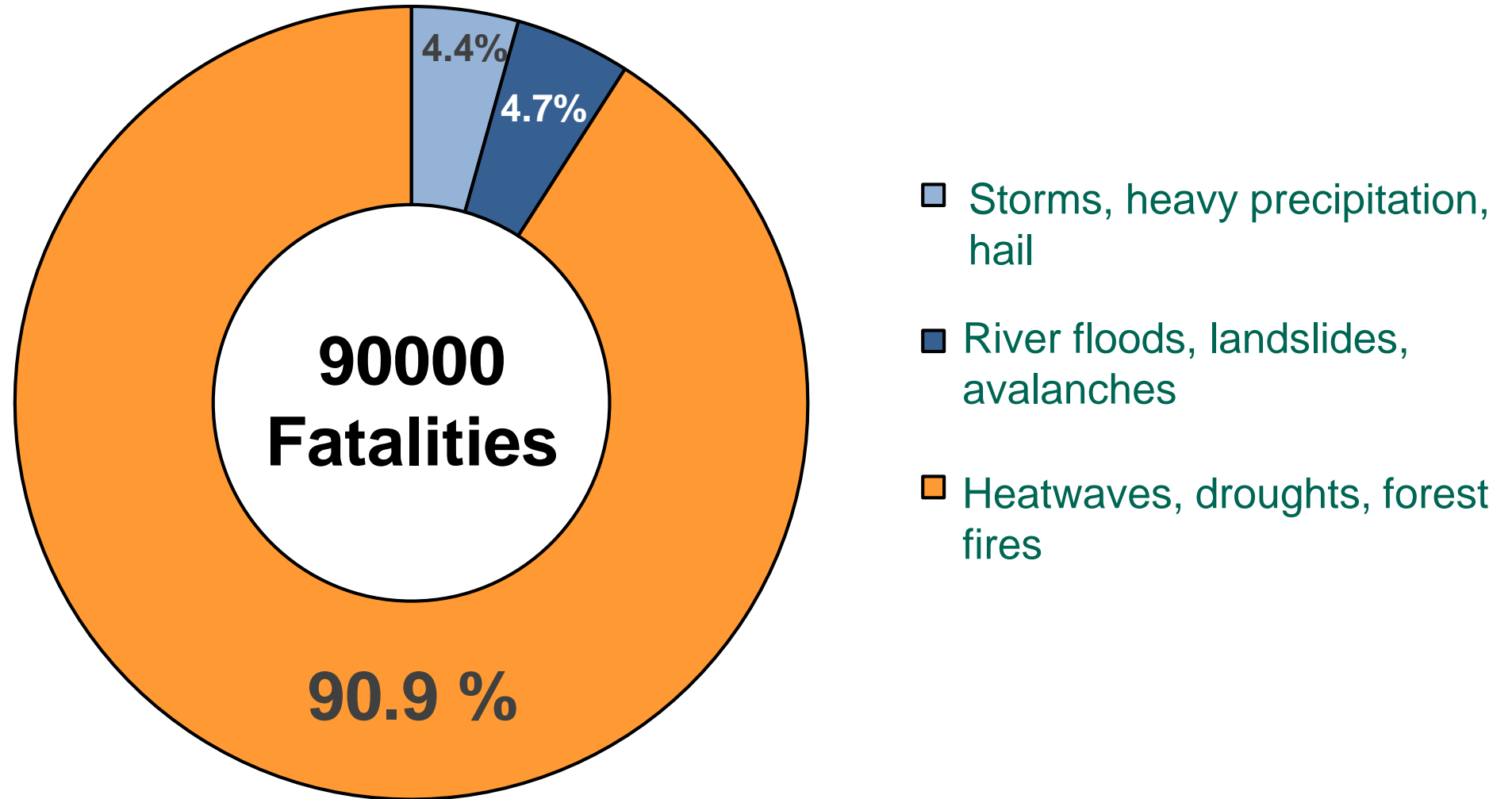
- **METEOROLOGICAL** (Storms, heavy precipitation, hail)
- **HYDROLOGICAL** (River floods, landslides, avalanches)
- **CLIMATOLOGICAL** (Heatwaves, droughts, forest fires)

Only 1/3 insured!

Average: 12 bln per year



1980 - 2016: Fatalities in Europe (EEA MSs)

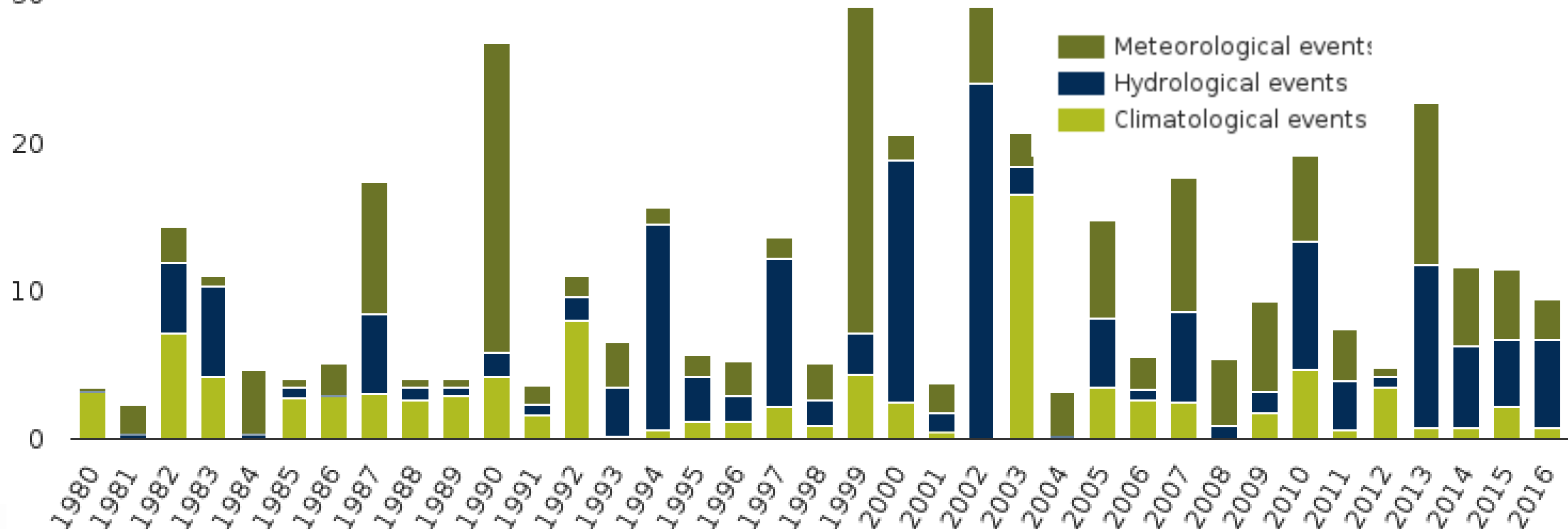


Source: Munich Re, 2016

1980-2016: Economic damages in EU28 (weather/climate)

- The increasing exposure of people and economic assets to weather/climate-related disasters has been the major cause of long-term increases in economic losses from them.
- Long-term trends in economic disaster losses, adjusted for wealth and population increases, have not been attributed to climate change, but a role played by climate change has not been excluded (*IPCC-AR, 2013*).
- Available studies for economic losses from river floods and storms in Europe suggest that the observed increases in losses are primarily because of increases in populations, economic wealth and developments in hazard-prone areas, but the observed increase in heavy precipitation in parts of Europe may have also played a role.
- Improved flood protection and prevention has contributed to reducing losses over time in some cases. .

billion Eur (2016 values)



CCA and DRR practices in Europe

Horizontal coordination and collaboration

Germany - *Strategic Agency Cooperation on Risk Assessment and Management*

UK - *London Climate Change partnership. Integrating CCA and DRR for small organisations*

Austria - *A comprehensive heat protection plan for Styria*

Vertical coordination and collaboration

Norway:- *Coordination between national government and municipalities*

Austria - *Legislative competence of municipalities*

Italy - *National Civil Protection Service*

Implementation of CCA and DRR in practice

Spain - Drought planning in water resource systems, Júcar river basin district

Hungary - Temporary floodwater storage in agricultural areas in the middle Tisza river basin

Ecosystem-based floodplain restoration in the Danube Delta for flood reduction

Spain - Infrastructure and economic incentives to reduce vulnerability to drought in the Segura and Tagus basins

Norway - Multi-Hazard Approach to Early Warning System in Sogn og Fjordane

Portugal - Awareness raising at municipal level and training programmes to improve resilience

Poland - Education and training for dealing with natural hazards

Norway - Use of climate services in Troms (what data at which level?)

Sweden - Nationally promoted municipality work with CCA and DRR

France - PAPI: A prevention programme against floods, taking climate change into account

Germany - Risk reduction after the event: Lessons learned from the Elbe floods in 2002

Italy - Effective management of old and new funds to reduce hydro-geological risks in Italy

Dealing with disasters: six good practice

1. Programmatic approach, supported by adequate funding and a long-term strategy, delivering effective CCA and DRR integration in practice by using a new adaptive planning approach “*Adaptive Delta Management (ADM)*” with a view to reducing the risk of overspending or underinvestment’ (**Delta Programme, the Netherlands**).
1. Insurance as a key player in combining not only risk transfer and mitigation in public–private cooperation but also in creating incentives for risk prevention and helping improve understanding of climate risks among citizens (***Consorcio de Compensación de Seguros (CCS)– Spain, French Catastrophes Naturelles (CatNat) – France, Flood Reinsurance Scheme (Flood Re) – UK***).
1. Good combination of national agenda setting and local implementation and integration which can result in an effective implementation of CCA and DRR strategies (**Switzerland**).
2. National Risk Assessments, including more risks than only those related to weather and climate hazards, can be an effective base for CCA and DRR, since they provide a broader risk picture and give indications for tolerance thresholds (**UK**).
1. **City networks** within the EU, which aim to increase urban resilience and are key in motivating cities and in supporting capacity building for both CCA and DRR.
1. Financing nature-based solutions for CCA and DRR in European countries (**European Investment Bank**).

Improving the relationship between CCA and DRR

EU, national and regional platforms

Hazard mapping and risk assessments

Climate services

Long-term national approaches

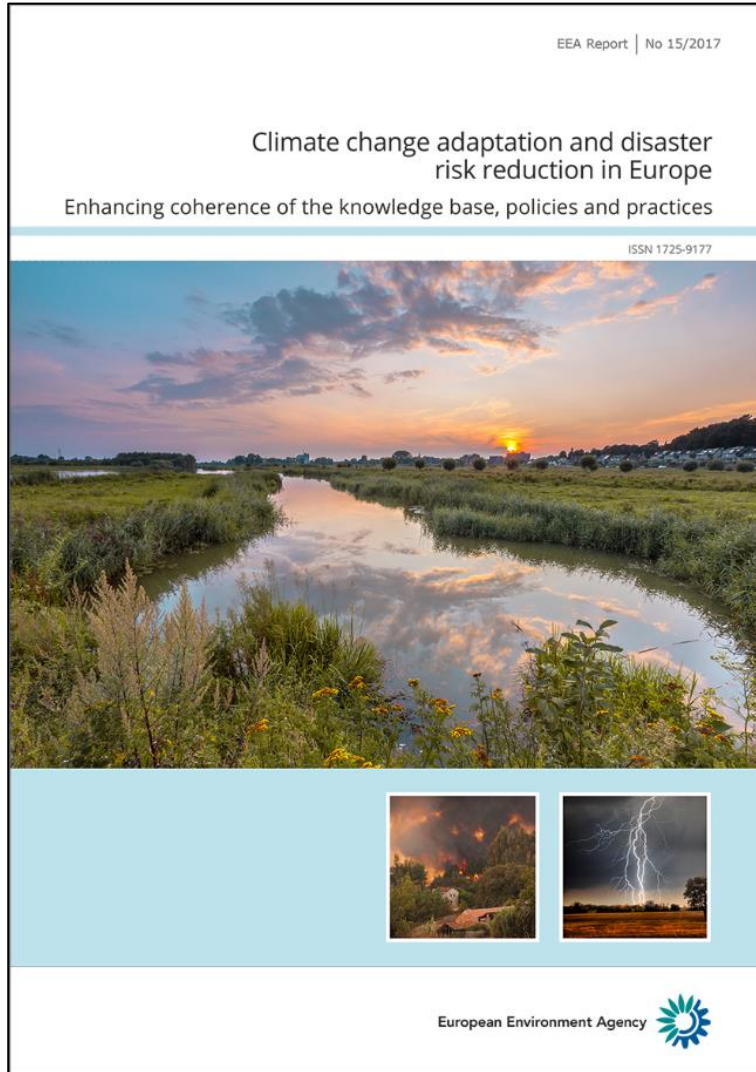
Nature-based solutions

Risk prevention financing

Monitoring and evaluation of policy



EEA report “Climate change adaptation and disaster risk reduction in Europe”



This EEA report is available on-line:

<https://www.eea.europa.eu/highlights/preparing-europe-for-climate-change>

Thanks !

Q&A session



To participate in the Q&A Session, please use the chat room provided by the Go-to-Webinar system



Forthcoming CMCC Webinar

“Blue Growth: science, society and innovation. A focus on the Mediterranean and Black Sea”

Presenter: Giovanni Coppini
CMCC, «Ocean Predictions and Applications» Division

Moderator: Simona Masina
CMCC, «Ocean Predictions and Applications» Division

*27 March 2018
12:30 pm CEST*

Thank you for attending this CMCC webinar.

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If you have any further question about the webinar, please email: webinar@cmcc.it