

Klimabedingte Risiken und Chancen – Aktivitäten der europäischen Länder



Zusammenarbeit der Schweiz und der EU in Umweltfragen

- Die Schweiz ist Vollmitglied der Europäischen Umweltagentur (EUA) und des Europäischen Umweltinformations- und Umweltbeobachtungsnetzes (Eionet) seit 2006
- Regelmäßige Teilnahme an informellen Treffen der EU-Umweltminister
- Teilnahme in Netzen der Leiter von nationalen Agenturen für Umweltschutz (EPA-Netz) und für Naturschutz (EUA-Netz)



Quelle:

<https://www.bafu.admin.ch/bafu/de/home/themen/internationales/organisationen/beziehungen-zwischen-der-schweiz-und-der-eu-im-umweltbereich.html>

Quelle: EUA

European Environment Agency



Ausgewählte EUA-Berichte zu Klimaanpassung (2015–2017)

EEA Technical report | No 20/2015

National monitoring, reporting and evaluation of climate change adaptation in Europe

ISSN 1725-2237

EEA Report | No 2/2017

Financing urban adaptation to climate change

ISSN 1977-8449



EEA Report | No 15/2017

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

ISSN 1725-9177



EEA Report | No 12/2016

Urban adaptation to climate change in Europe 2016 Transforming cities in a changing climate

ISSN 1977-8449



European Environment Agency 

EEA Report | No 1/2017

Climate change, impacts and vulnerability in Europe 2016 An indicator-based report

ISSN 1977-8449



European Environment Agency 

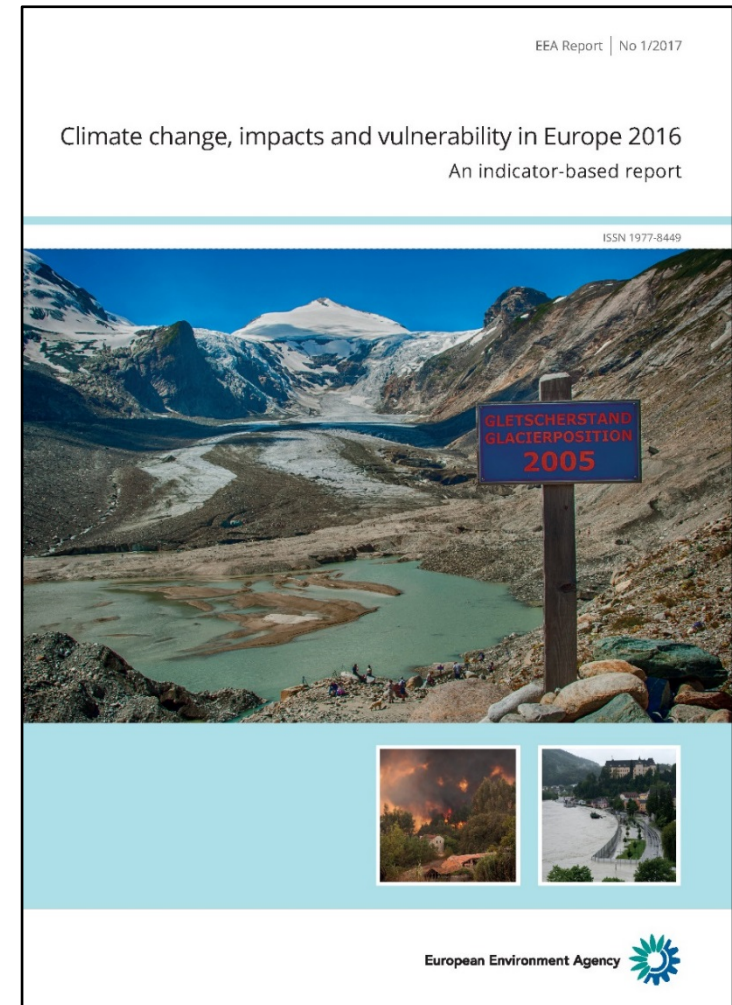


European Environment Agency 

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EUA-Bericht zum Klimawandel in Europa 2016

- **Vorherige EUA-Berichte:** 2004, 2008 and 2012
- **Etwa 70 Autoren**
 - Europäische Umweltagentur (Koordinator)
 - Drei Europäische Themenzentren (CCA, BD, ICM)
 - JRC, WHO, ECDC und weitere Organisationen
- **Inhalt**
 - 35 Indikatoren (vergangene Trends und Projektionen)
 - Multi-sektorielle Vulnerabilität und Risiken
 - Globaler und europäischer Politikrahmen
 - Entwicklung der Wissensbasis für Klimaanpassung
- **Datenquellen**
 - Internationale Datenbanken und Berichte
 - Europäische Forschungsprojekte und Datenzentren
 - Wissenschaftliche Publikationen
- **Externe Beratergruppe**
 - Wissenschaftliches Komitee der EUA
 - Europäische Kommission
 - Ausgewählte EUA-Mitgliedsländer
 - Europäische Forschungsprojekte und -organisationen
- **Mehrere Begutachtungen durch externe Experten**



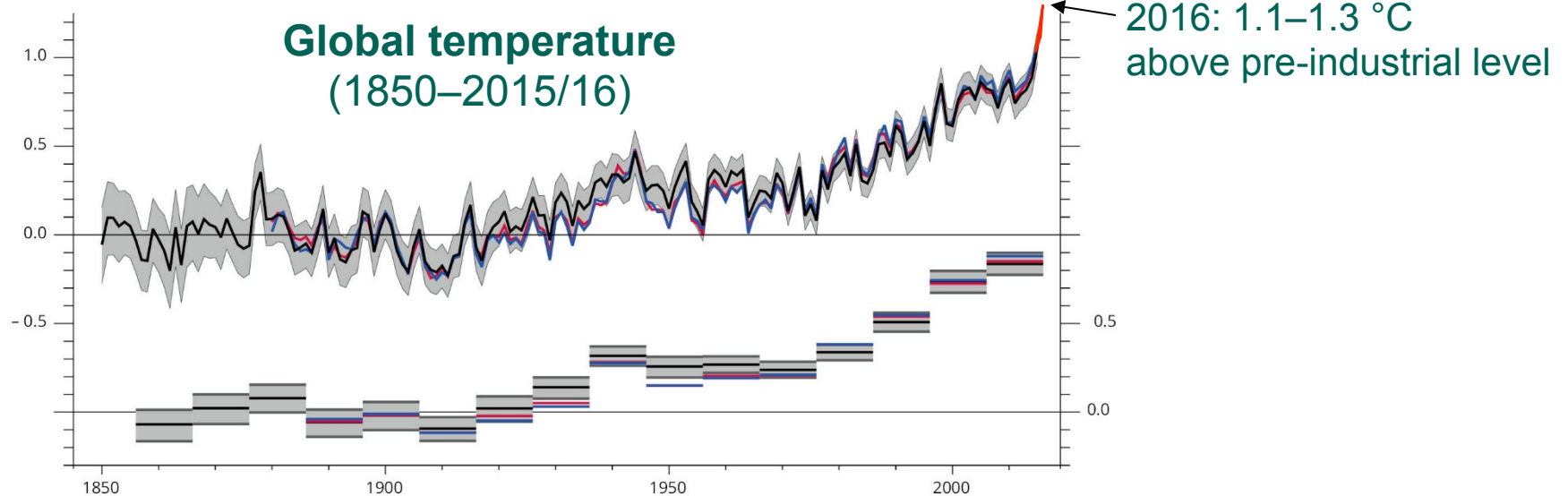
Was ist neu im EUA-Bericht zum Klimawandel 2016?

1. *Alle wesentlichen Ergebnisse des 2012 EUA-Berichts sind weiterhin gültig*
2. **Mehrere Langzeit-Klima“rekorde“ wurden in den letzten Jahren gebrochen**
(z. B. globale und europäische Temperatur, globaler Meeresspiegel, Arktisches Meereis)
3. **Weitere Veränderungen in Wetterextremen können dem vom Menschen verursachten Klimawandel zugeschrieben werden**
(z. B. der beobachtete Anstieg von Starkniederschlägen in Europa)
4. **Weitere Veränderungen in Umwelt und Gesellschaft in Europa können dem regionalen oder globalen Klimawandel zugeschrieben werden**
(z. B. Krankheitsausbrüche, Migration von Baumarten, Einwanderung invasiver Arten)
5. **Die Evidenz für zukünftige Zunahmen von Wetterextremen in Europa hat sich verstärkt** (z.B. Hitzewellen, Dürren, starke Stürme, Sturmfluten)
6. **Die Evidenz für Europas Verwundbarkeit gegenüber Klimaereignissen in anderen Regionen ist gestiegen** (z.B. Dürren als Auslöser von Migration)
7. **Erweiterter Inhalt:**
 - *Multi-sektorielle Klimawandelstudien (Europa, transnational)*
 - *Politikrahmen (global, Europa, transnational, national)*

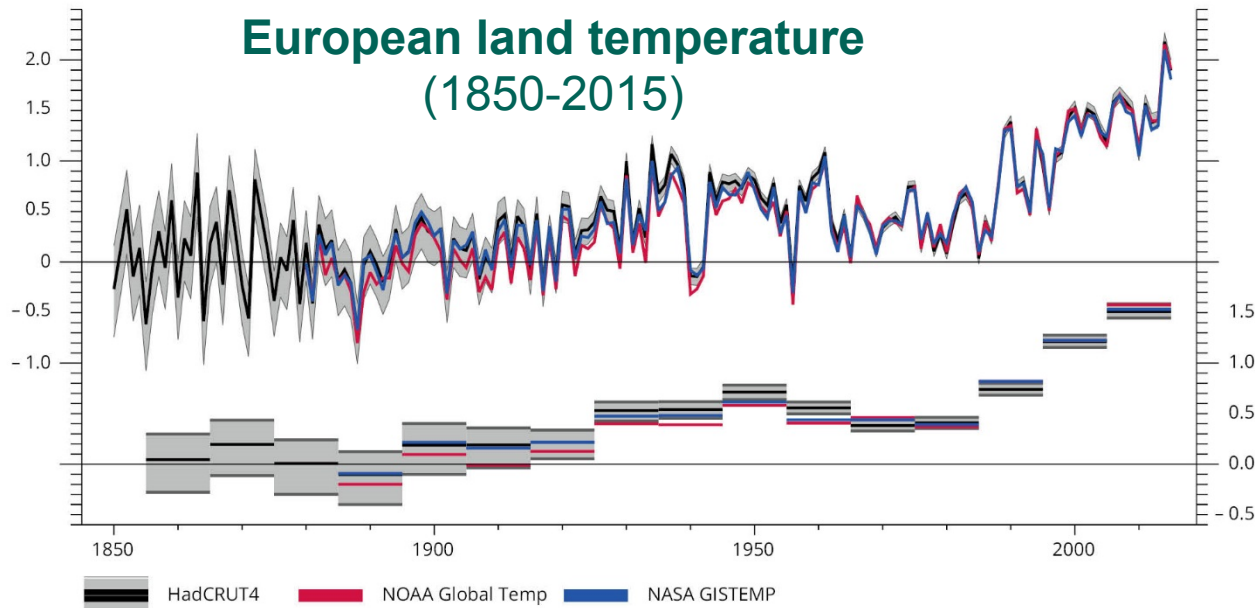


Der Klimawandel bricht globale und europäische Klimarekorde

Temperature anomaly (°C) relative to pre-industrial



Temperature anomaly (°C) relative to pre-industrial

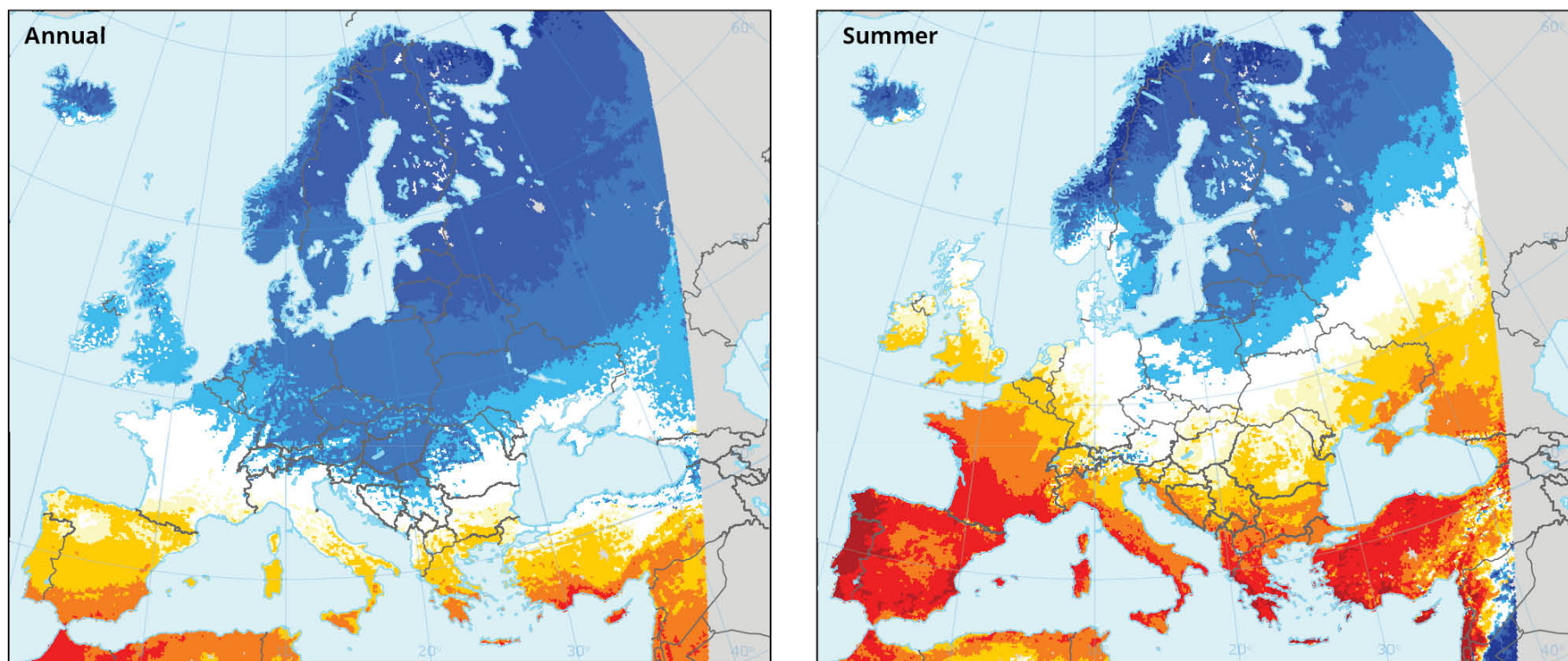


Sources:
HadCRUT4 (Met Office),
NOAA Global Temp,
NASA GISTEMP



Die Unterschiede zwischen wasserreichen und wasserarmen Regionen in Europa werden weiter zunehmen

Annual and summer precipitation
(projected change for 2080s, RCP8.5)



Projected change in annual (left) and summer (right) precipitation

%



- 40 - 30 - 20 - 10 - 5 5 10 20 30



Outside coverage

0 500 1 000 1 500 km



Europa ist verwundbar gegenüber den Auswirkungen des Klimawandels in anderen Weltregionen

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

Der Klimawandel betrifft alle Regionen in Europa – die Anpassungsbedürfnisse unterscheiden sich jedoch

Arctic region

Temperature rise much larger than global average
Decrease in Arctic sea ice coverage
Decrease in Greenland ice sheet
Decrease in permafrost areas
Increasing risk of biodiversity loss
Some new opportunities for the exploitation of natural resources and for sea transportation
Risks to the livelihoods of indigenous peoples

Atlantic region

Increase in heavy precipitation events
Increase in river flow
Increasing risk of river and coastal flooding
Increasing damage risk from winter storms
Decrease in energy demand for heating
Increase in multiple climatic hazards

Mountain regions

Temperature rise larger than European average
Decrease in glacier extent and volume
Upward shift of plant and animal species
High risk of species extinctions
Increasing risk of forest pests
Increasing risk from rock falls and landslides
Changes in hydropower potential
Decrease in ski tourism

Coastal zones and regional seas

Sea level rise
Increase in sea surface temperatures
Increase in ocean acidity
Northward migration of marine species
Risks and some opportunities for fisheries
Changes in phytoplankton communities
Increasing number of marine dead zones
Increasing risk of water-borne diseases

Boreal region

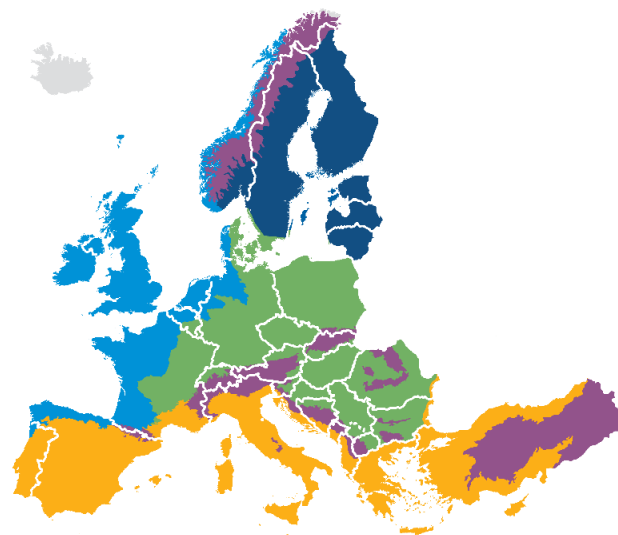
Increase in heavy precipitation events
Decrease in snow, lake and river ice cover
Increase in precipitation and river flows
Increasing potential for forest growth and increasing risk of forest pests
Increasing damage risk from winter storms
Increase in crop yields
Decrease in energy demand for heating
Increase in hydropower potential
Increase in summer tourism

Continental region

Increase in heat extremes
Decrease in summer precipitation
Increasing risk of river floods
Increasing risk of forest fires
Decrease in economic value of forests
Increase in energy demand for cooling

Mediterranean region

Large increase in heat extremes
Decrease in precipitation and river flow
Increasing risk of droughts
Increasing risk of biodiversity loss
Increasing risk of forest fires
Increased competition between different water users
Increasing water demand for agriculture
Decrease in crop yields
Increasing risks for livestock production
Increase in mortality from heat waves
Expansion of habitats for southern disease vectors
Decreasing potential for energy production
Increase in energy demand for cooling
Decrease in summer tourism and potential increase in other seasons
Increase in multiple climatic hazards
Most economic sectors negatively affected
High vulnerability to spillover effects of climate change from outside Europe



EUA-Bericht zu Klimaanpassung und Risikovorsorge (2017)

EEA Report | No 15/2017

Climate change adaptation and disaster
risk reduction in Europe

Enhancing coherence of the knowledge base, policies and practices

ISSN 1725-9177



European Environment Agency



- Globaler und Europäischer Politikkontext
- Informationen zu zehn klimatischen Extremereignissen und deren Auswirkungen
- Sechs europäische Fallbeispiele zur Verbindung von Klimaanpassung und Risikovorsorge
- Chancen für bessere Kohärenz der beiden Politikbereiche

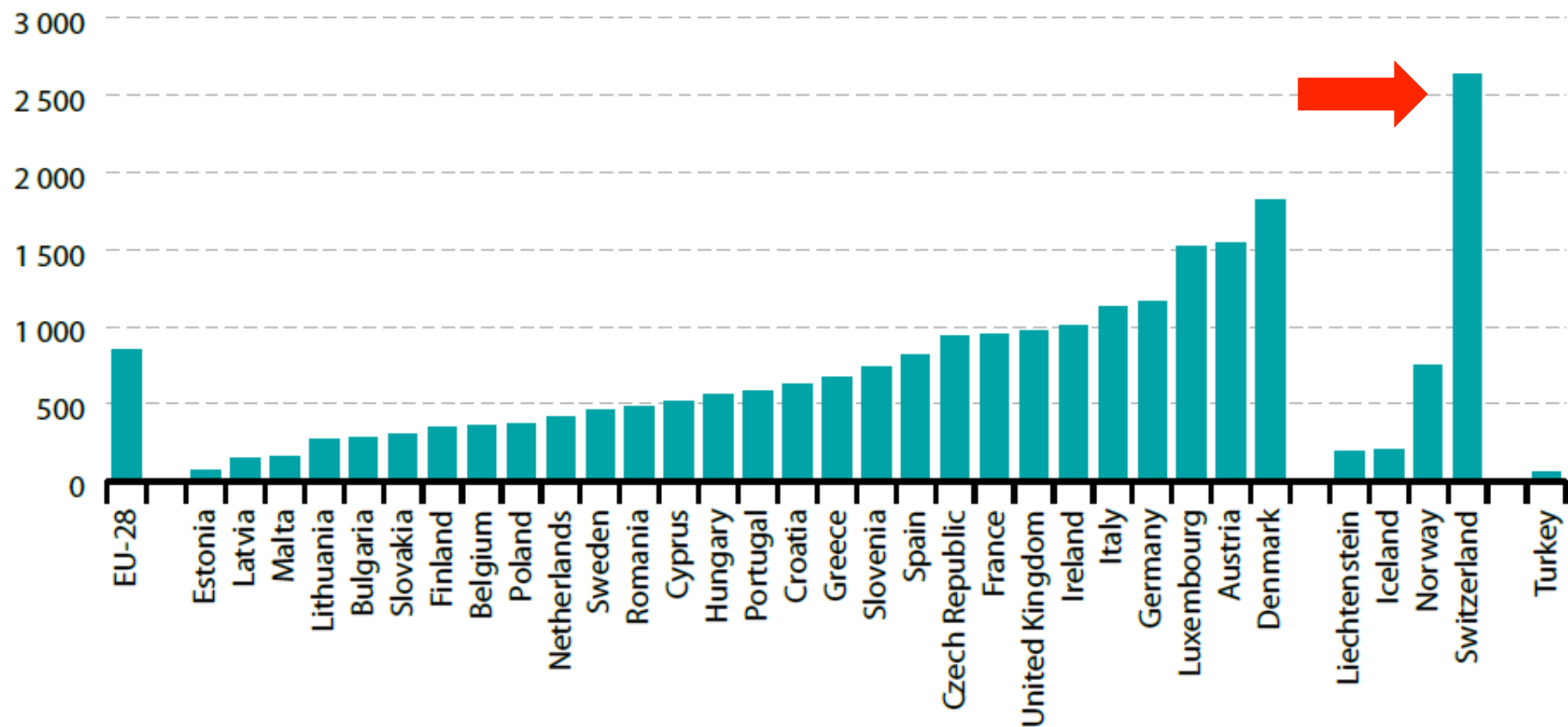
eea.europa.eu/publications/climate-change-adaptation-and-disaster-2017

European Environment Agency



Die Schweiz ist durch Extremereignisse stark betroffen

Figure 13.10: Climate-related economic losses, by country, 1980–2015
(cumulative losses since 1980 in EUR per capita (2015 values))

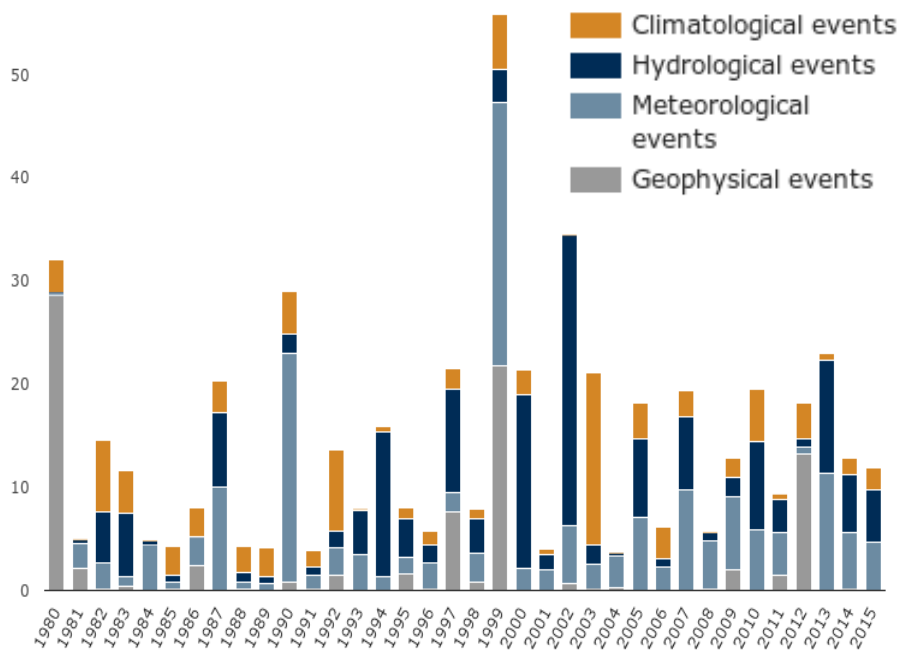


Source: European Environment Agency (EEA) (Eurostat online data code: [sdg_13_40](#))

Kein klarer Trend bei den Schäden von extremen Wetterereignissen in Europa – jedoch Anstieg bei konvektiven Stürmen

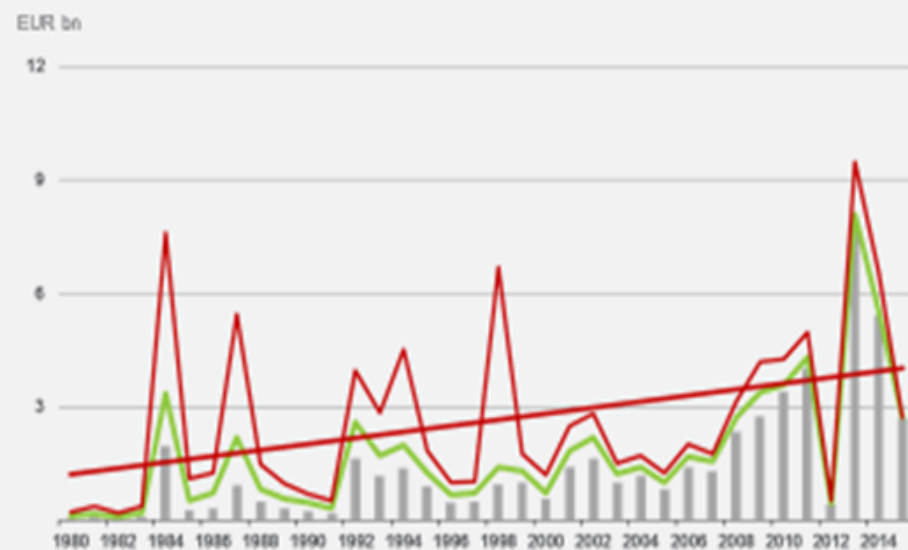
Economic losses from extreme events in EEA member countries (1980–2015)

All hazards



Convective storms

Overall losses: nominal, inflation adjusted, and normalized

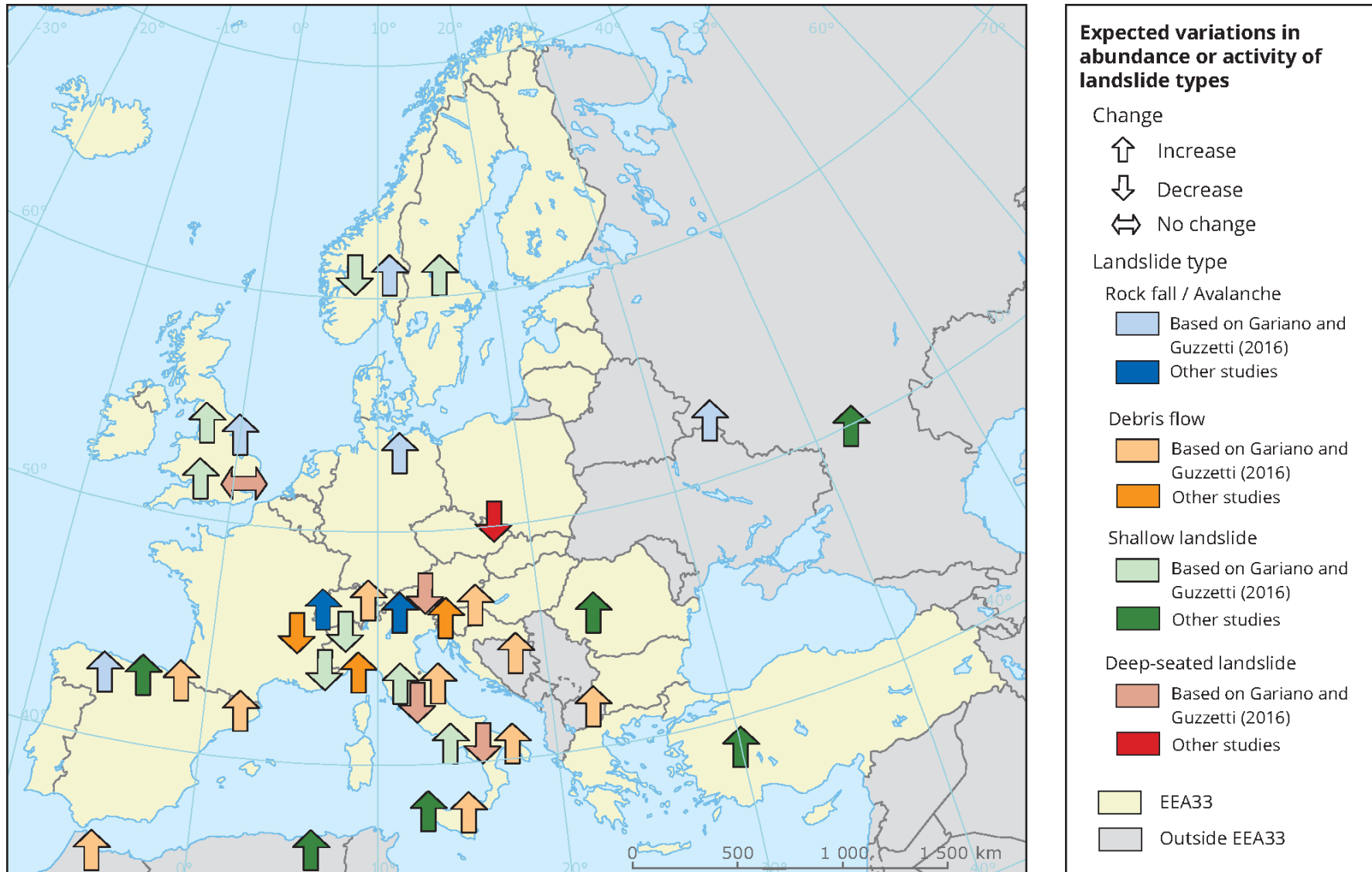


Source: Munich RE NatCatSERVICE

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Der Klimawandel verändert das Risiko von Hangrutschsen



Source: Adapted from Gariano and Guzzetti, 2016



5.4 Case 3: Local governance in climate change adaptation and disaster risk reduction in Switzerland

Box 5.2 Switzerland — Green measures

Forests as protection against landslides and avalanches

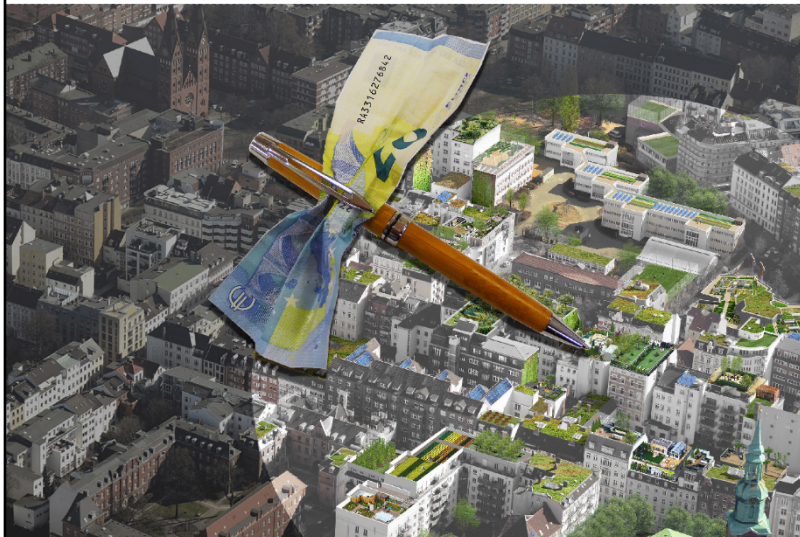
Green measure: room for the river

EUA-Bericht zur Finanzierung von Anpassung in Städten (2017)

EEA Report | No 2/2017

Financing urban adaptation to climate change

ISSN 1977-8449



European Environment Agency



Fallstudien zur Finanzierung von Klimaanpassung in Städten



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Mehrere europäische Fonds umfassen auch die Schweiz

European Funds	Where	What is funded/financed	Co-financing rate	Contacts and further information
Interreg 15 Regional Programmes and European Territorial Cooperation	EU-28, Norway and Switzerland Depends on the Regional Programme	– Implementation of cooperation projects and measures – Network development http://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial	Between 50 and 85 % depending on country	http://ec.europa.eu/regional_policy/en/policy/cooperation/european-territorial/contact-funding/
URBACT	EU-28, Norway and Switzerland	– Facilitates transnational exchange – Exchange of good practice and dissemination – Capacity-building http://urbact.eu/environment	- EU-28: 70-85 % (linked to ERDF) - Norway and Switzerland: co-financed up to 50 % by Norwegian and Swiss national funds	http://urbact.eu/faq
European Economic Area grants	EU-28, Norway and Switzerland	– Information exchange – Implementation of measures and projects – Strategy and plan development	Depends on the Partnership Agreement. Usually 85-100 %	http://eeagrants.org/How-to-apply
eea.europa.eu/publications/financing-urban-adaptation-to-climate-change		http://eeagrants.org/programme/search?programme%5B%5D=pa07&submit=Search		



EUA-Bericht zur Anpassung an Klimawandel in Städten (2016)

EEA Report | No 12/2016

Urban adaptation to climate change in Europe 2016

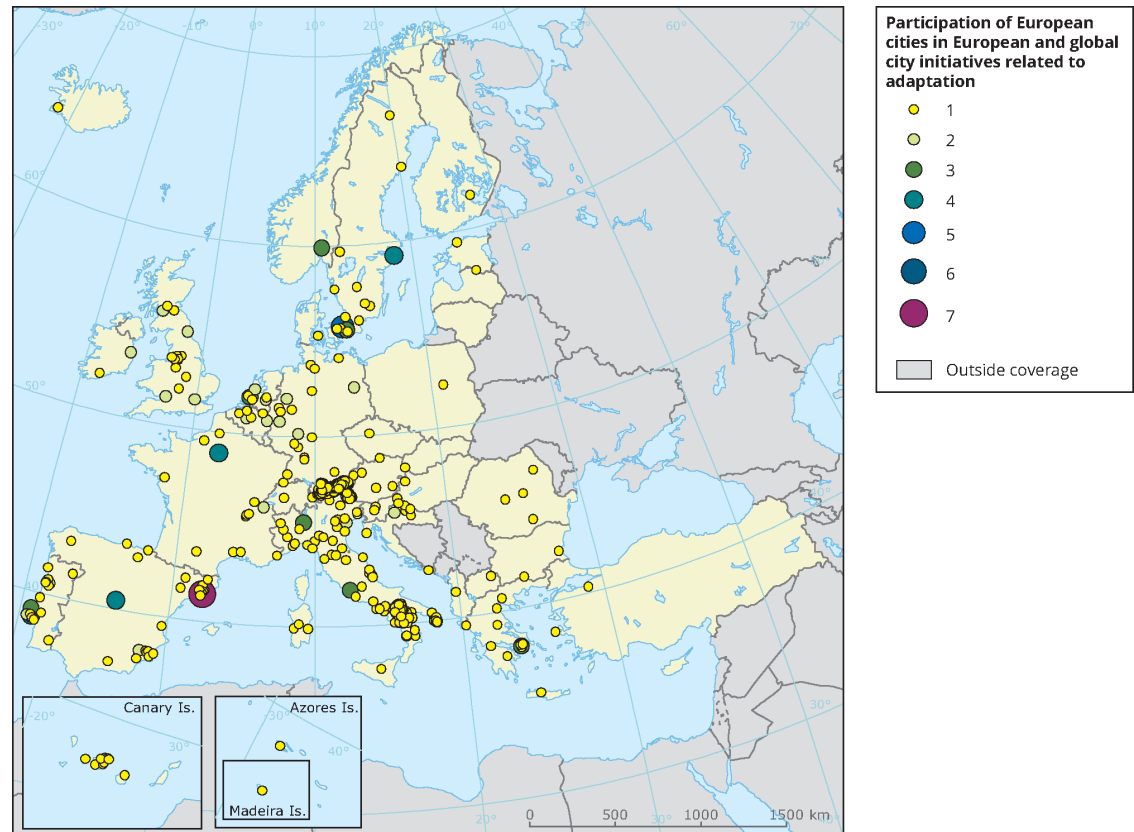
Transforming cities in a changing climate

ISSN 1977-9449

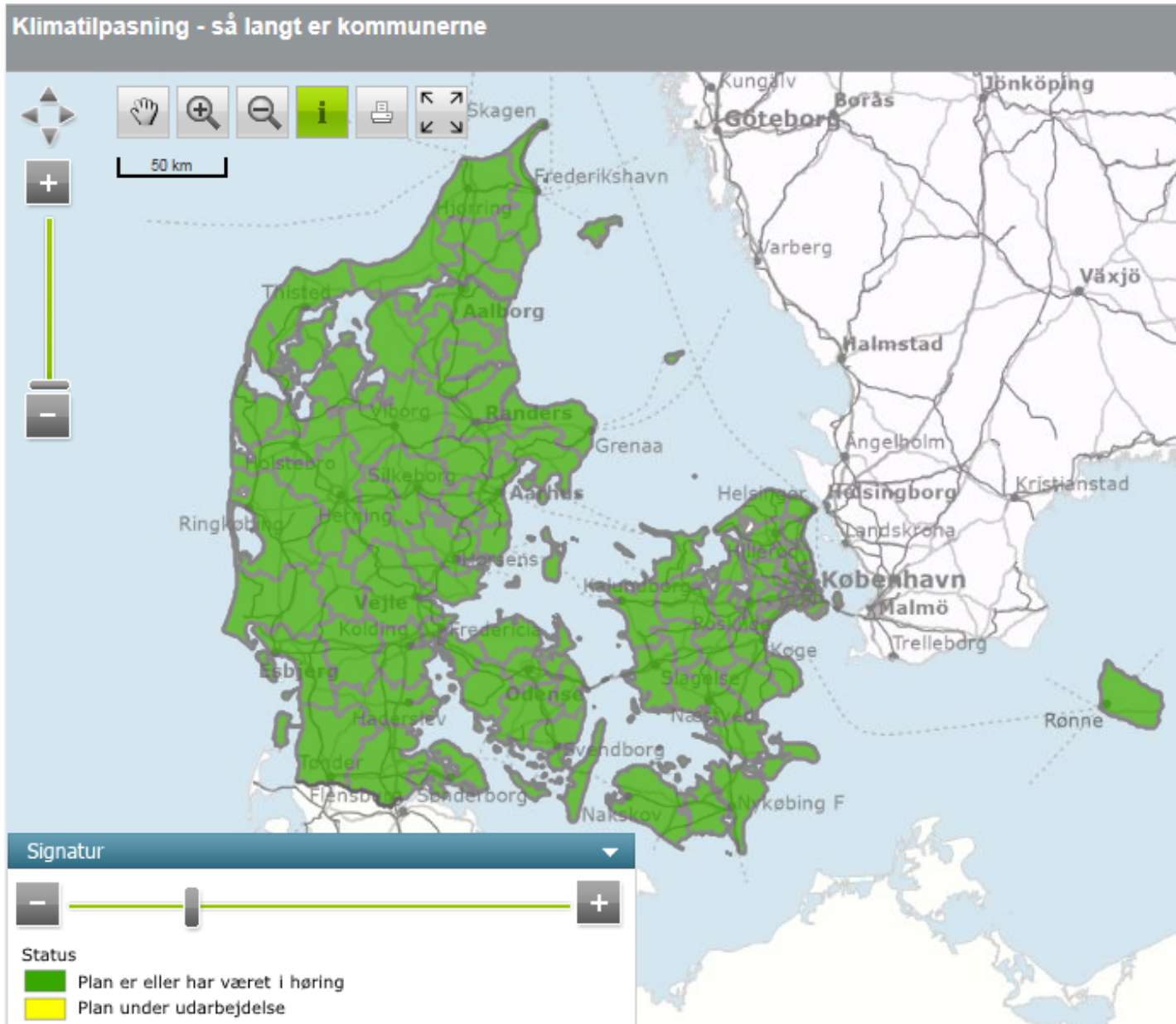


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Beteiligung europäischer Städte in europäischen und globalen Netzwerken zur Klimaanpassung



Alle danske kommuner har en Klimaanpassningsplan

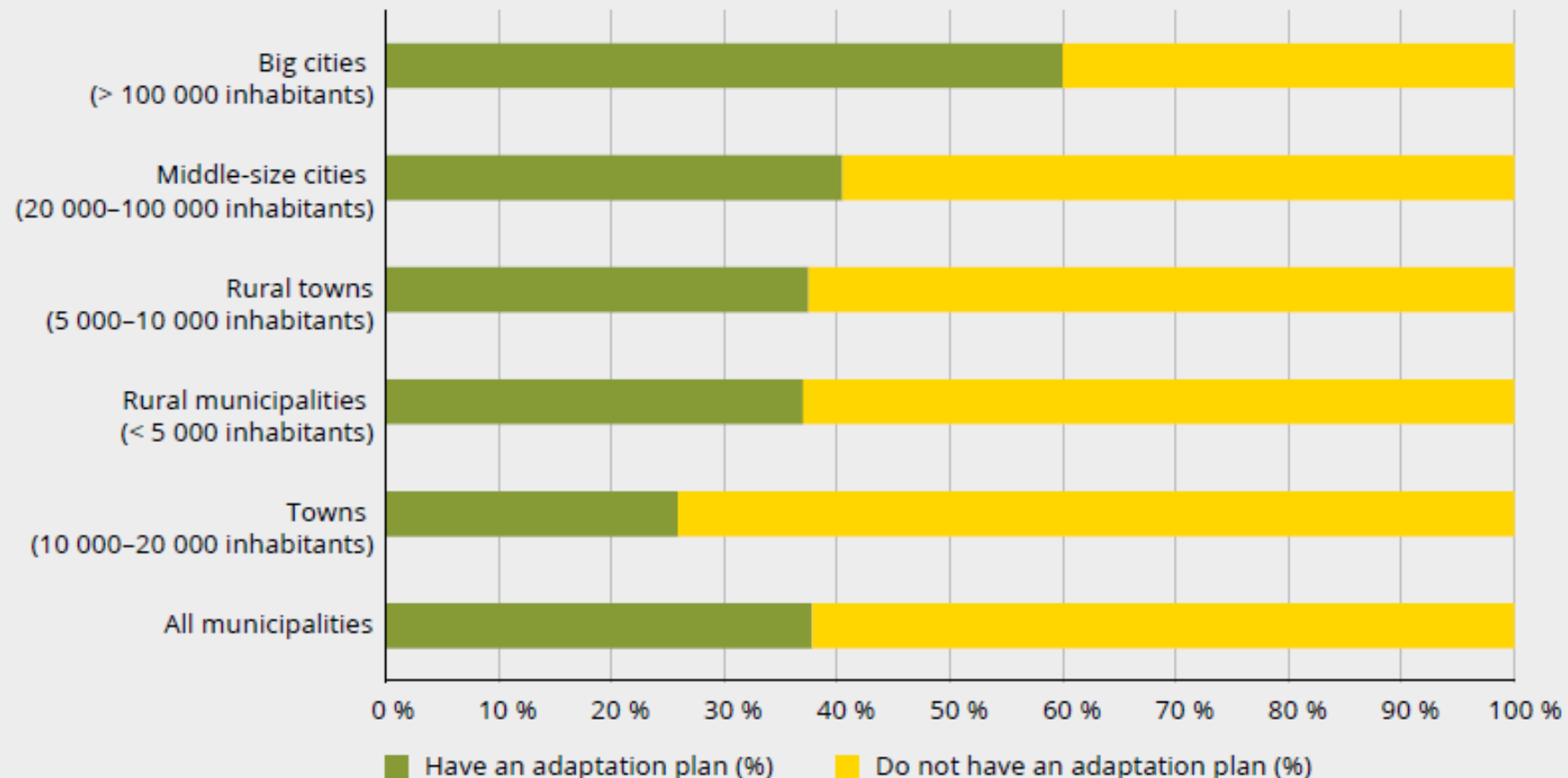


klimatilpasning.dk/kommuner/kortlaegning-til-brug-for-klimatilpasning/kommunekort.aspx



Die Mehrzahl der deutschen Großstädte haben einen Klimaanpassungsplan – bei den kleineren Städten ist der Anteil deutlich geringer

Figure 5.5 State of climate change adaptation planning according to the size of municipalities in Germany, 2011



Source: Mohammadzadeh et al., 2013.

Fallstudie: Im Einzelfall kann Anpassung Umsiedlung beinhalten

Box 5.29 Transformational adaptation makes economic sense: relocating houses in the Eferdinger Becken, Austria



Photo: © Landespolizeidirektion OÖ

Sources: <http://derstandard.at/2000011527317/Eferdinger-Becken-Hochwasseropfer-stimmen-Absiedlung-zu>; <http://www.startclim.at/startclim2015>.



Biogeographical region:
Central and eastern Europe

The region of the Eferdinger Becken, Upper Austria, lies on the Danube. It has no protection against floods with a 100-year probability and no projects are planned.

The flood-prone area covers 24 hectares. About 130 houses there flood regularly. Expert judgements on the costs and benefits suggest that relocating these houses is cheaper than designing and implementing flood protection. Homeowners needed to decide by the end of 2015. The federal and the regional government compensate citizens for 80 % of the value of the house if they move. Currently 29 homeowners have decided to move.

EUA-Bericht zu Berichtssystemen zur Klimaanpassung (2015)

EEA Technical report | No 20/2015

National monitoring, reporting and evaluation
of climate change adaptation in Europe

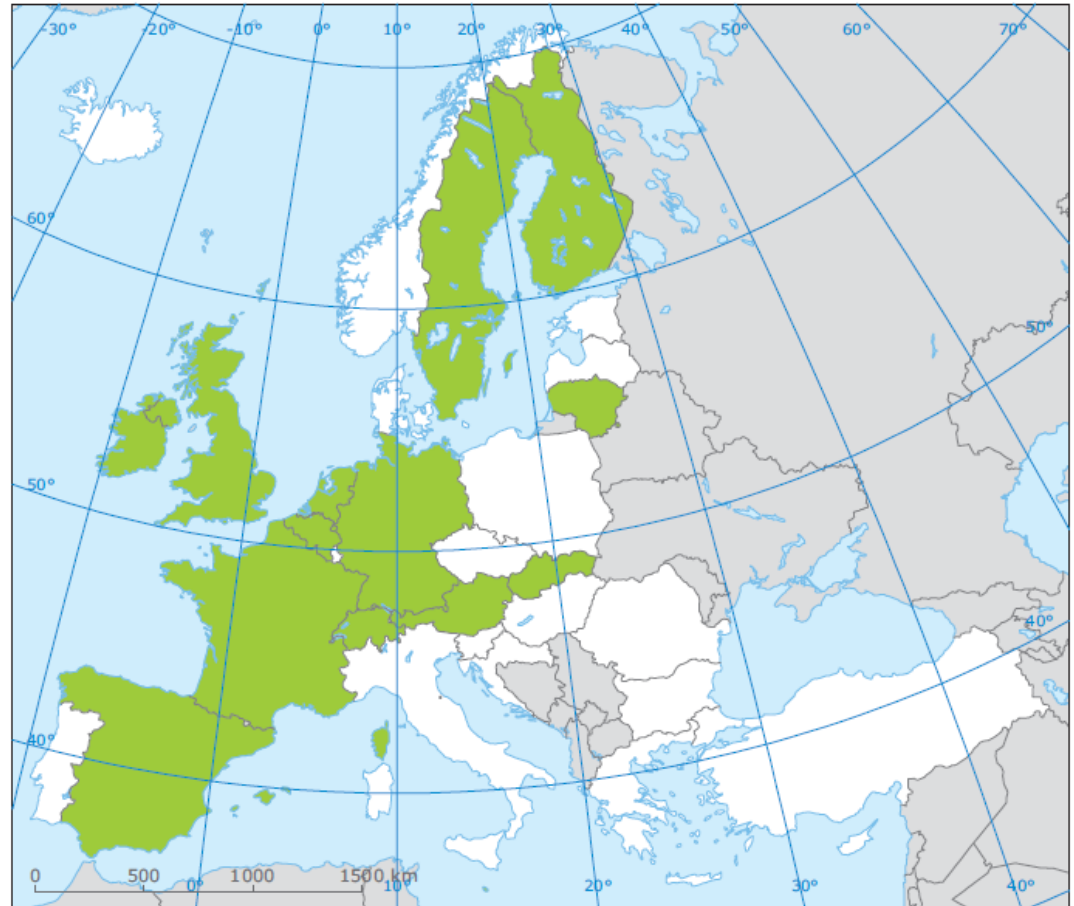
ISSN 1725-2237



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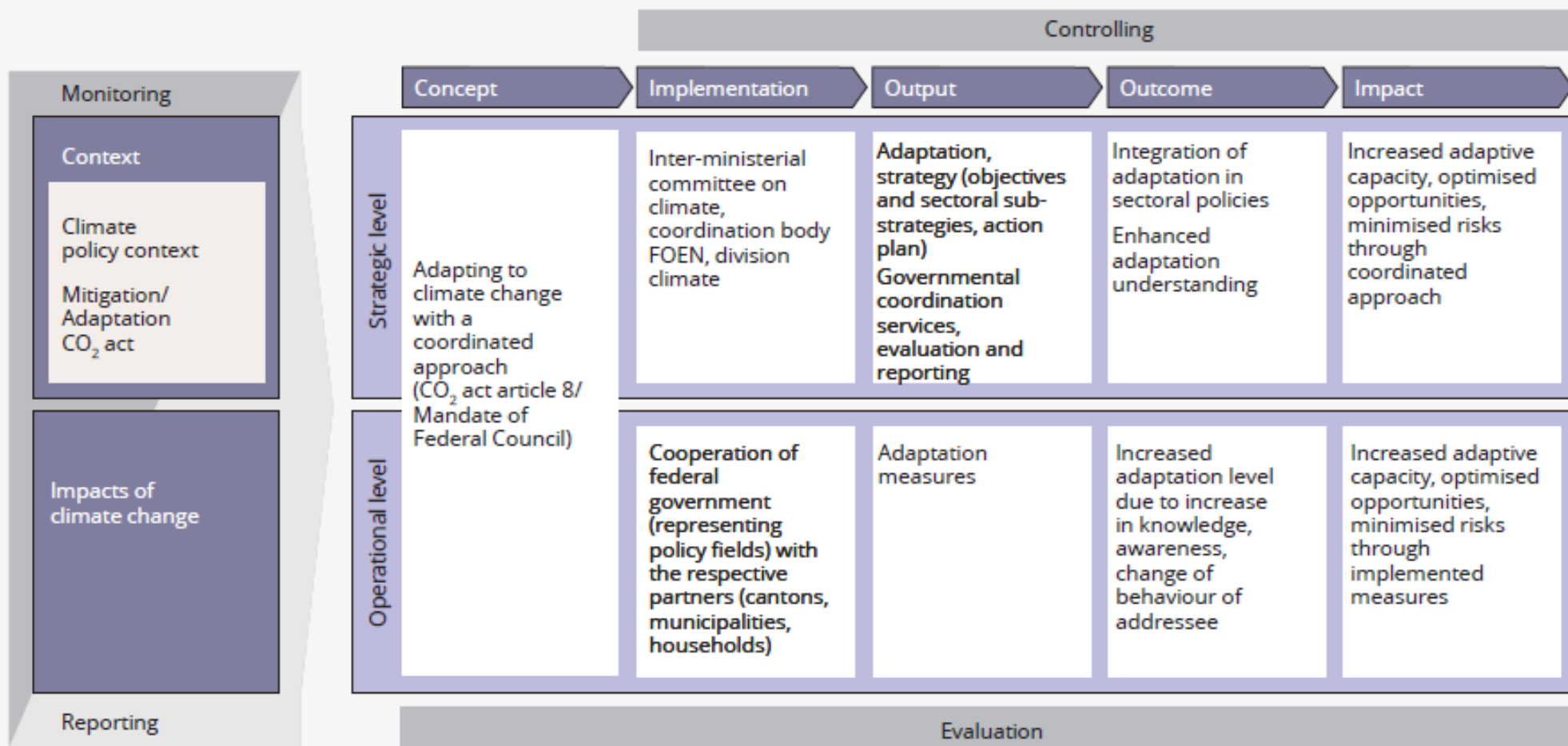


Länder, in denen ein Berichtssystem zur Anpassung besteht oder entwickelt wird



Beispiel: Berichtssystem zur Anpassung in der Schweiz

Box 2.14 Using an impact model to inform a national MRE system: experiences from Switzerland



EUA-Bericht zu Klimavulnerabilitätsanalysen in Europa

National climate change vulnerability
and risk assessments in Europe 2018

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Prepared by:
EEA

EEA project manager:
Hans-Martin Fussel supported by André Jol

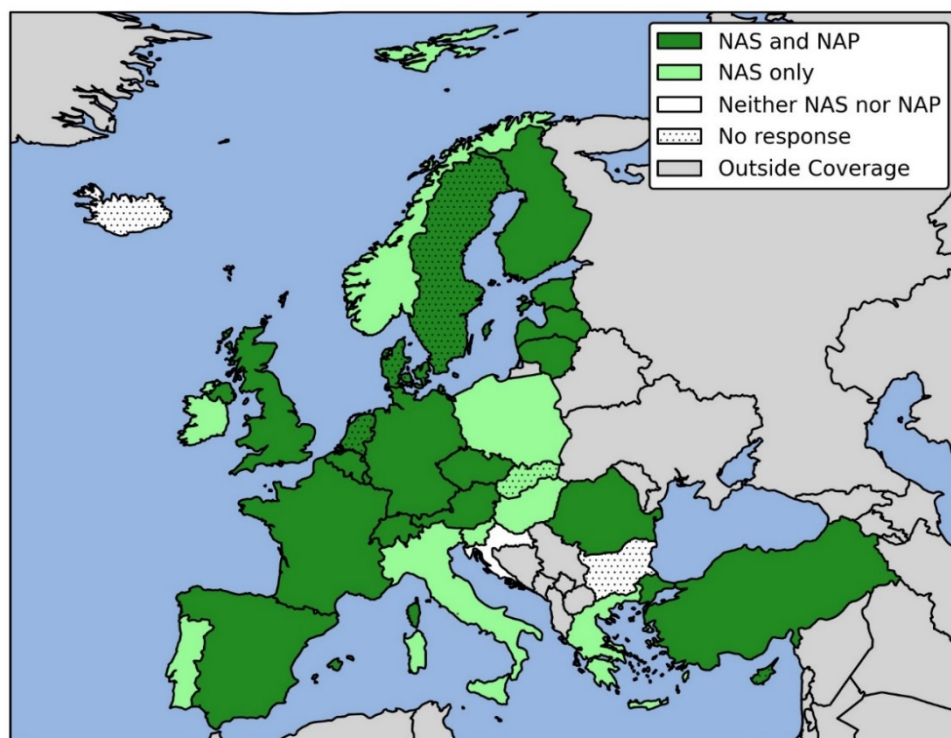
Version history

Version	Date	Status and description	Distribution
1.0	27/09/2017	First internal draft	Internal
2.0	01/12/2017	Second draft for review	Eionet review

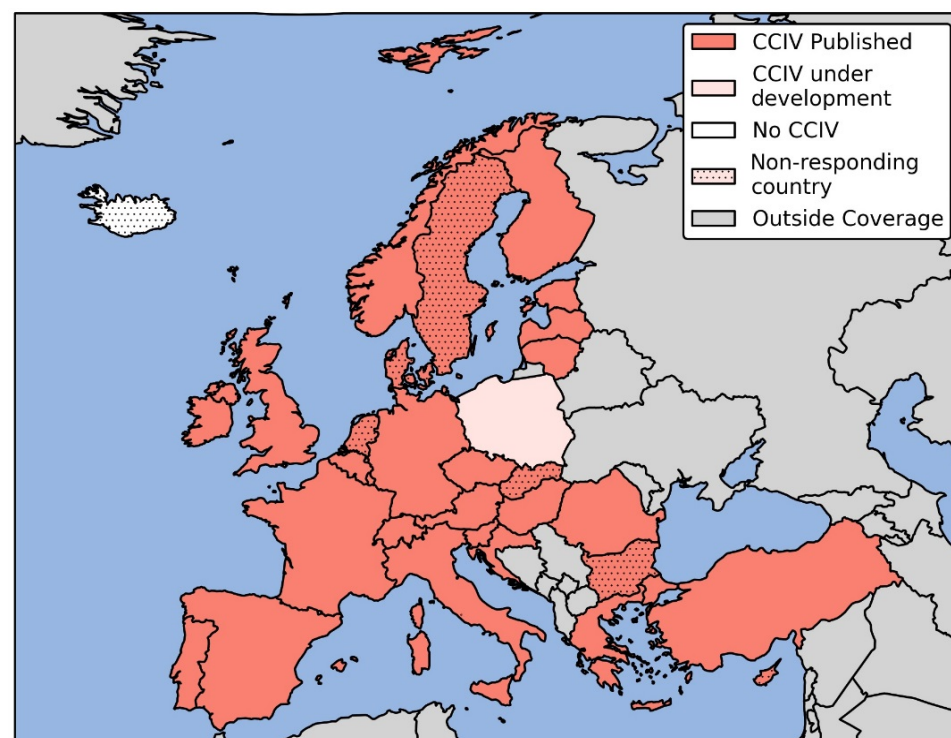
- Basiert auf Befragung aller EUA-Mitgliedsländer
- Entwurf wird nächste Woche zur Begutachtung versandt
- Veröffentlichung im Frühjahr 2018
- Im Folgenden einige ausgewählte, **vorläufige** Ergebnisse

Übersicht zu nationalen Anpassungsstrategien und -plänen sowie Vulnerabilitätsstudien in Europa

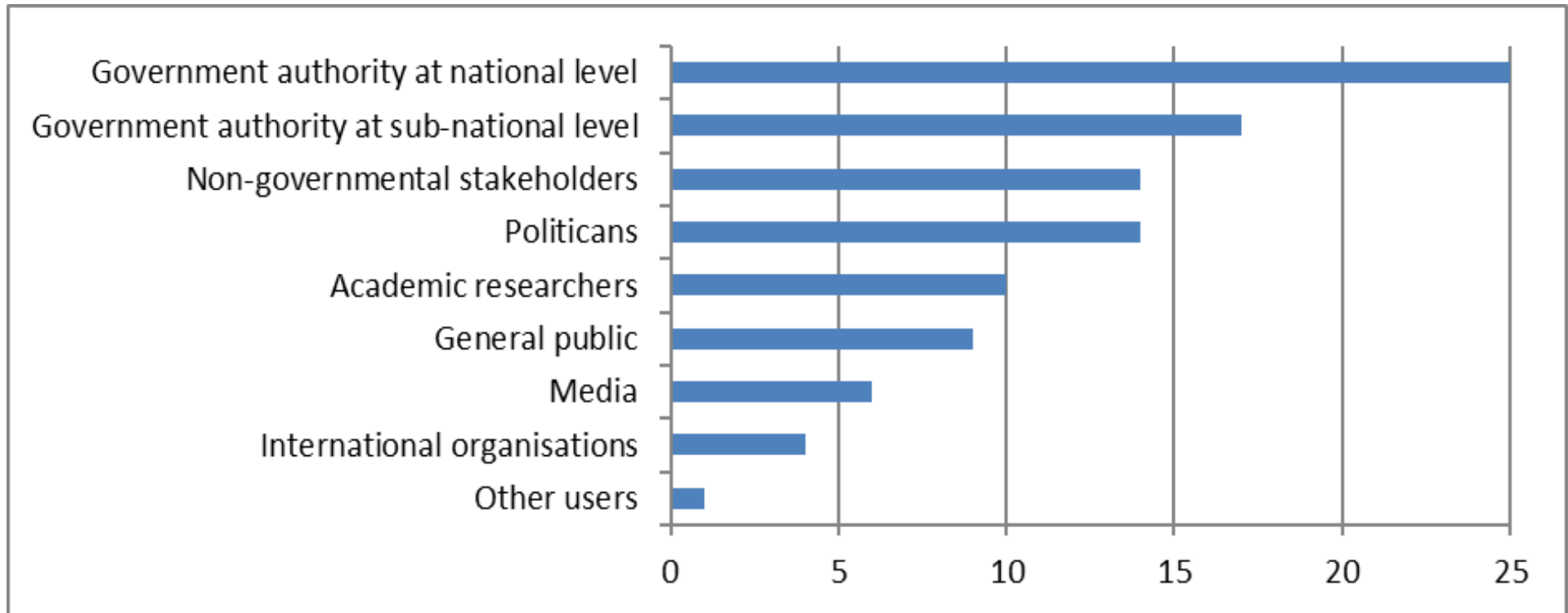
Anpassungsstrategien und -pläne



Nationale Klimavulnerabilitätsstudien

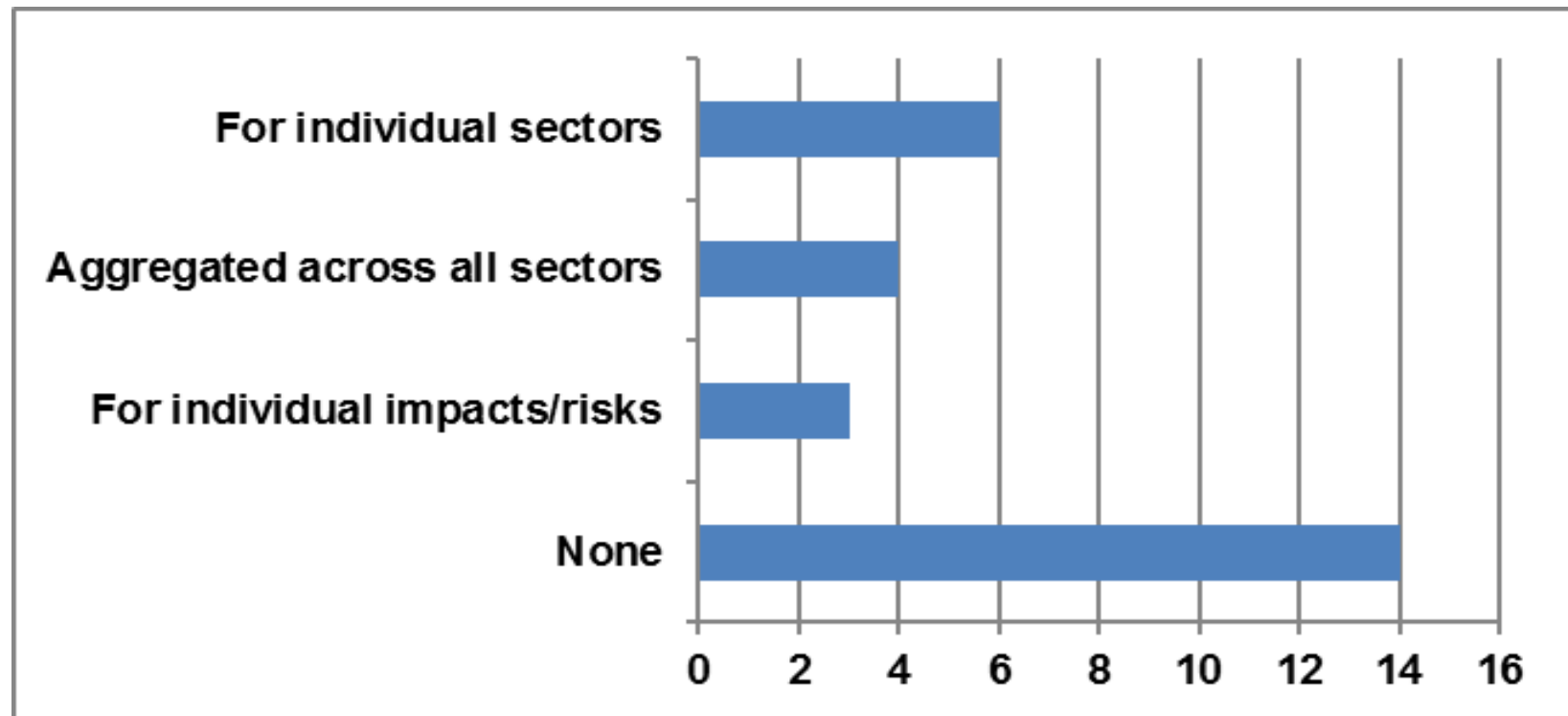


Zielgruppen nationaler Vulnerabilitätsstudien in Europa



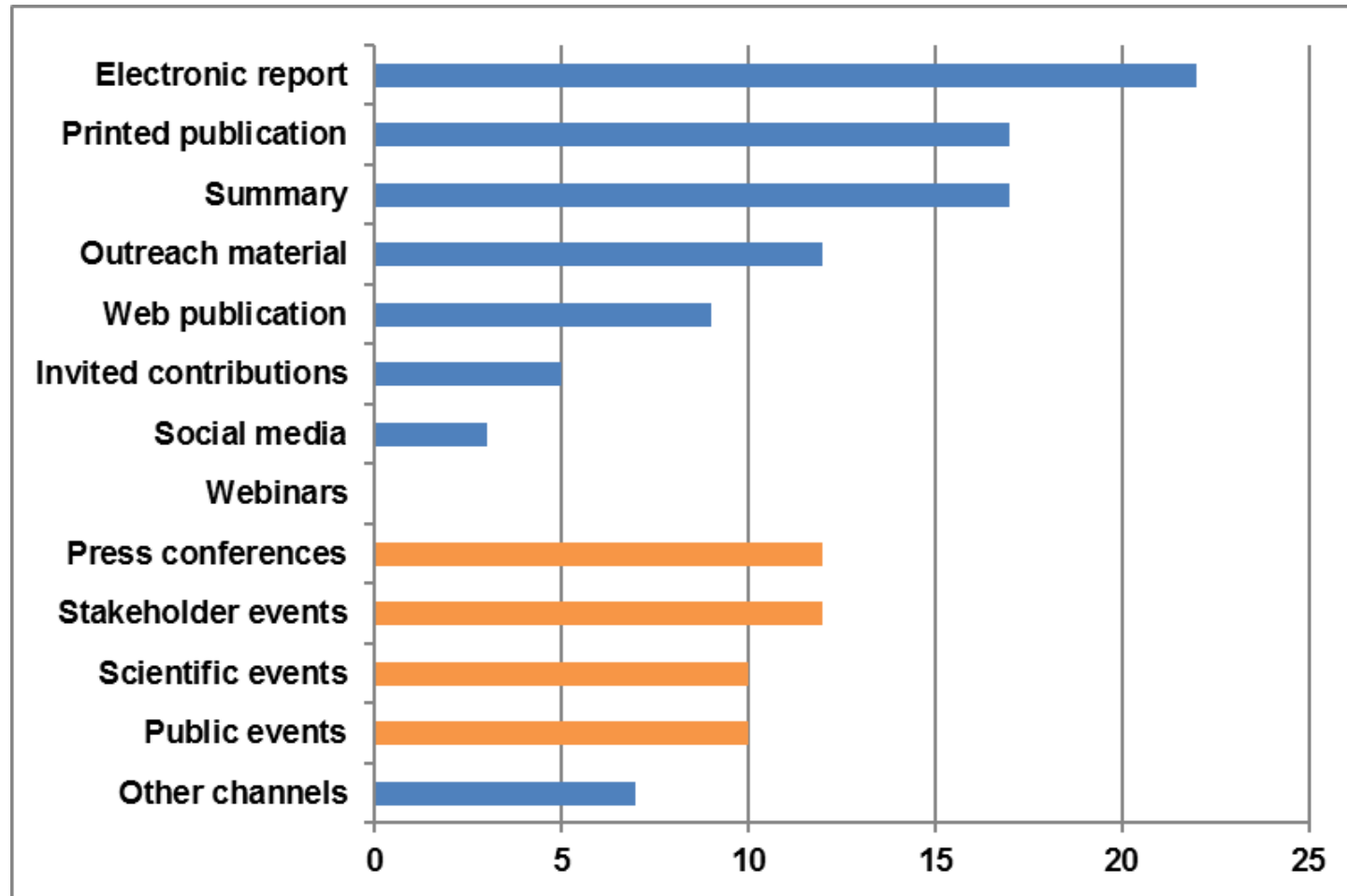
- Nationale Vulnerabilitätsstudien sind relevant für verschiedene Akteure
- Subnationale Entscheidungsträger sind die zweitwichtigste Zielgruppe

Berücksichtigung regionaler Risiken in nationalen Vuln.studien



- Die Mehrzahl der nationalen Vulnerabilitätsstudien in Europa gibt keine explizite Information zu regional bedeutenden Risiken
- Regional aufgelöste Information ist entscheidend für die Entwicklung regionaler Anpassungsstrategien

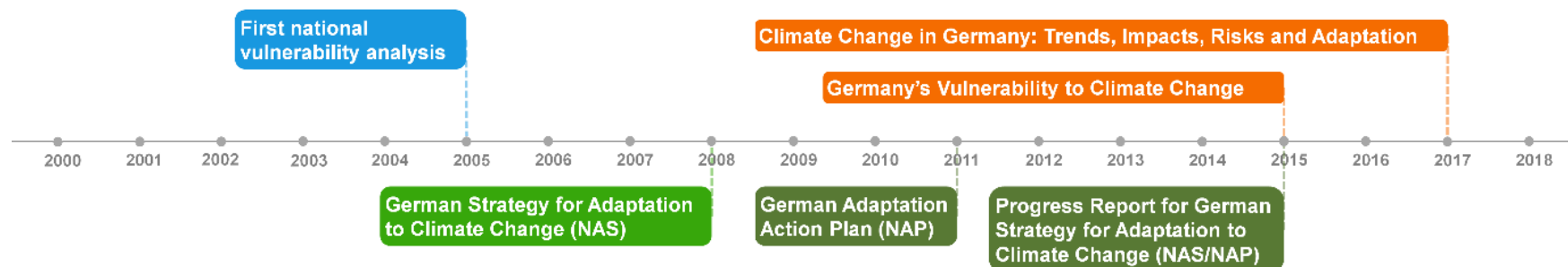
Kommunikationskanäle für nationale Vulnerabilitätsstudien



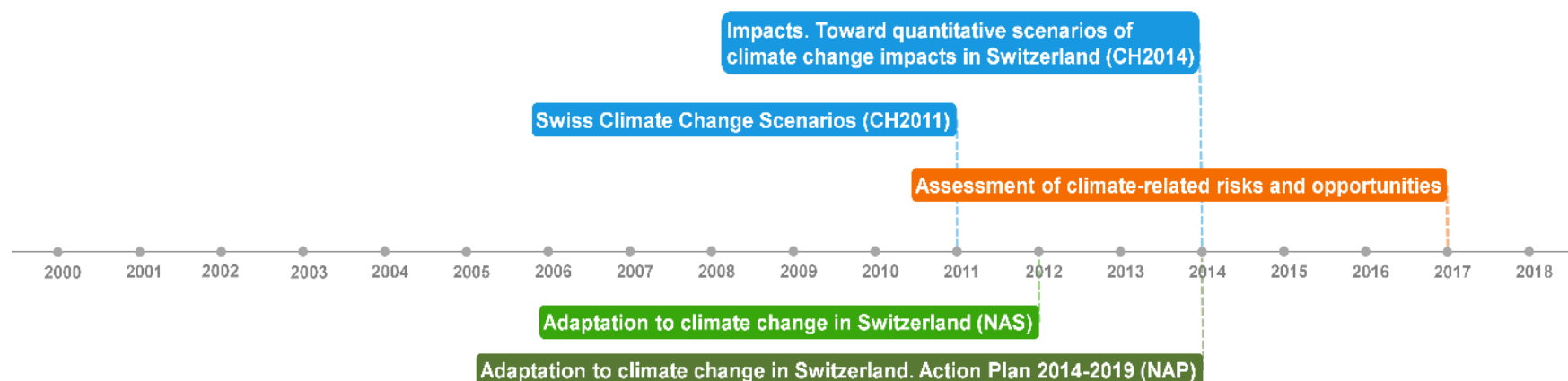
- Unterschiedliche Kommunikationskanäle erlauben die zielgruppen-spezifische Kommunikation der Ergebnisse von nationalen Vulnerabilitätsstudien

Zeitliche Entwicklung von nationaler Anpassungspolitik und von nationalen Vulnerabilitätsstudien

Germany



Switzerland



Leitfaden zu Klimavulnerabilitätsanalysen (aus Deutschland)



- **Verfasser:**
Interministerielle Arbeitsgruppe
Anpassung an den Klimawandel
der deutschen Bundesregierung
- **Inhalt:**
Methodische Empfehlungen zur
Durchführung von Klimawirkungs-
und Vulnerabilitätsanalysen
- **Kernzielgruppen:**
Bundes- und Landesbehörden

Europäische Anpassungsplattform (Climate-ADAPT)

Zielsetzung

- Unterstützt Entwicklung und Implementierung von Anpassungsstrategien/-plänen
- Komplementär zu nationalen Anpassungsplattformen

Zielgruppe

- Experten und Entscheider von der europäischen bis zur subnationalen Ebene
- Forscher

Wartung und Entwicklung

- Finanziert und durchgeführt durch EUA und EU-Kommission

Verbreitung

- Zweimonatlicher Newsletter
- Webinars
- Konferenzen und Workshops



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

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events

2nd World Symposium on Climate Change Adaptation (WSCCA-2017)
Consistent with the need for more cross-sectoral interactions among the various stakeholders, the aims of the conference are to present research findings, exchange information, discuss implementation in practice and disseminate experiences in the field of climate change adaptation with a specific focus on integrative approaches.
[Read more](#)

Adaptation support tool
New to adaptation? Use the Adaptation Support Tool

What are European countries doing?
Choose a country

Find case studies on adaptation in Europe

Share your information

News
» 08 May 2017, Alpine fauna and flora need ecological connectivity to face climate change
» 08 May 2017, Open European Day 2017 about innovation, co-creation and transformation in resilient cities held in Bonn
» 01 May 2017, LIFE LOCAL ADAPT: Integration of climate change adaptation into the work of local authorities
[» More news](#)

Events
» 15 Nov 2017, Pyradapt 2017: 2nd International Colloquium on Climate Change in mountain areas
» 14 Jun 2018, [Adaptation Futures 2018, Dialogue for Solutions](#)
» 06 Jun 2017, Climate ADAPT contributes to the ECCA 2017 Conference with a topic on sharing knowledge on adaptation
[» More Events](#)

Newsletter
Check the European Climate Adaptation Newsletter and register to receive it in your e-mail


Latest updates
Check the latest updates in the content of the Platform.
» Updated Country page of Bulgaria
» Urban Adaptation Support Tool
» Mayors Adapt landing page

Climate-ADAPT: Fallstudie “Grüne Dächer in Basel”



Climate-ADAPT - Sharing adaptation information across Europe

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Case studies



Green roofs in Basel, Switzerland: combining mitigation and adaptation measures (2015)

The city of Basel in Switzerland has the largest area of green roofs per capita in the world. Initiatives aiming to increase the provision of green roofs in Basel were initially driven by energy-saving programmes, and subsequently by biodiversity conservation. The City of Basel has promoted green roofs via investment in incentive programmes, which provided subsidies for green roof installation (1996-1997 and 2005-2006). The programmes were funded from the Energy Saving Fund made of 5% of all customers' energy bills in the Basel canton. In 2002, an amendment to the City of Basel's Building and Construction Law was passed. It reads that all new and renovated flat roofs must be greened and also stipulates associated design guidelines. This is likely to bring adaptation benefits in the form of lower temperatures and reduced surface runoff.

Case Study Illustrations

(5)



Keywords

Basel, building regulations,
green roofs, incentives,
mitigation

Sectors

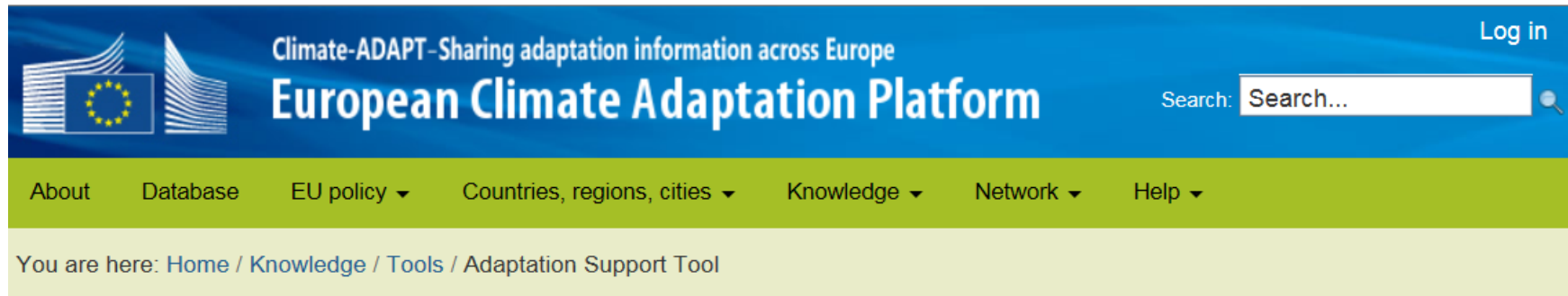
Biodiversity, Buildings, Energy,
Urban

climate-adapt.eea.europa.eu/metadata/case-studies/green-roofs-in-basel-switzerland-combining-mitigation-and-adaptation-measures-1

European Environment Agency



AST: Unterstützung der Anpassung auf nationaler Ebene



» The Adaptation Support Tool - Getting started

- » How is the European climate changing?
- » Why adapt to climate change?
- » Key principles for adaptation
- » How to use the Adaptation Support Tool?

» 1. Preparing the ground for adaptation

» 2. Assessing risks and vulnerabilities to climate change



The Adaptation Support Tool - Getting started

What is the Adaptation Support Tool?

The aim of the Adaptation Support Tool is to assist users in developing climate change adaptation strategies and plans by providing guidance, links to relevant sources and dedicated tools (urban practitioners find here also a specific [Urban Adaptation Support Tool](#)).

The European Commission has issued [EU guidelines on developing adaptation strategies](#) as a component of the [EU strategy on adaptation to climate change](#), with the aim to support EU Member States in the process of developing, implementing and reviewing their adaptation strategies. They provide a common understanding of key features relevant to adaptation processes, building on the experience available in the EU. The steps and recommendations of the Adaptation Support Tool are aligned with the contents of these guidelines.

[Read more](#)



Urban AST: Unterstützung der Anpassung in Städten

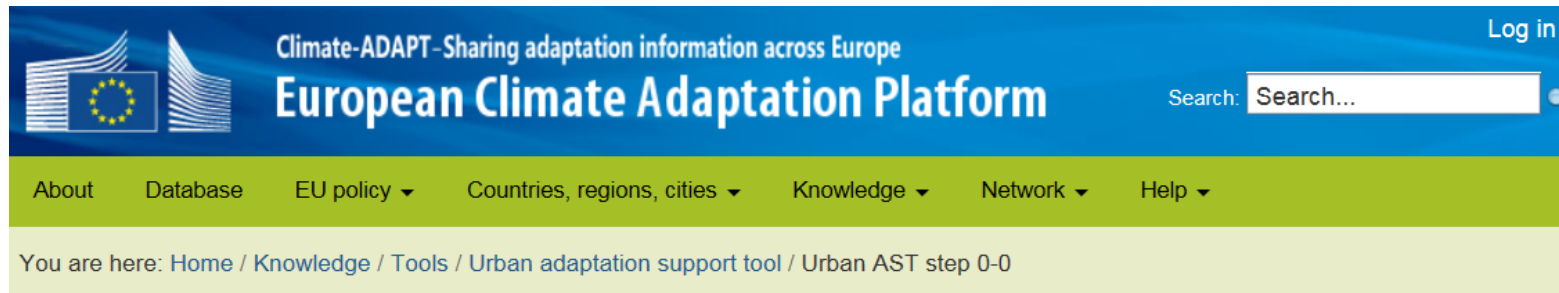


Image © : UAST logo_ general

» 0. The Urban Adaptation Support Tool - Getting started

- » 0.1 How to use the Urban Adaptation Support Tool?
- » 0.2 How is the European climate changing and what are the consequences for urban areas?
- » 0.3 What is adaptation to climate change and why does it matter in my city/town?
- » 0.4 What are the key principles for adaptation?



The Urban Adaptation Support Tool - Getting started

STEP0 The Urban Adaptation Support Tool – Getting started

Urban areas in Europe and worldwide are increasingly experiencing the pressures arising from climate change and are projected to face **aggravated climate-related impacts** in the future. Cities and towns play a significant role in adaptation to climate change in the EU, which has been recognised by [the EU Strategy on adaptation to climate change](#). Several cities and towns across Europe are already **pioneering adaptation action** and many others are taking first steps to ensure that European cities remain safe, liveable and attractive centres for living, innovation, economic activities, culture, and social life.

Whether you are a city just starting to take adaptation action or one already making progress on your adaptation goals, you will find that the tool offers a **wealth of valuable information** that can support your adaptation efforts in a variety of ways.

The Urban Adaptation Support Tool (Urban AST) was developed as a **practical step-by-step guidance tool** to assist signatories of the Mayors Adapt and the now integrated [Covenant of Mayors for Climate and Energy](#) initiative in planning for and taking adaptation action.

[Read more](#)



Herausforderung Klimaanpassung



Vielen Dank

Alle EUA-Berichte zur Anpassung an den Klimawandel sind hier verfügbar:

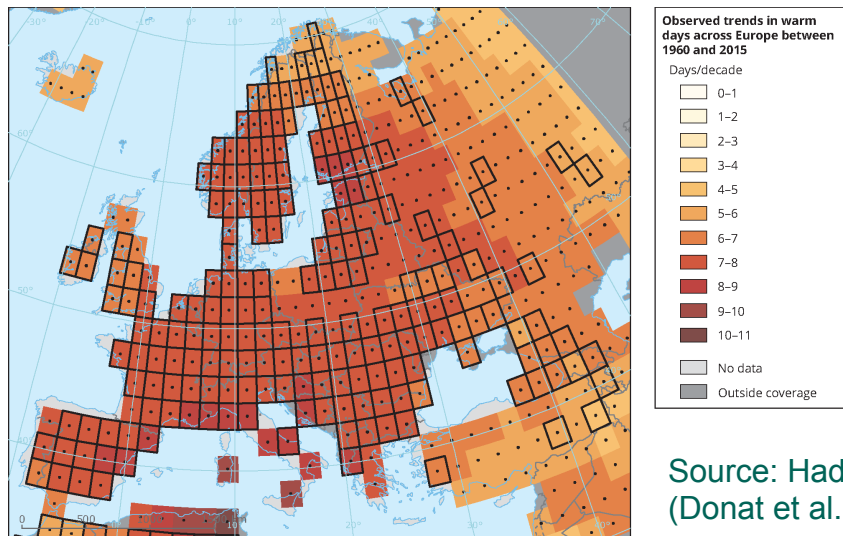
eea.europa.eu/themes/climate-change-adaptation/publications

Europäische Anpassungsplattform (Climate-ADAPT):

climate-adapt.eea.europa.eu

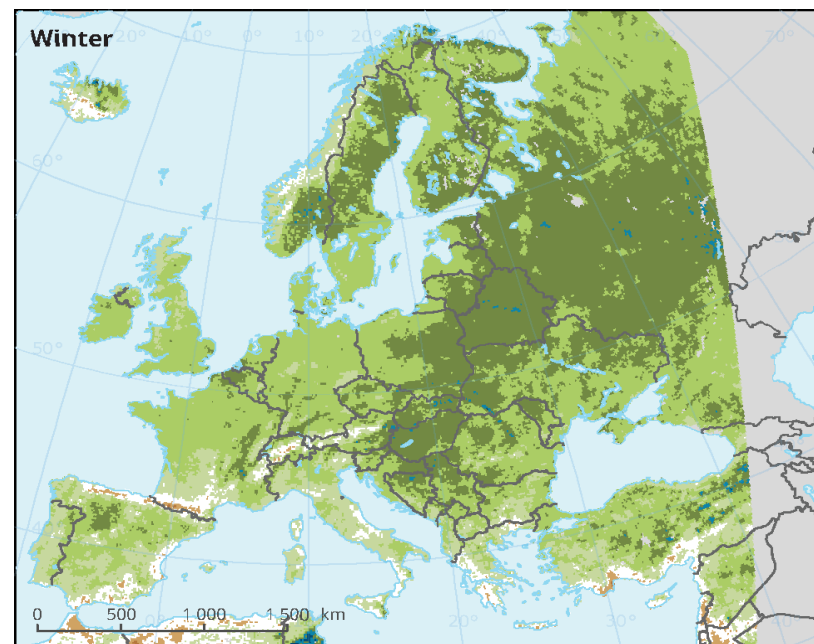
Viele Wetterextreme werden stärker

Exceptionally warm days (1960–2015)

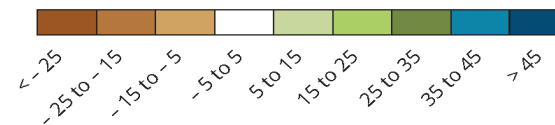


Source: HadEX2
(Donat et al. 2013)

Heavy daily precipitation (projected change for 2080s, RCP 8.5)

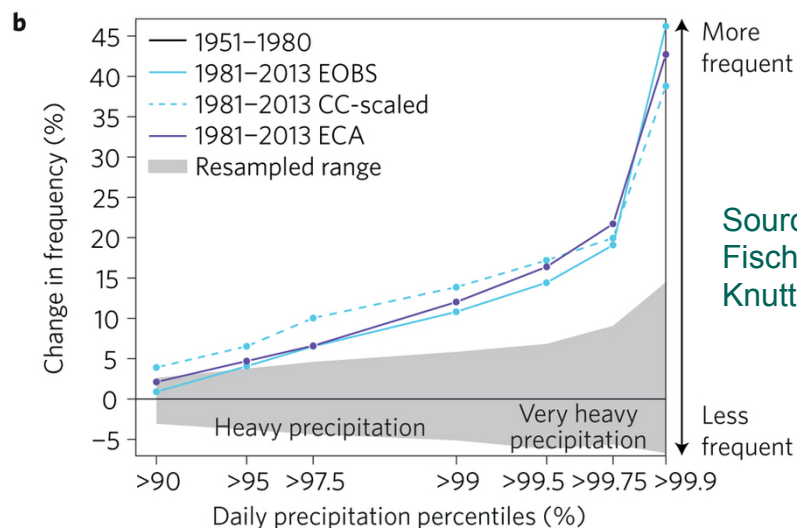


Heavy winter and summer precipitation change (%)



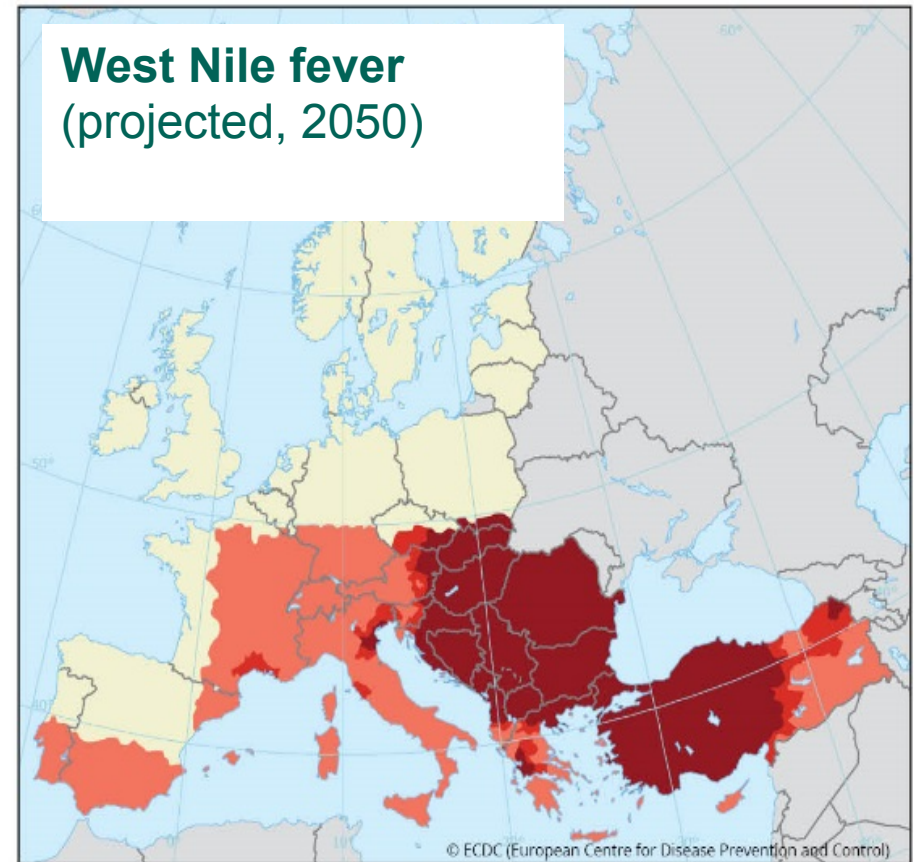
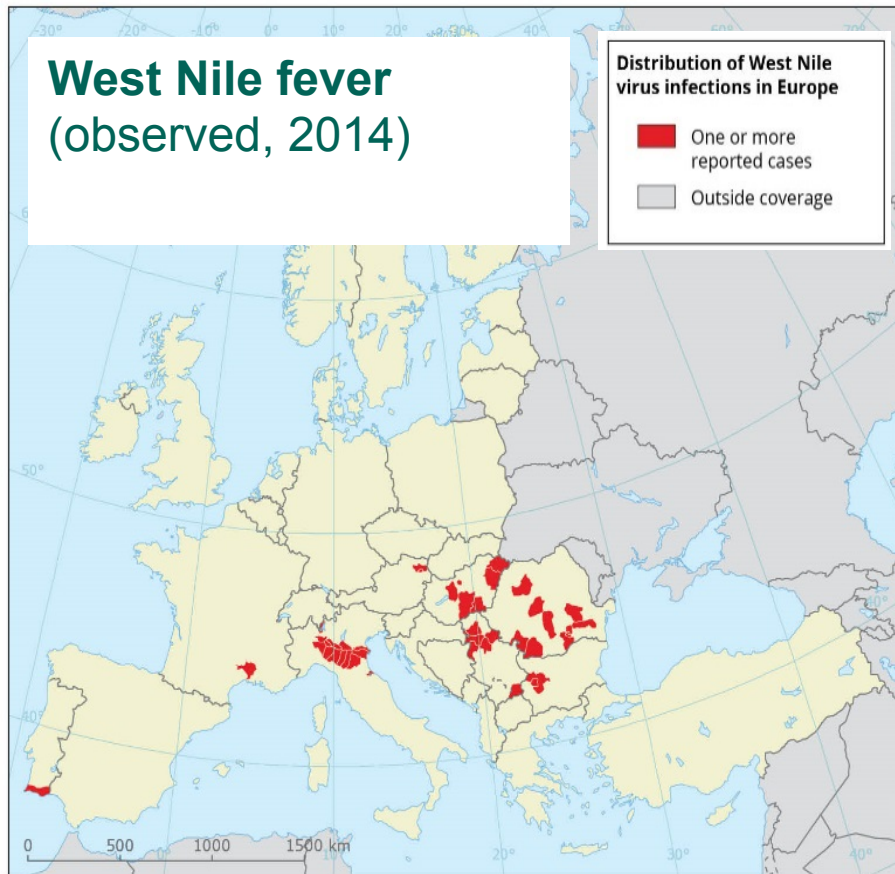
Source: EURO-CORDEX (Jacob et al., 2014)

Heavy daily precipitation (1951–2013)



Source:
Fischer &
Knutti (2016)

Der Klimawandel begünstigt die Ausbreitung von Krankheiten



Source: ECDC
(Semenza et al. 2014)

Nationale Anpassungsstrategien und -pläne in Europa

EEA Member countries	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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											



National adaptation strategy (NAS) in place

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

No policy

* Norway had a NAP before a NAS

Quelle:

eea.europa.eu/data-and-maps/figures/overview-of-national-and-sectoral-1

European Environment Agency

