

# THE GREAT TRANSFORMATION

CLIMATE — CAN WE BEAT THE HEAT?



Sustainable Climate Adaptation

Markus Leitner, Tirana, 24 November 2014

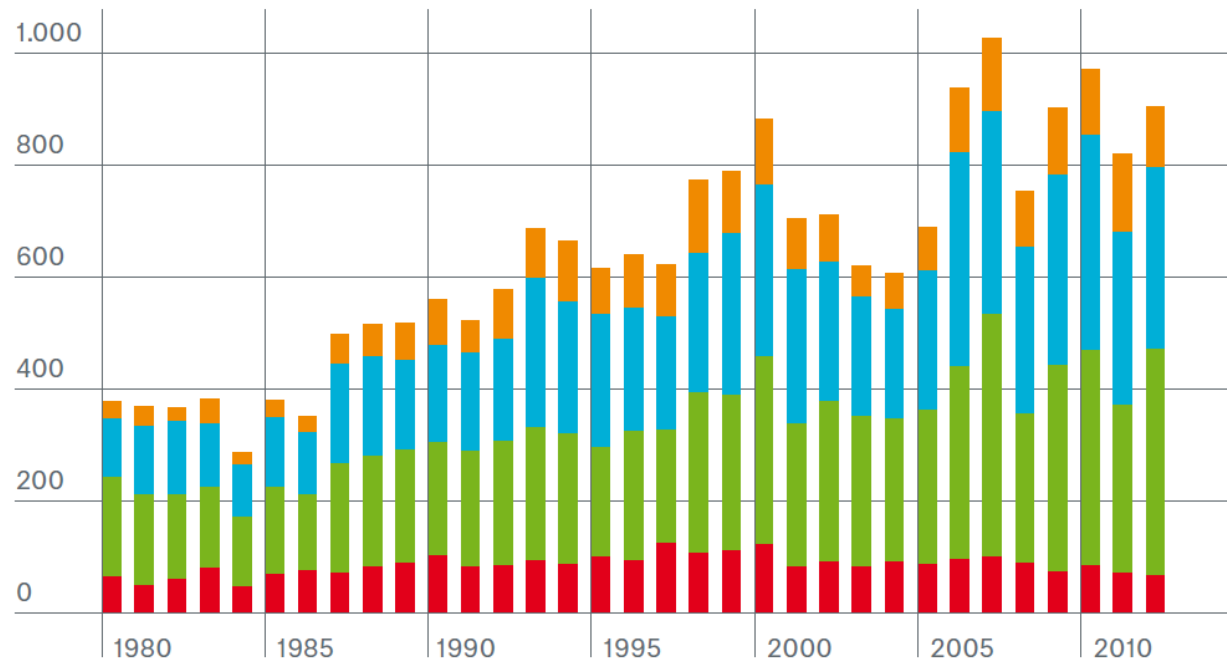
Source: Comic English: **The Great Transformation** - Climate - Can We Beat The Heat?, WBGU, Germany

## Adaptation Options:

- Adaptation aims to manage climate risk to an acceptable level, taking advantage of any positive opportunities that may arise. (Climate-Adapt)
- Adaptation can **contribute to the well-being of populations**, the **security of assets**, and the **maintenance of ecosystem goods, functions and services** now and in the future. (IPCC, AR5, SPM, 1. Nov. 2014)
- Adaptation is place- and context-specific (high confidence). A **first step towards adaptation to future climate change is reducing vulnerability and exposure to present climate variability** (high confidence). Integration of adaptation into planning, including policy design, and decision making can promote synergies with development and disaster risk reduction. Building adaptive capacity is crucial for effective selection and implementation of adaptation options (high agreement, robust evidence). (IPCC, AR5, SPM, 1. Nov. 2014)
- [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_SPM.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPM.pdf)

# Extreme events matter

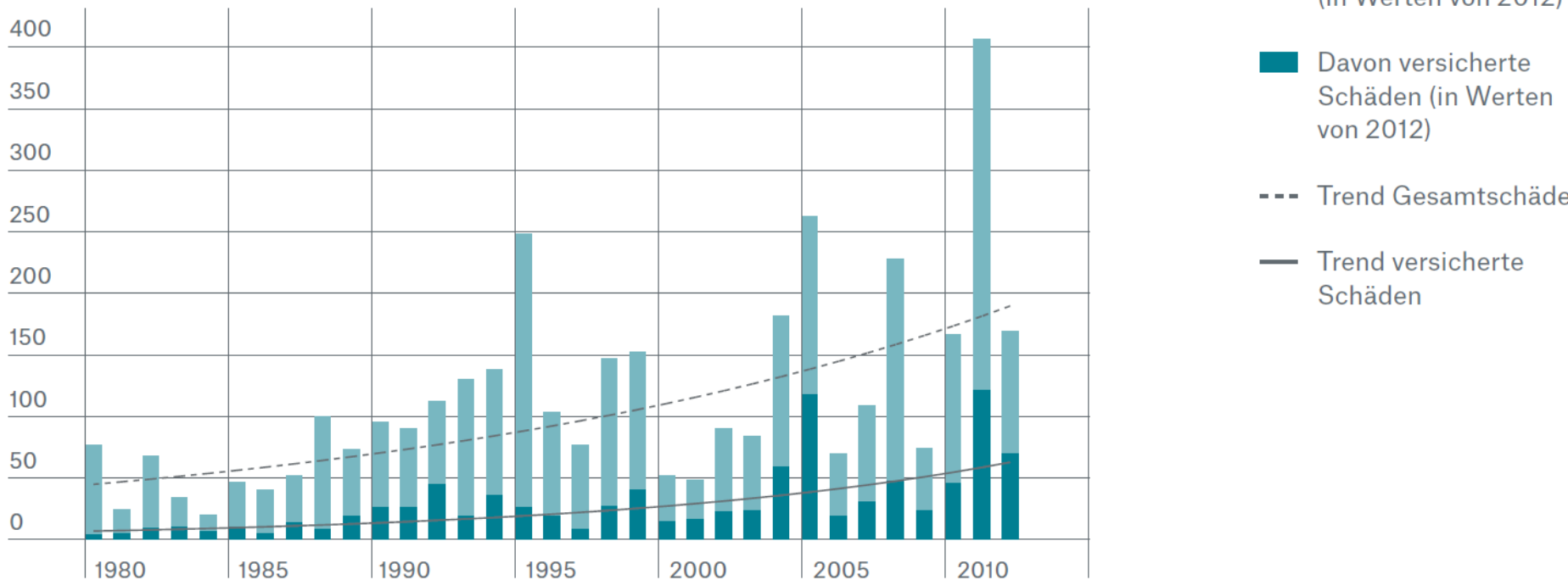
Anzahl Naturkatastrophen 1980 bis 2012



- Geophysikalische Ereignisse:  
Erdbeben, Tsunami, Vulkanausbruch
- Meteorologische Ereignisse:  
Tropischer Sturm, Wintersturm, Unwetter, Hagel, Tornado, lokaler Sturm
- Hydrologische Ereignisse:  
Flussüberschwemmung, Sturzflut, Sturmflut, Massenbewegung (Erdrutsch)
- Klimatologische Ereignisse:  
Hitze-, Kältewelle, Waldbrand, Dürre

...because damage costs are already significant!

Gesamte und versicherte Schäden in Mrd. US\$ 1980 bis 2012



© Münchner Rück (2013): Jahresrückblick Naturkatastrophen 2012

**But note: damages = events x exposure of values**

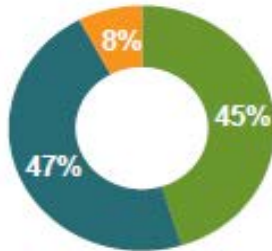
NatCatSERVICE

# Weather disasters in Austria 1980 – 2010

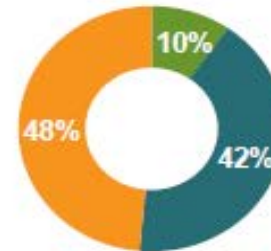
%ages

Munich RE 

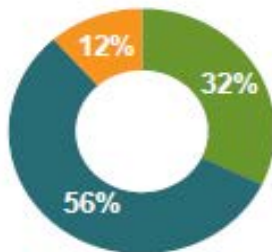
## 232 damage events



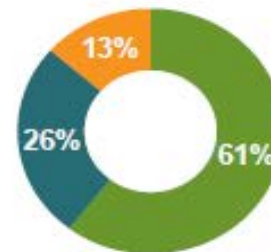
## 710 fatalities



## Total damage 9,67 bln EUR in values of 2010



## Insured damage 2,91 bln EUR in values of 2010



 storms

 Floods, mudflows, landslides and avalanches

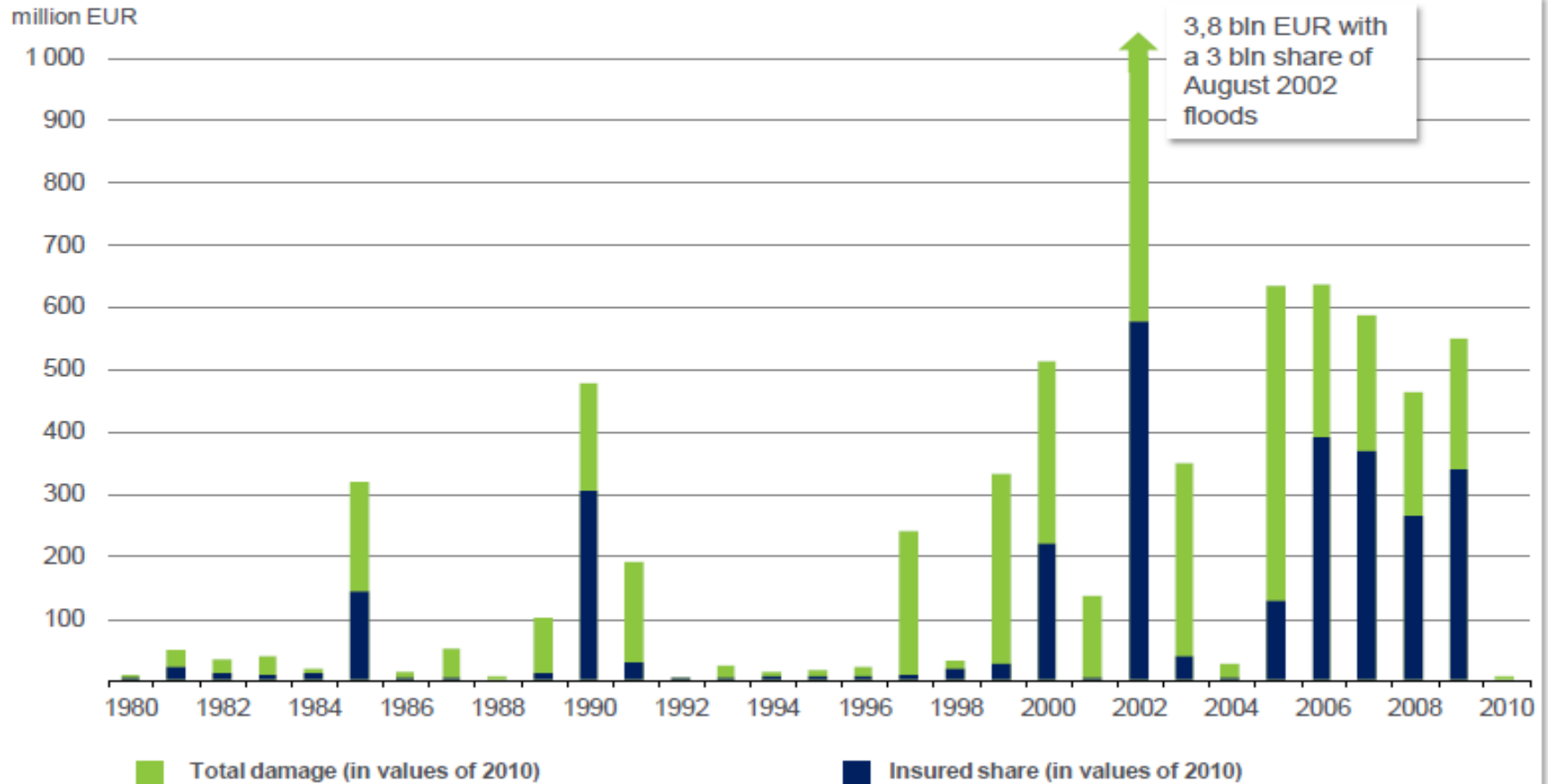
 Temperature extremes, droughts and forest fires

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## Weather disasters in Austria 1980 – 2010

### Total and insured damage costs

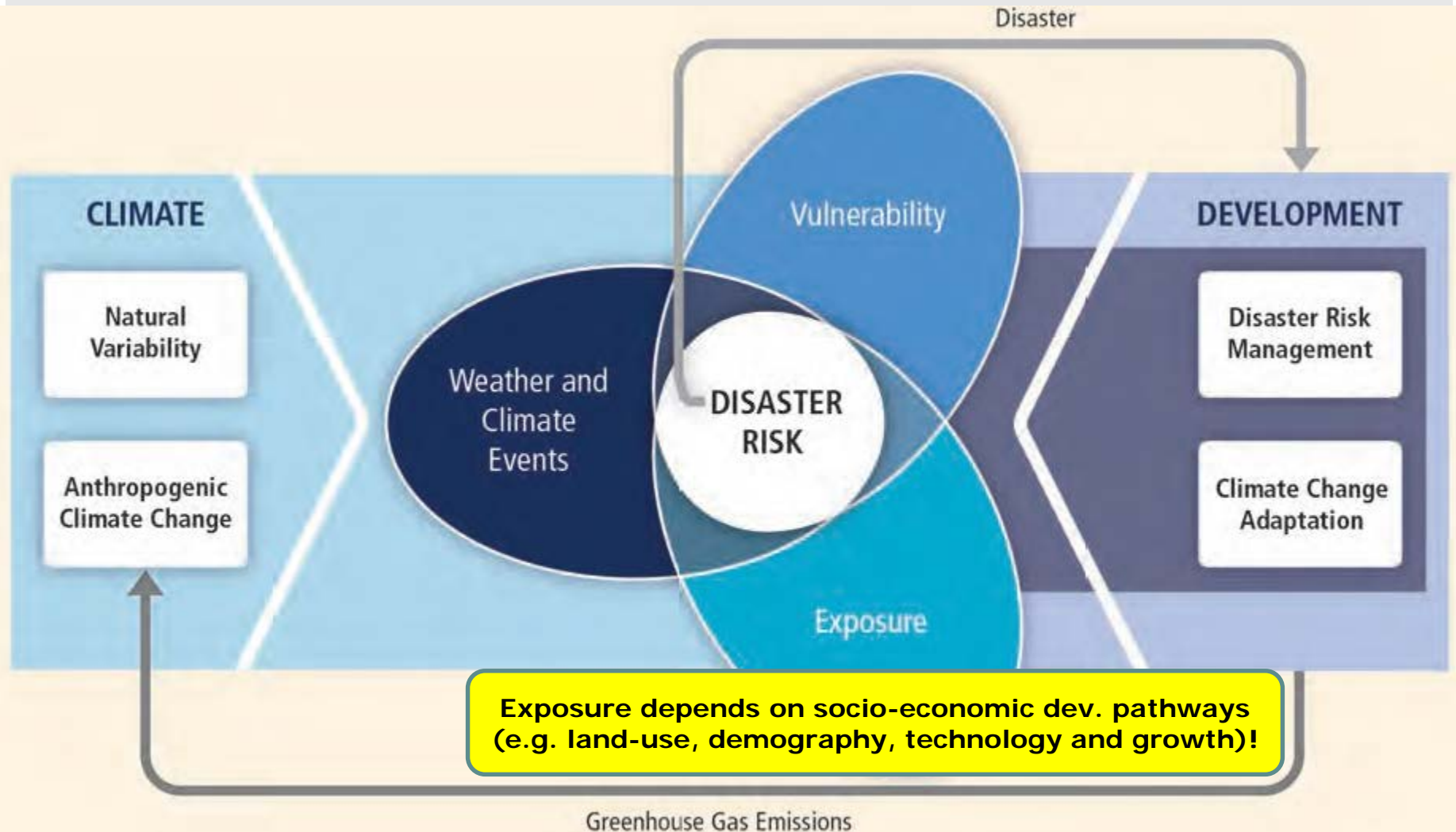
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## Intermediate key messages

- Look at gradual (slow onset) trends as well as extreme (sudden onset) events
- If climate models deliver high range of future extreme event frequencies/amplitudes, work with simple 'if, then-scenarios' to depict potential vulnerability in certain sectors/regions
- If you want to assess potential future vulnerability quantitatively, you need to take socio-economic development (i.e. demographic, land-use, technological change and economic growth/values at risk) into account

# Disaster risk and climate change





# Impacts and Adaptation Options

## Natural system changes

Changes in length of growing

Changes in ecosystem composition

Wetland migration

Private sector adaptation:

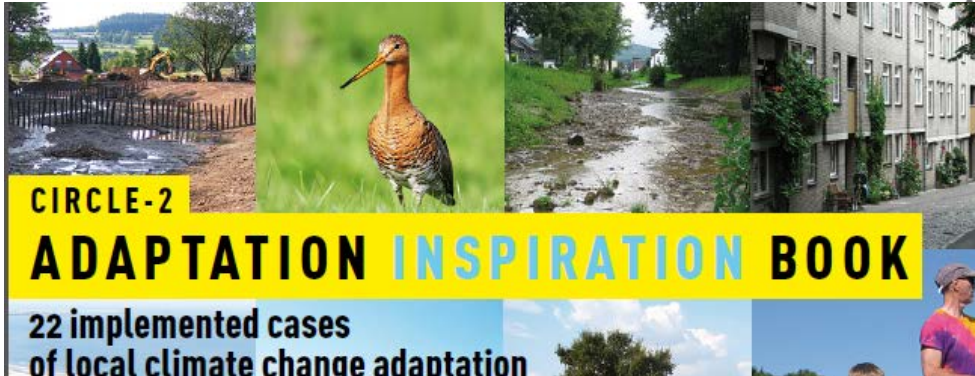
based on IPCC, 2001

Proactive	Reactive
Purchase of insurance (private)	Changes in farm practices
Construction of houses on stilts	Changes in farm insurance premiums
Redesign of infrastructure	Purchase of air-conditioning

# Impacts and Adaptation Options

Public sector adaptation:

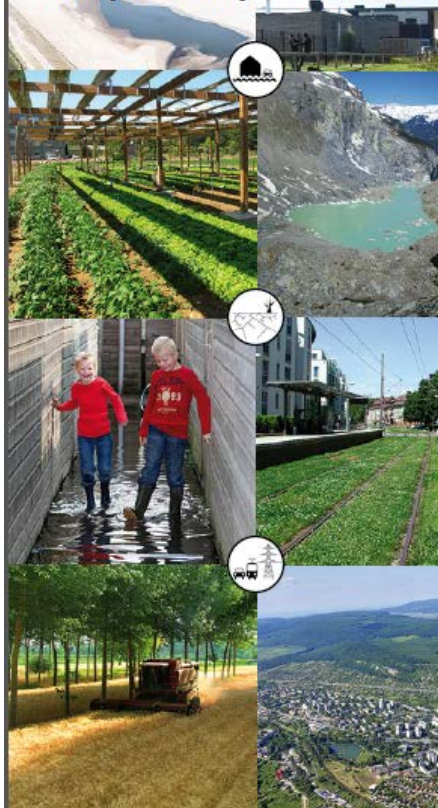
Proactive	Reactive
Early warning systems	Compensatory payments, subsidies
New building codes, design standards	Enforcement of building codes
Incentives for relocation	Beach nourishment



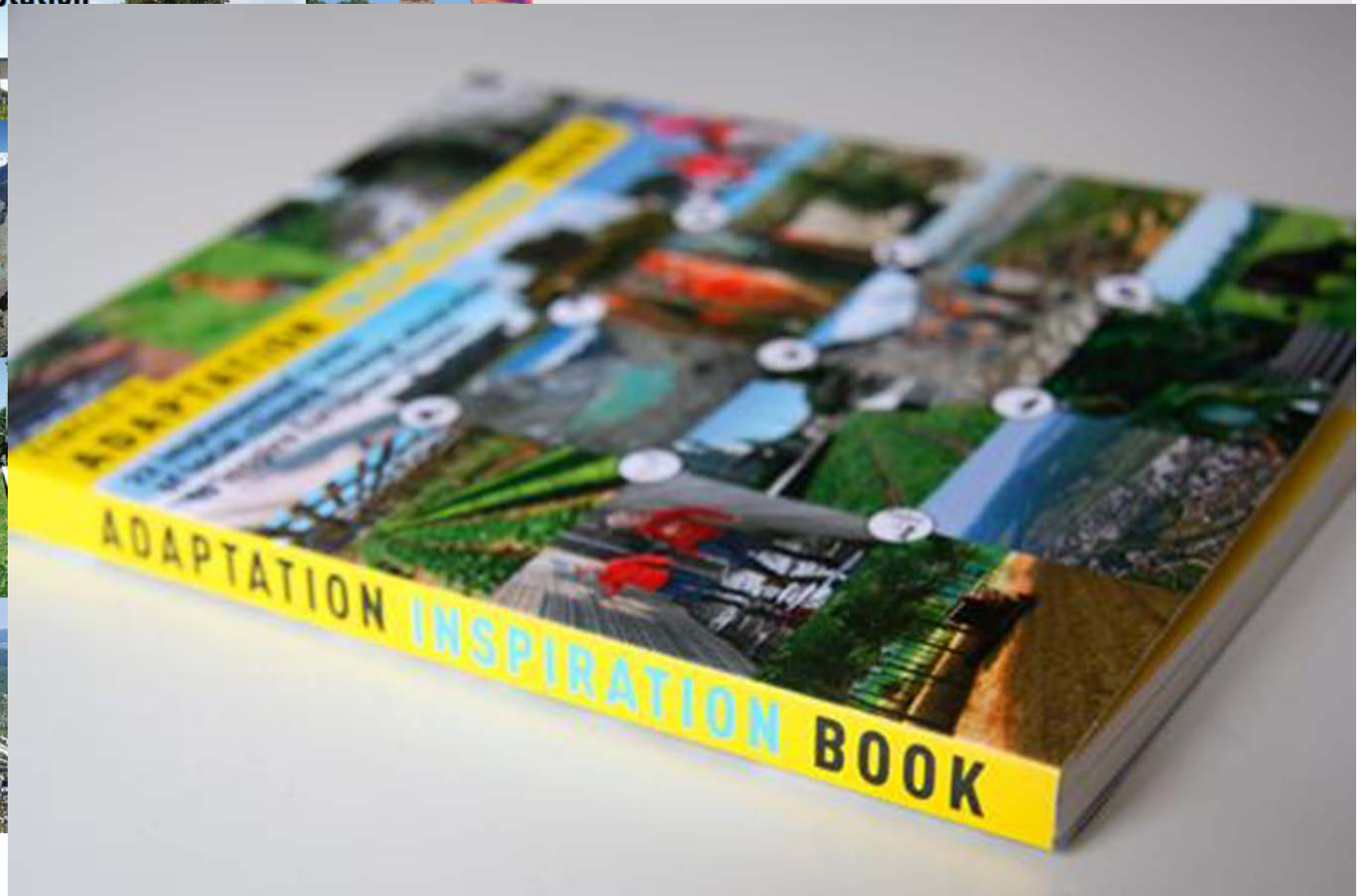
CIRCLE-2

## ADAPTATION INSPIRATION BOOK

22 implemented cases  
of local climate change adaptation  
to inspire European citizens



# Adaptation Inspiration Book







# Adaptation Inspiration Book

Overview of 22 inspiring case studies that helped adapt a region in Europe to the impacts of climate change.



# Climate Adaptation INFOBASE

- a publicly accessible, online database on Climate Adaptation research
- Consists of more than 1.400 projects
- Link: <http://infobase.circle-era.eu/>
- Analysis:
  - Executive Summary - [http://www.circle-era.eu/np4/%7B\\$clientServletPath%7D/?newsId=512&fileName=Executive\\_Summary.pdf](http://www.circle-era.eu/np4/%7B$clientServletPath%7D/?newsId=512&fileName=Executive_Summary.pdf)
  - Preliminary Findings and Key Questions - [http://www.circle-era.eu/np4/%7B\\$clientServletPath%7D/?newsId=554&fileName=CIRCLE\\_2\\_Preliminary\\_Findings\\_Climate\\_Ad.pdf](http://www.circle-era.eu/np4/%7B$clientServletPath%7D/?newsId=554&fileName=CIRCLE_2_Preliminary_Findings_Climate_Ad.pdf)



# Climate Adaptation INFOBASE

## CLIMATE ADAPTATION RESEARCH IN A LARGER EUROPE:

AN ANALYSIS AT LOCAL AND  
NATIONAL SCALES

DRAFT VERSION #1: October, 2012



## CLIMATE ADAPTATION RESEARCH IN A LARGER EUROPE:

AN ANALYSIS AT  
NATIONAL SCALE

Preliminary Findings & Key Questions  
March 2013



# Contact & Information

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