FLOOD RISK MANAGEMENT | SCOPE & MILESTONES

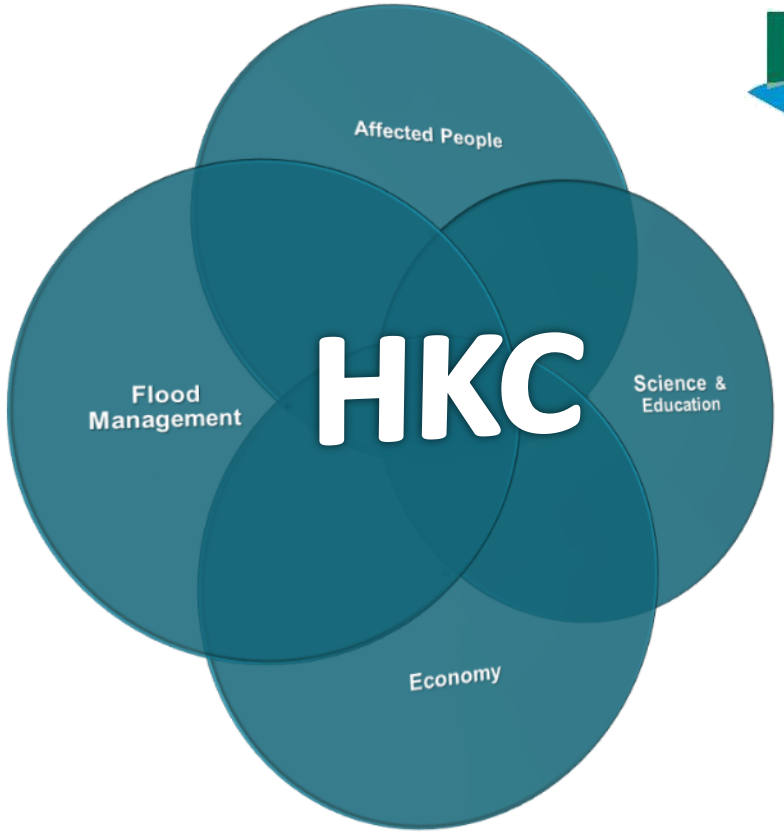
GIZ – CONNECTIVE CITIES | 03/16/2022

Georg Johann

Image: The Atlantic

OUR MISSION

- ✓ Deliver information in an understandable way
- ✓ Provide practicable solutions
- ✓ Support self-initiative



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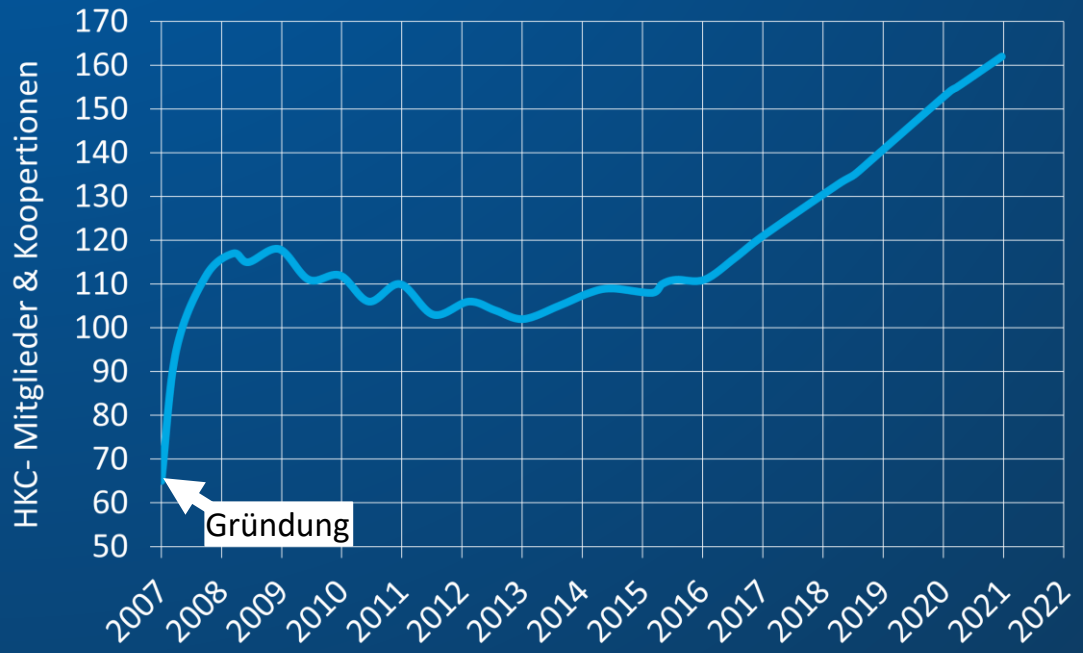
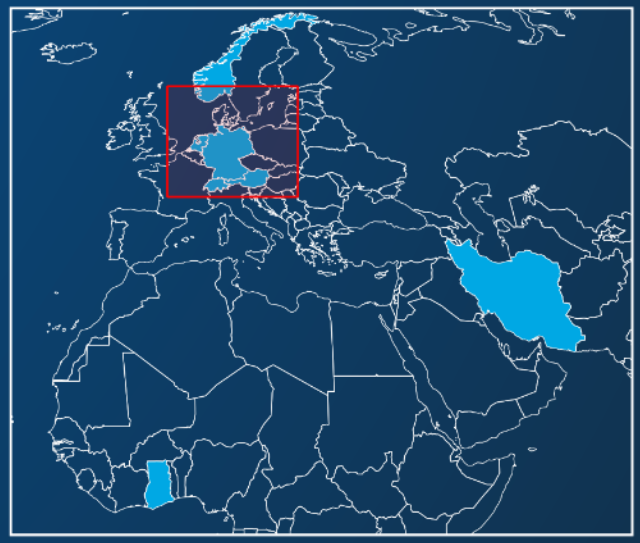
HKC Hochwasser Kompetenz Centrum e.V.

162 MEMBERS AND 13 COOPERATIONS

Development of members & cooperations



Locations of the members, cooperations and International Projects



Flood and flooding precautions

… are a community task

Building precautions

Risk provisioning

Prevention

Precautionary information

Behavioural precautions

Increase in natural water retention

Technical flood protection

Provision and preparation of disaster response

Dealing with an event

Event

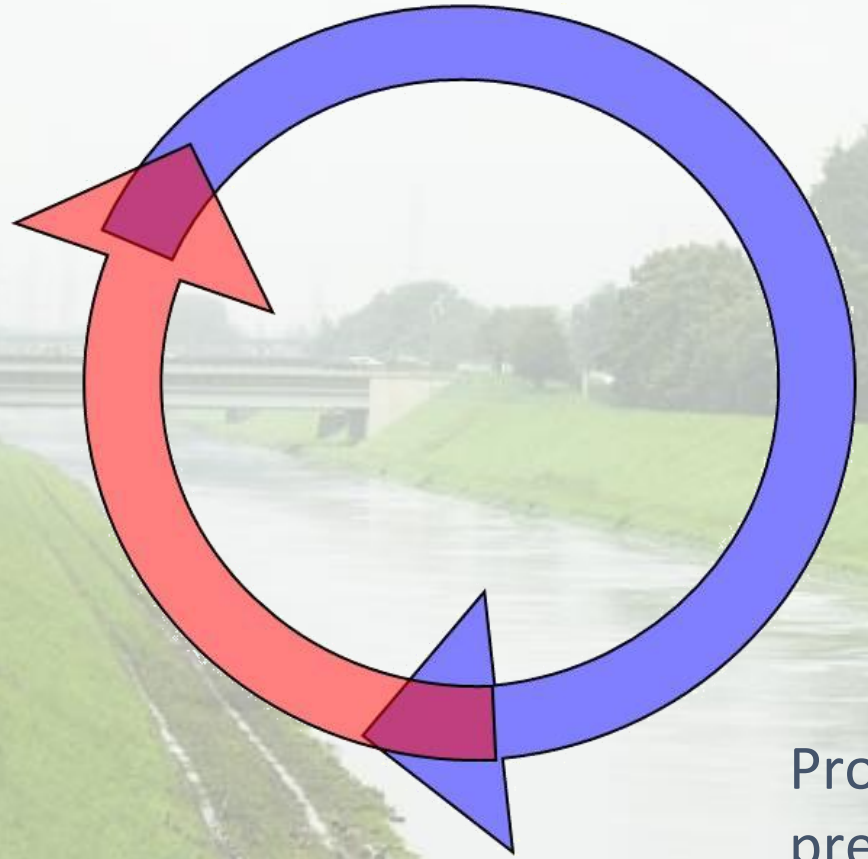
Management operation

Rebuilding/ rehabilitation

Emergency aid Disaster response

After-care

Precautionary land use



Sustainability

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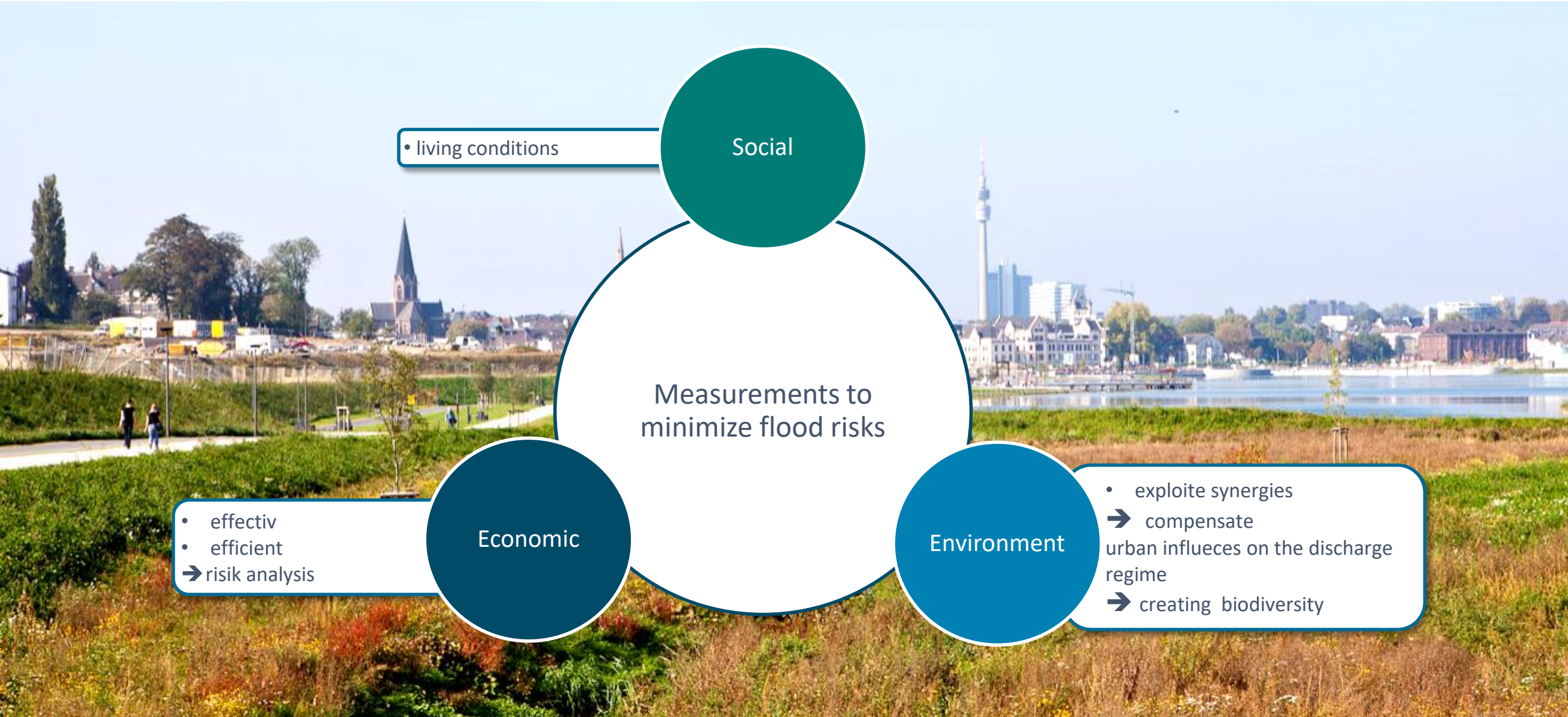
Our guiding principle of our flood management



QUESTISTIONS

1. What is the problem and what are the threats posed by a hazard?

2. Who considers this hazard a problem?

   Legal institutions or governance structures?

   Why do they consider this hazard of concern?

3. What funding sources, resources, and capacity are available?

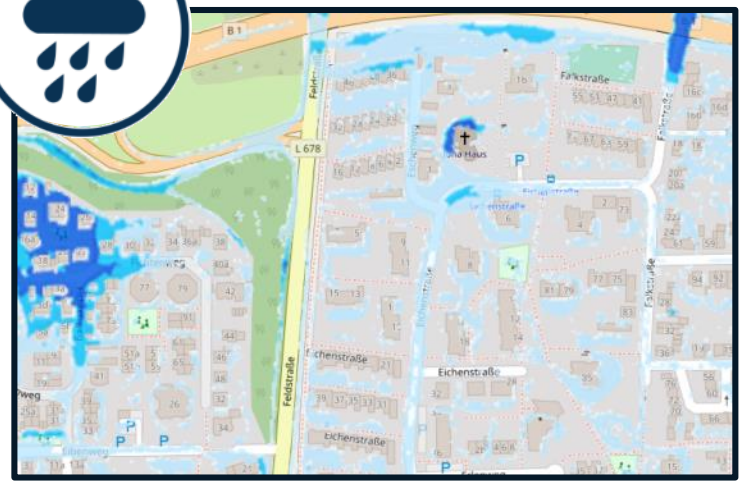
4. What mitigation actions are proposed?

5. Is there reliable data and sufficient time to prepare for the next hazard?

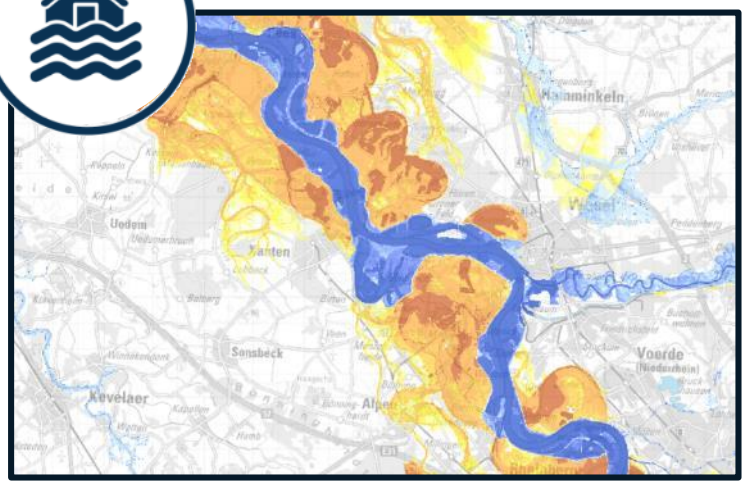
FLOOD HAZARD COMMUNICATION

FLOOD HAZARD MAPS: MUST BE PUBLISHED BY THE PUBLIC AUTHORITIES

STORM SURGES FROM THE SEA



HEAVY RAIN

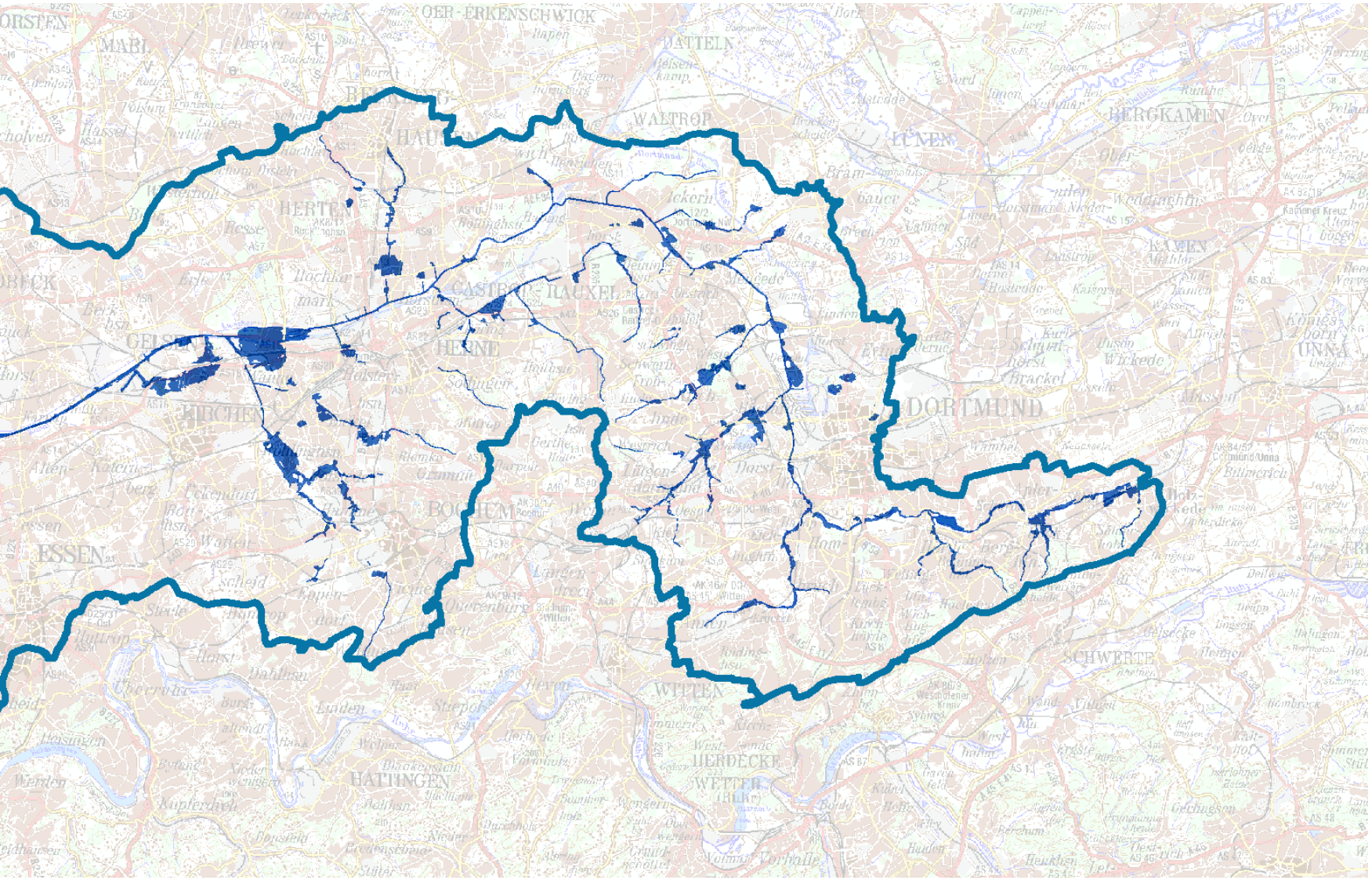


RIVER FLOODS

Everybody has to know:

- That Flood Hazard Maps are existing
- How to read Flood Hazard Maps
- What the messgage means
- What to do to reduce the own risk

What could happen:
Extrem Flood upstream Emscher



616 Mio. €

Damages at houses

18.500

Affected people

only fluvial flood – no pluvial flood

What could happen:
Extrem Flood downstream Emscher

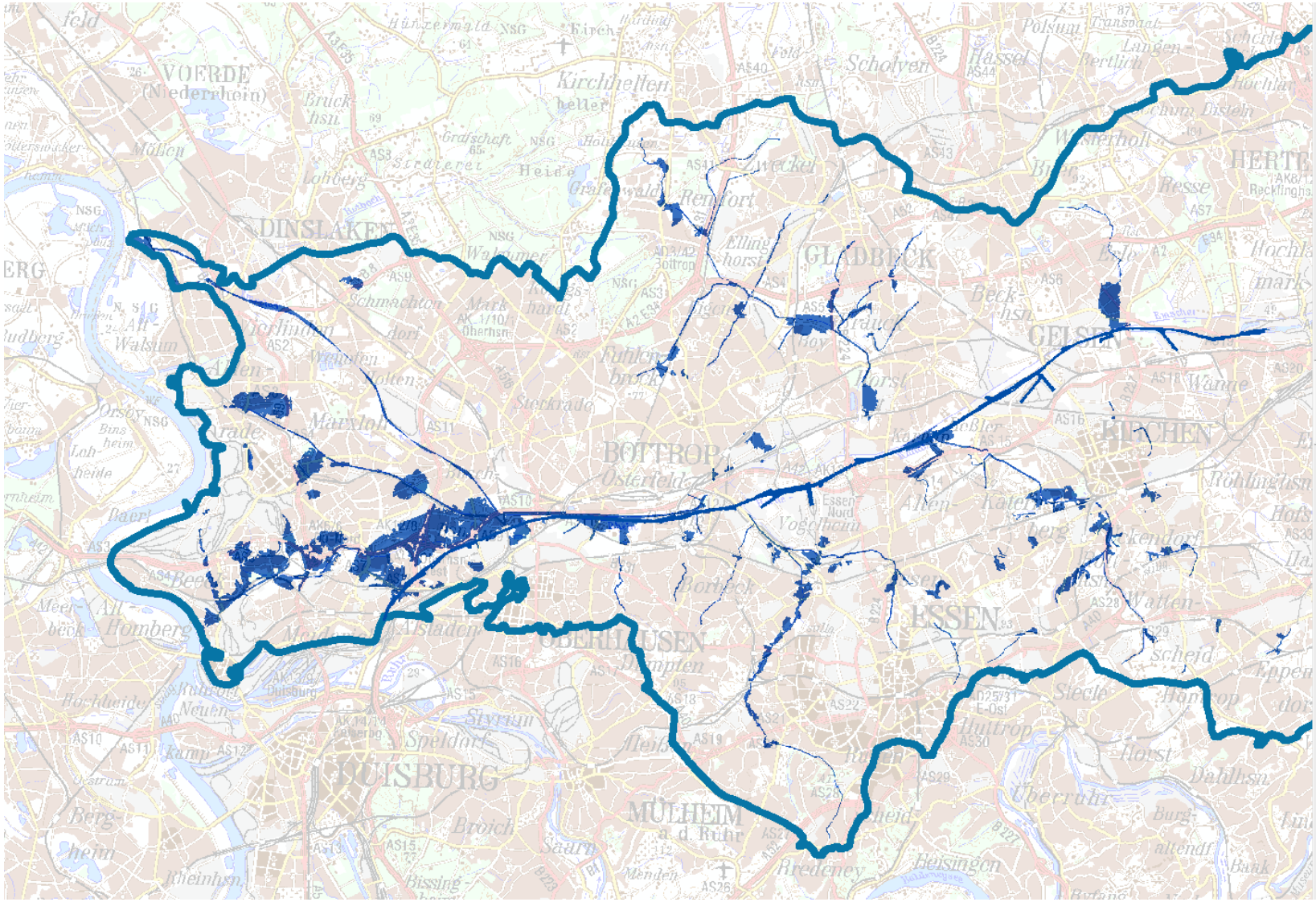
2.980 Mio. €

Damages at houses

43.400

Affected people

only fluvial flood – no pluvial flood



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LAW:
Development planning is a critical factor

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Development planning is a critical factor

Flood Early Warning System

terrestical measurement data

radar measurement data

met. forecast

Online-Models

areal precipitation based on watershed

runoff-prediction up to 7 days

Current status report of flood situation

EG/LV Hochwasserlagebericht Freitag 25.10.2013 – 15:12 Uhr

Berichtswoche: 43. KW 21.10.2013 bis 27.10.2013

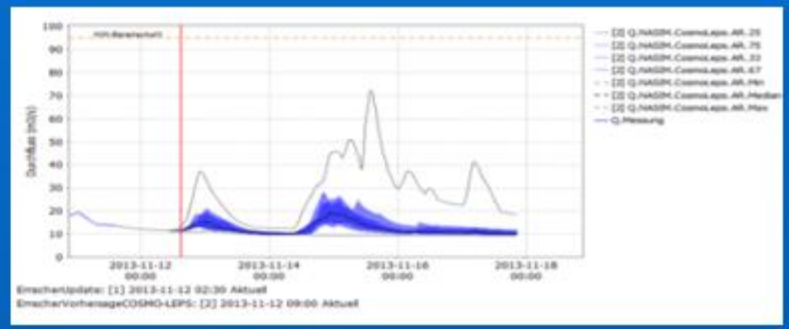
Thursday
0.4 mm precipitation sum 24.10.2013

Friday
0.6 mm measurement (08:30–14:15 25.10.2013)
27.2 mm prediction

Saturday + Sunday
0.7 mm prediction 26.10.2013
7.2 mm prediction 27.10.2013

Emscher

Online-Models



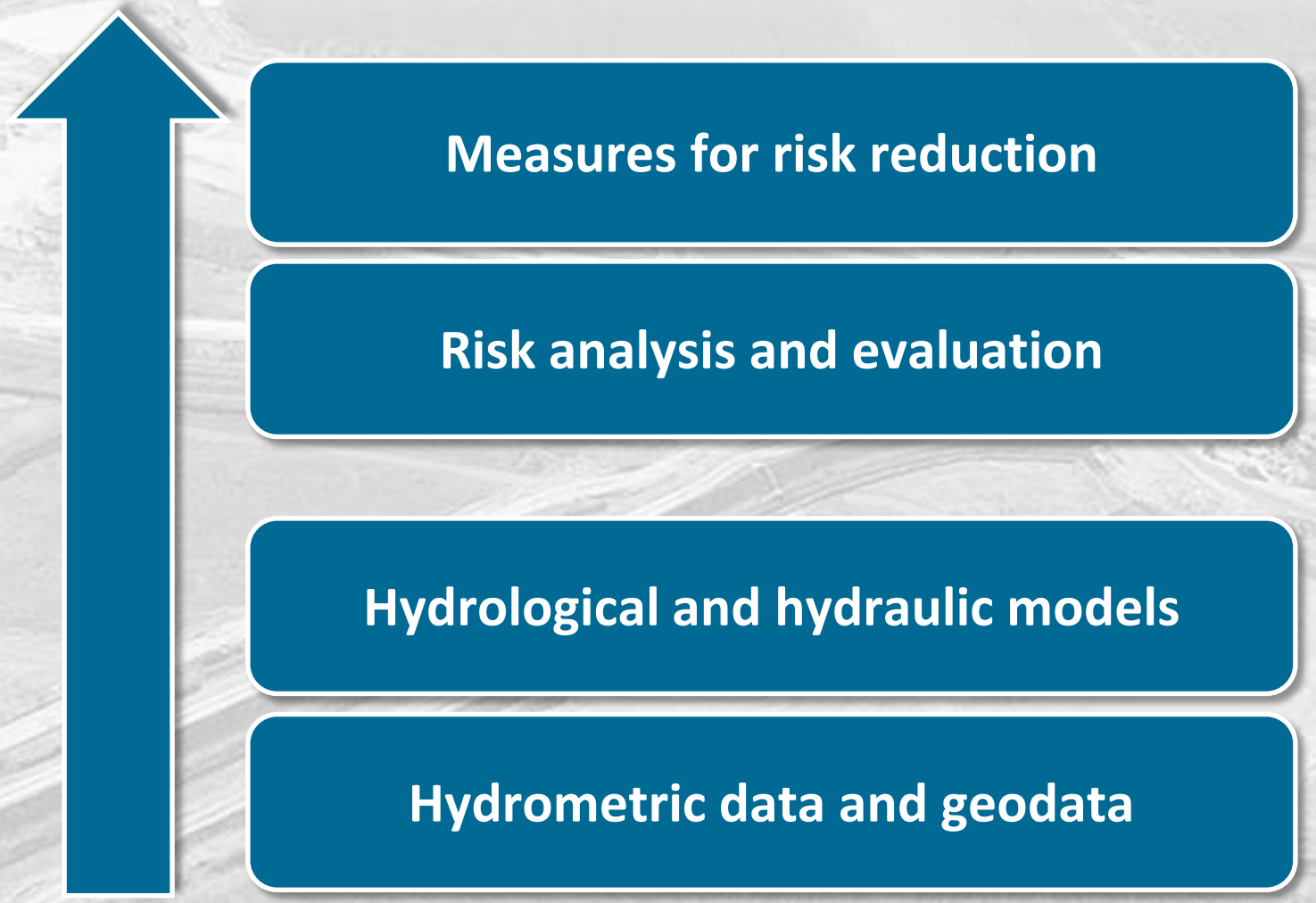
Automated SMS- warning and alert system

10.08.2015 23:12

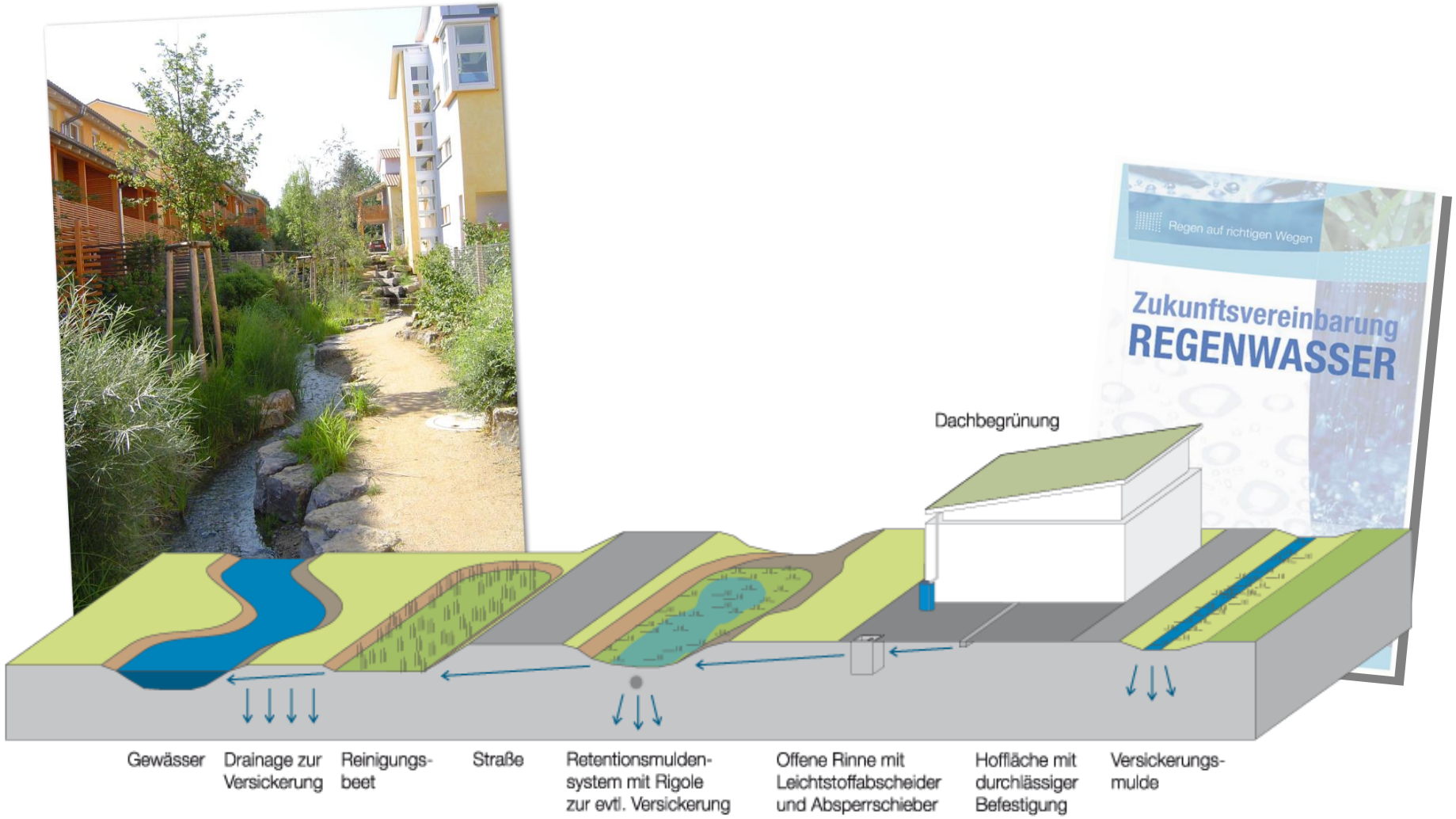
HOWIS-Portal Emscher: HOCHWASSERBEREITSCHAFT

HOWIS-Portal Lippe: VORWARNUNG

ADAPTION:
Planning measures to reduce flood damage



Decentral rainwater management as a component of flood provisioning



Roof greening
Water course Drainage for seepage Cleaning bed Street Retention basin system with infiltration ditch for possible seepage Open channel with light contaminant separator and shut-off valve
Yard surface with permeable surface Infiltration basin

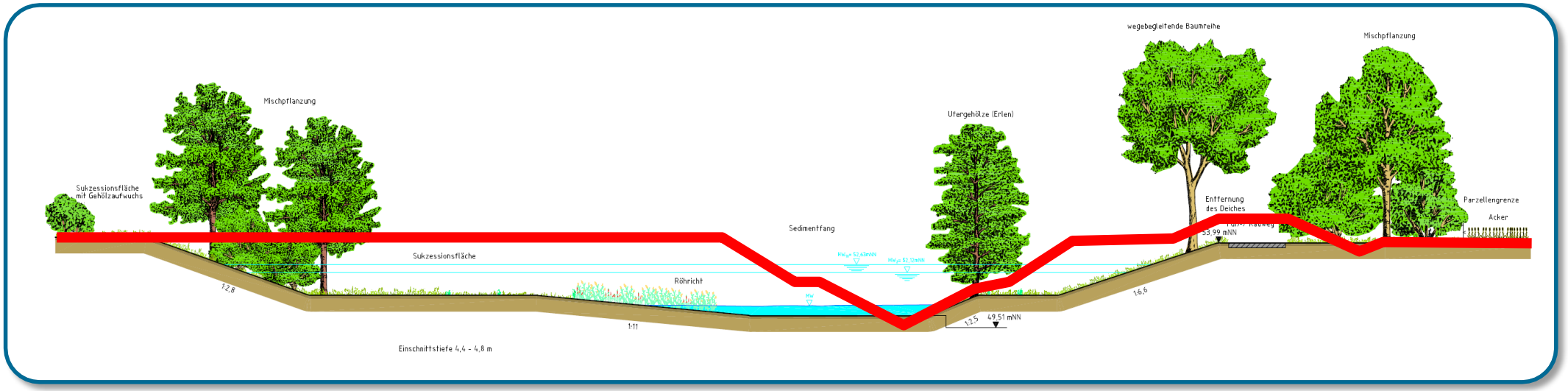
Retention measueres

ThyssenKrupp Quartier in Essen

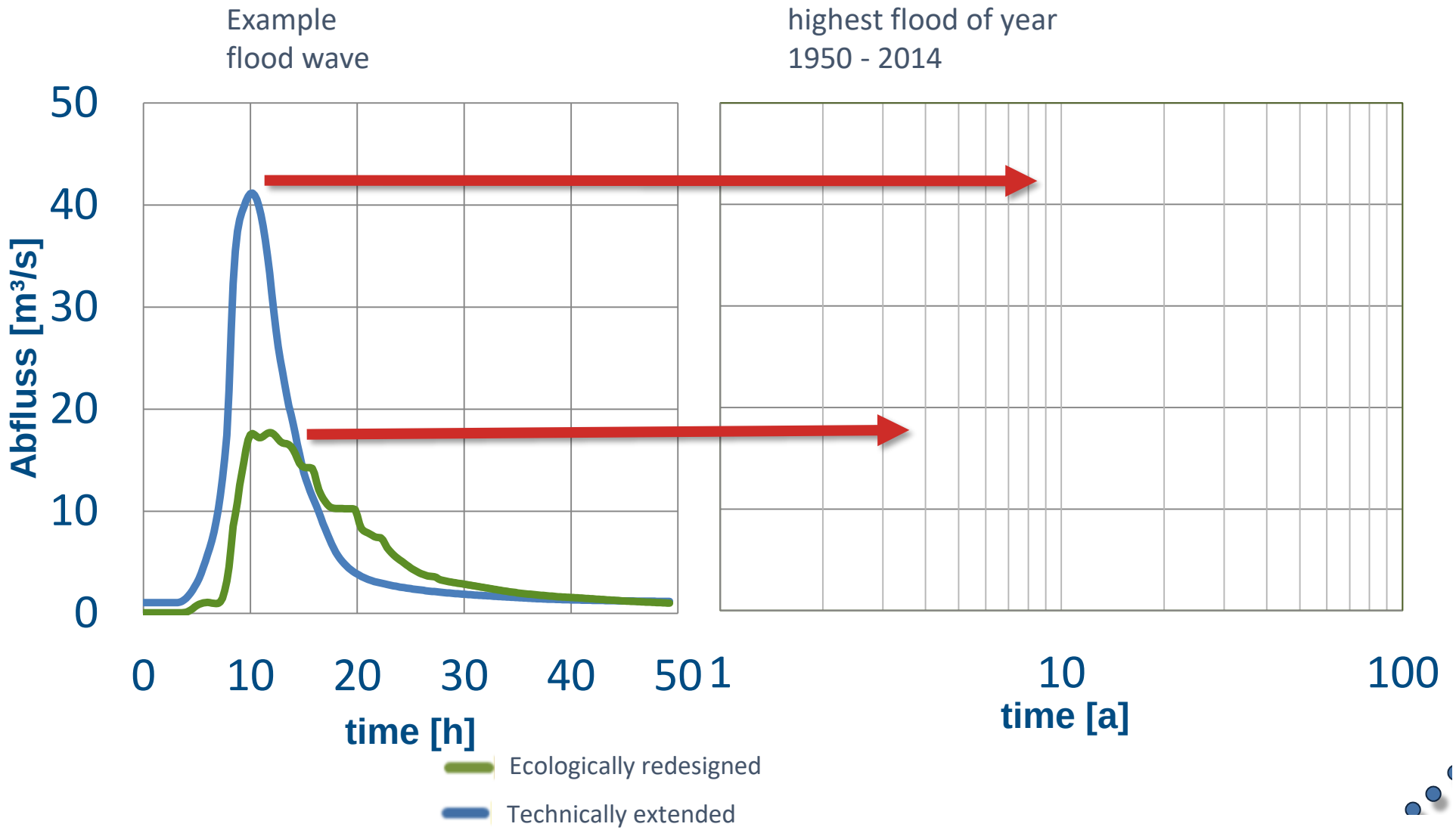
Stadtgarten in Bottrop

Siedlung Bausemshorst in Essen

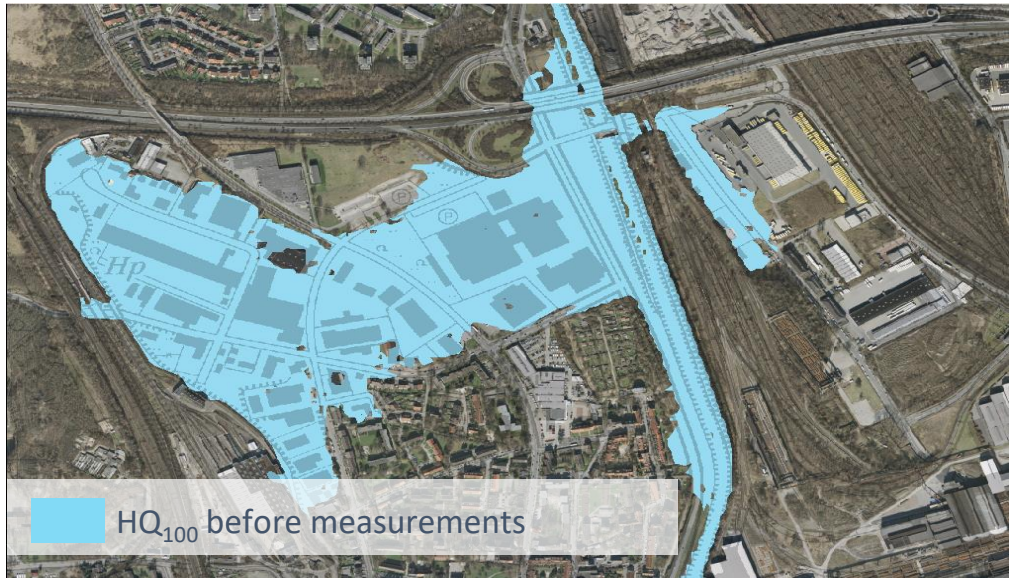
Ecological watercourse redesign



Effect of Ecological watercourse redesign on flood behavior



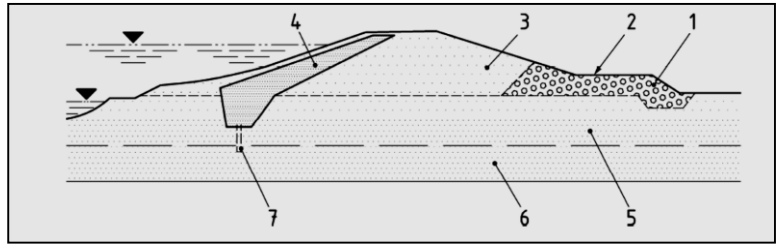
Flood area before and after river redesign

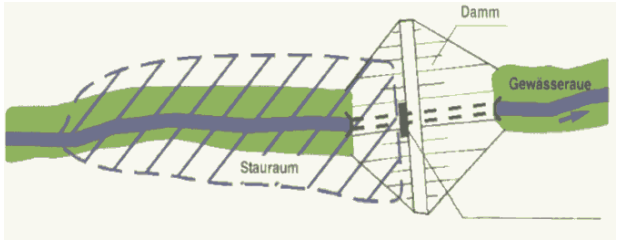


Building precautions

Technical flood protection

- **Dikes**
  - Earthwork structures with specific characteristics
- **Flood control reservoir**
  - Earthen dams with retaining structure
  - Curbs floodwater run-off
  - Artificial retention area, aims to cap flood peaks
- **Flood protection (HWS) walls**
  - Fixed walls made of various materials (concrete, sheet pile walls etc.)
  - Can be washed over
- **Partly mobile HWS**
  - Stationary fixings
- **Mobile HWS**
  - Easily moved flood protection systems





Damm – Dam
Stauraum – Retention area
Gewässeraue – Watercourse meadow

Flood Precautions have their limit

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Options & limitations

Dike reinforcement programme

CONSEQUENCES OF GLOBAL WARNING

- ✓ Flood hazrad is rising
- ✓ Uncertainty of propability of flood event is rising

New or bigger flood protection facilities

- \- Uncertainty for dimensioning high
- \- Space available is hard to find
- \- Planning and construction is expensive and takes a long time

Self-provision

- \+ Measures are cost-efficient
- \+ No dependency on superior planning
- \+ Applicable for planned and existing houses

FLOOD RISK MANAGEMENT
IN TIMES OF CLIMATE CHANGE AND URBANISATION

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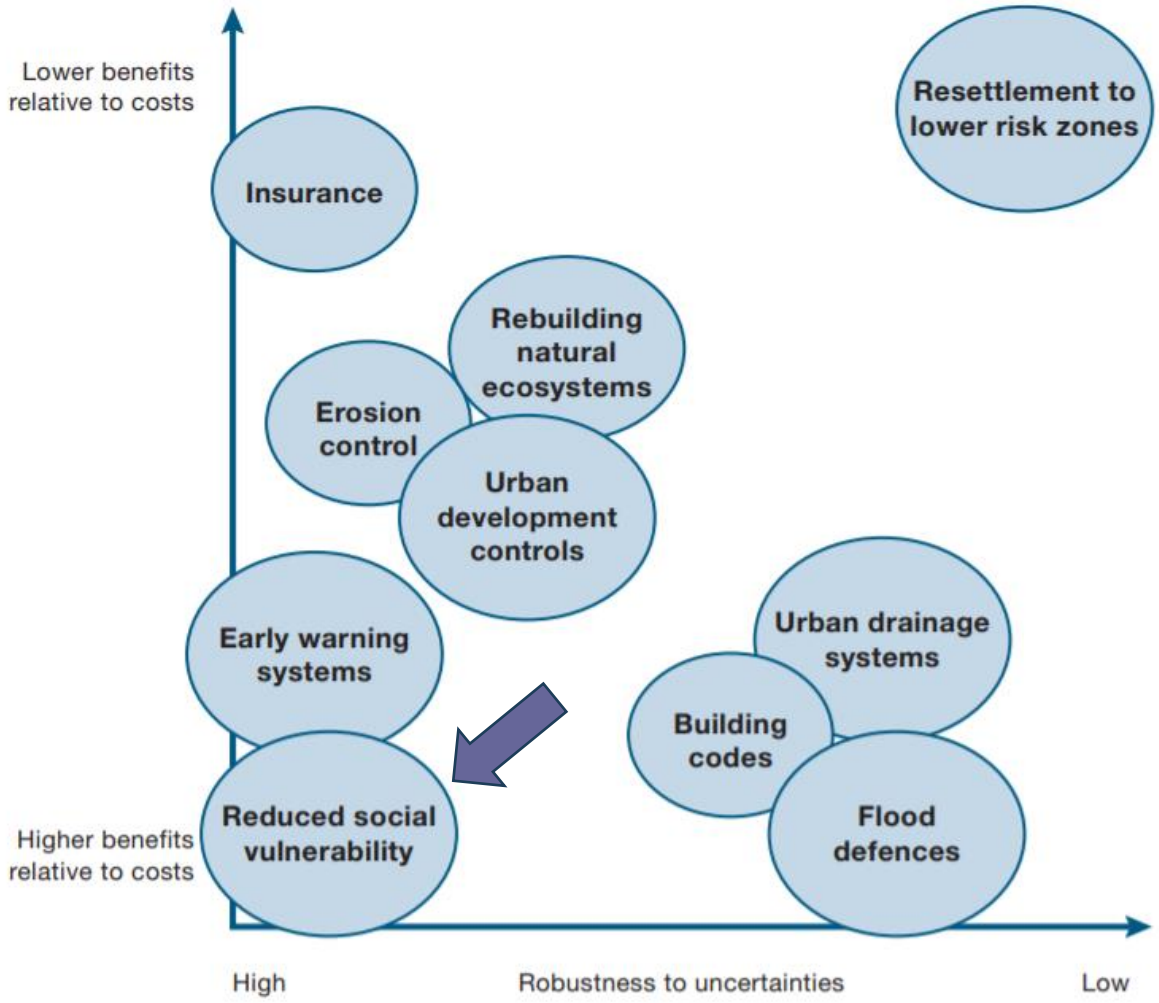
Enlargement of technical measures

Communication of flood risk to empower citzens‘ resilience

- behavior
- measures at the own house
- planning of the development
- nature based solutions

„No-regret-measures“

RELATIVE COSTS AND BENEFITS OF FLOOD MANAGEMENT OPTIONS



Source: Adapted from Ranger and Garbett-Shields 2011

Image: Gideon Mendel

CITIZENS‘ RESILIENCE IS NOT IN FOCUS TODAY

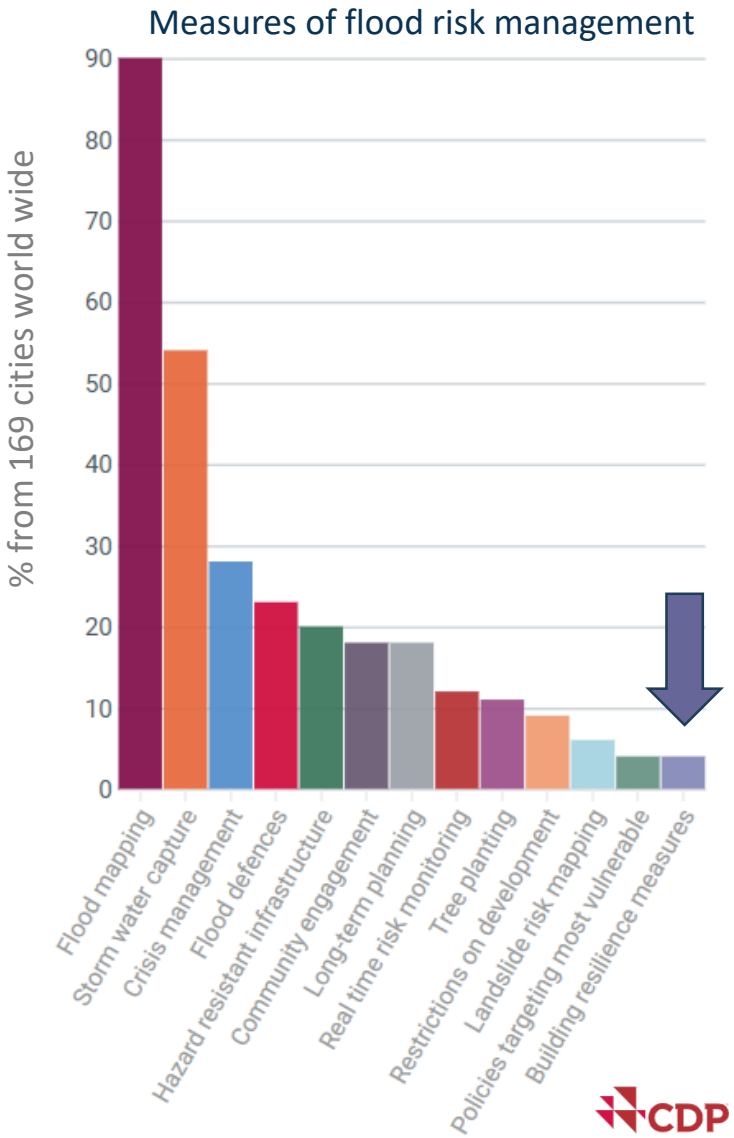


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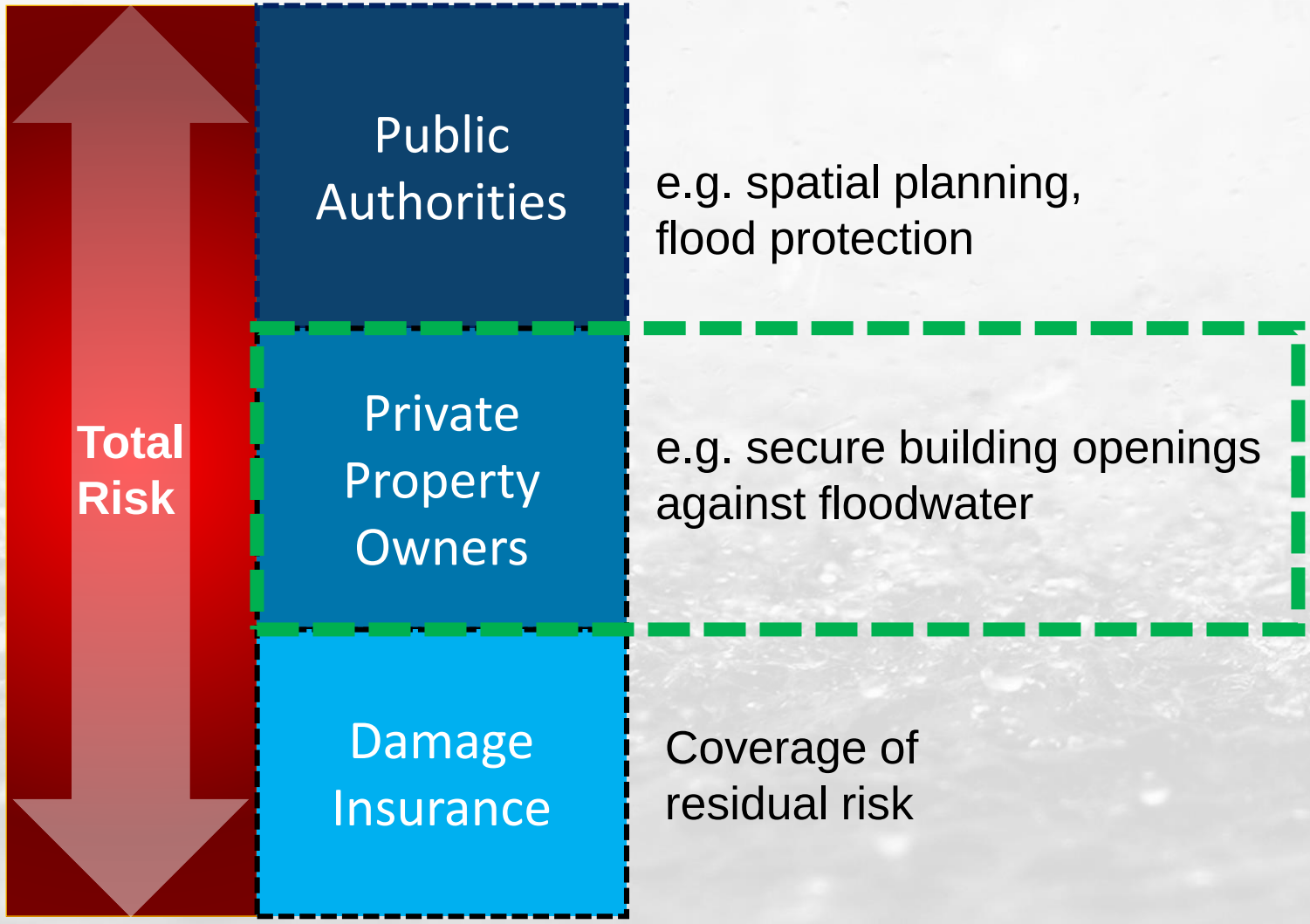
Image: Grimshaw

RISK IN PERSPECTIVE



FLOOD LABEL

ANALYSIS OF THE RISK OF PLUVIAL FLOOD: SELF PRECAUTIONS ARE MEASURABLE AND PAY OFF

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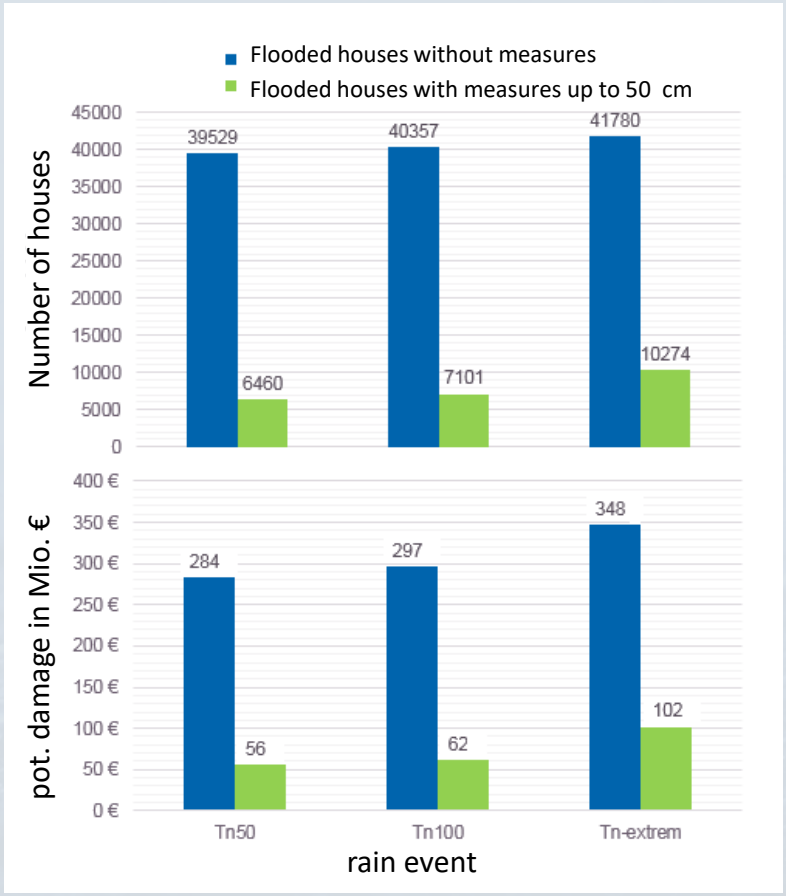
Ø pot. Damage ~ 10.000 €
Max. pot. Damage ~ 270.000 €

without measures



80 %

damage reduction
for the society
due to self provision

FIELDS OF APPLICATION

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House owner

Municipality

Region

Country

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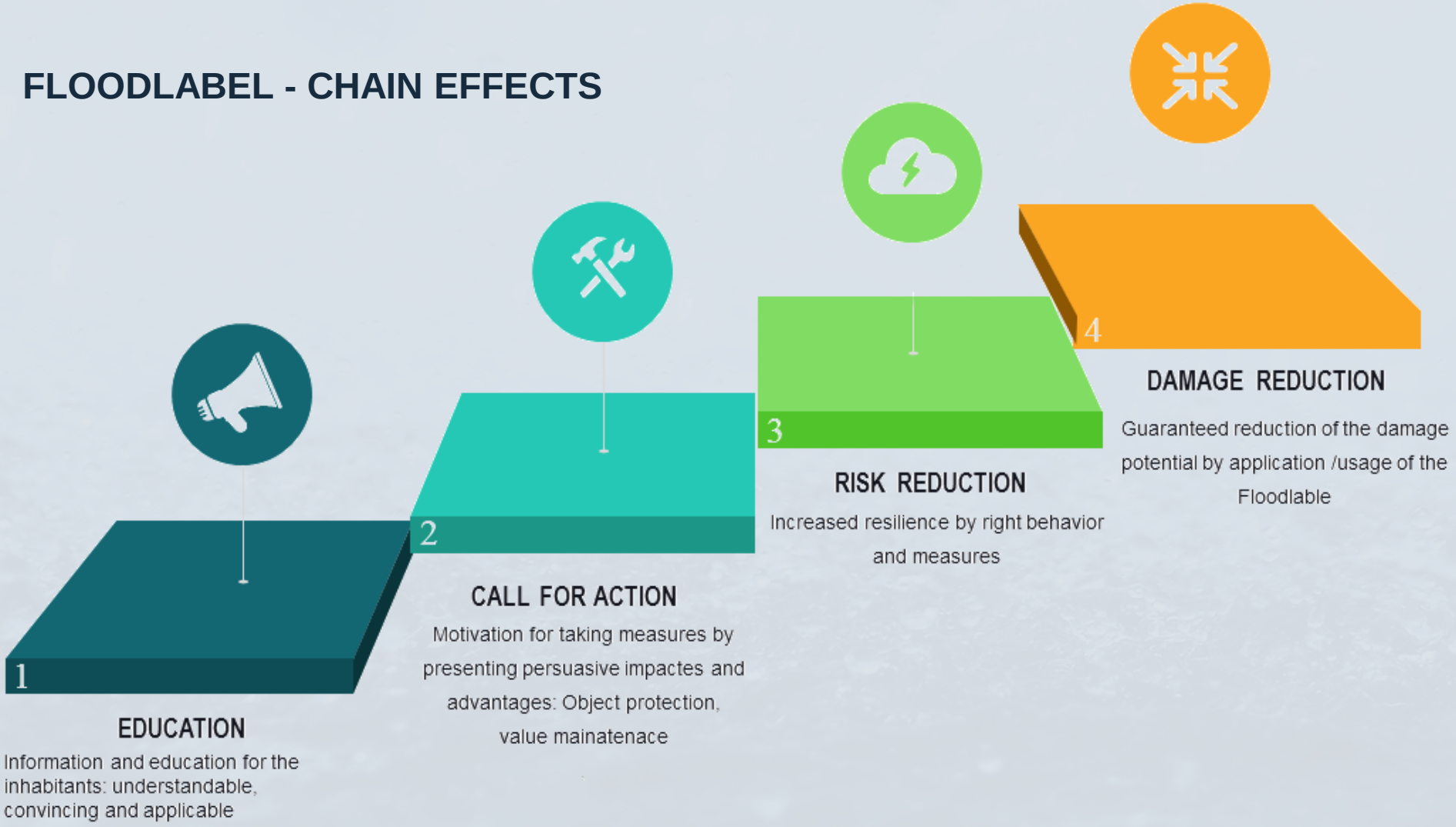
FLOODLABEL - CHAIN EFFECTS




Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe
Floodlabel: Home
https://www.floodlabel.com
Suchen
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WELCOME TO FLOODLABEL.COM
Floodlabel.com is provided to you by the Flood Competence Center (HochwasserKompetenzCentrum e.V.).
Our purpose is to provide advice and training in all matters of flood- and stormwater risk management, as well as the promotion of science, research and education.
Our website provides you with information on flood hazards and property flood protection measures along with an overview of our projects.

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HOWAMAN

“Sustainable strategies and technologies for flood risk management in arid and semiarid areas”

PARADeS

“Participatory assessment of flood disaster prevention and development of an adapted coping system in Ghana”

FLOODLABEL GHANA UND IRAN 2020-2023

PARADeS

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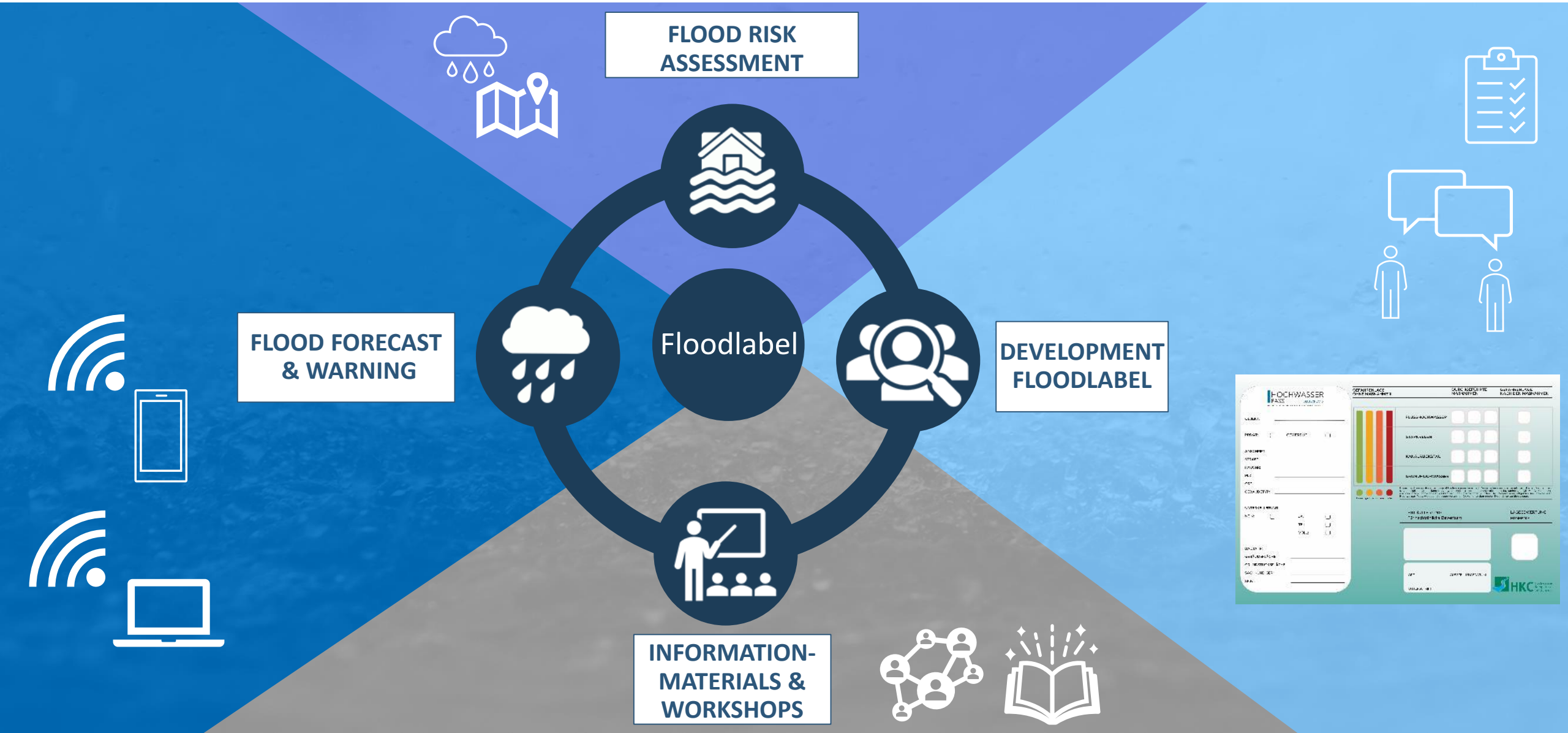


PARADeS

FLOODLABELGhana – Form

Documentation of the Flood Risk (natural + measures)

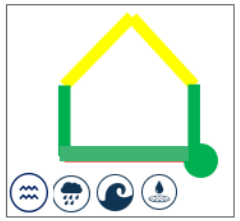
Roof

Foundation

Wall

Sewer Backflow

Final Assessment



FLOOD LABEL GHANA

Personal precautions against floods

Adress of property

Digital address:

Street: House Number:

Post Code: City:

Region: District:

Building information

Building type:

Basement: Yes No Year of construction

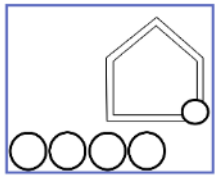
Building footprint (size): Plot area (size):

Recommendation of personal precaution measures:

Place:

Date of issue:

Signature:



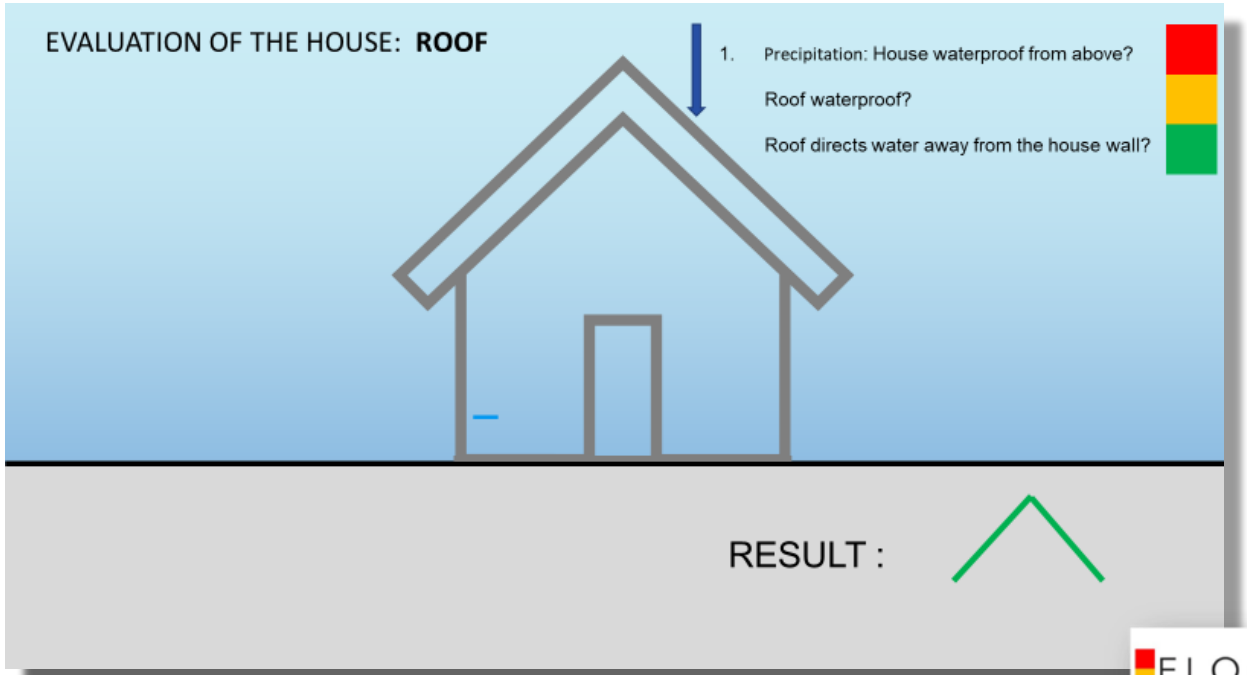
Your Flood Risk

This Floodlabel shows the current hazard situation by visual inspection and the measures already taken. For all further details, please refer to the accompanying documents, which have been signed by your expert.

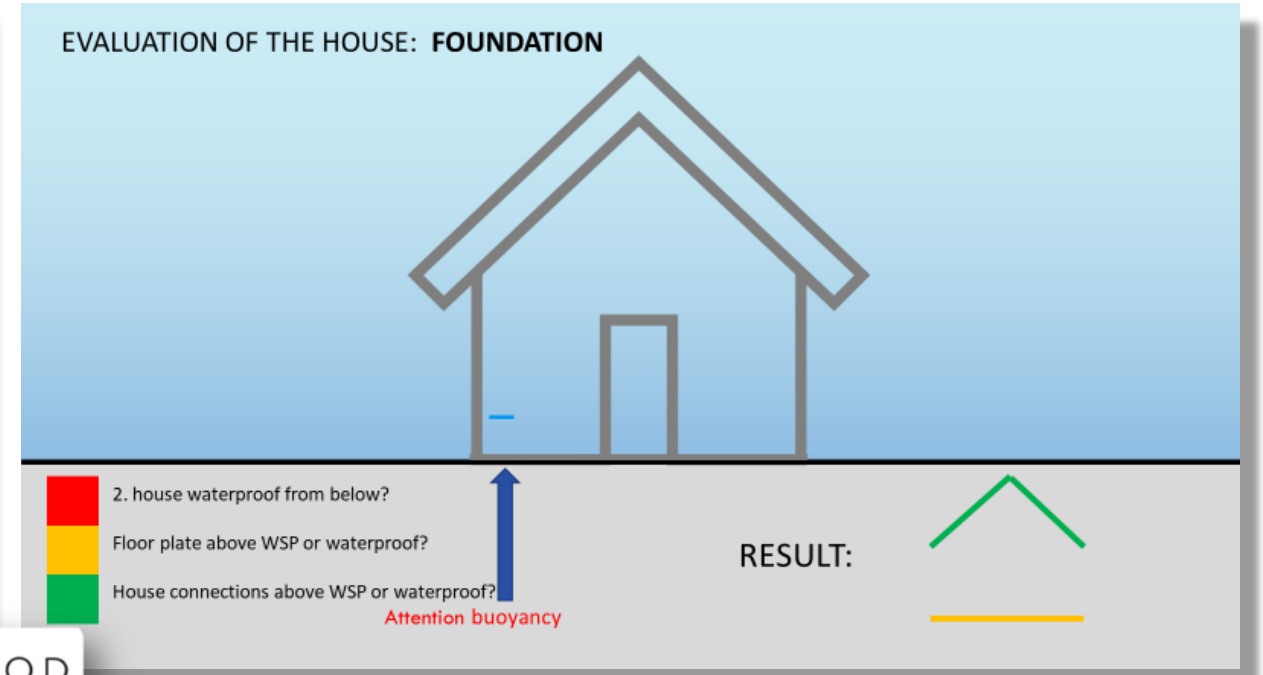
Developed by floodlabel.com

Precaution measurements in Ghana

EVALUATION OF THE HOUSE: **ROOF**

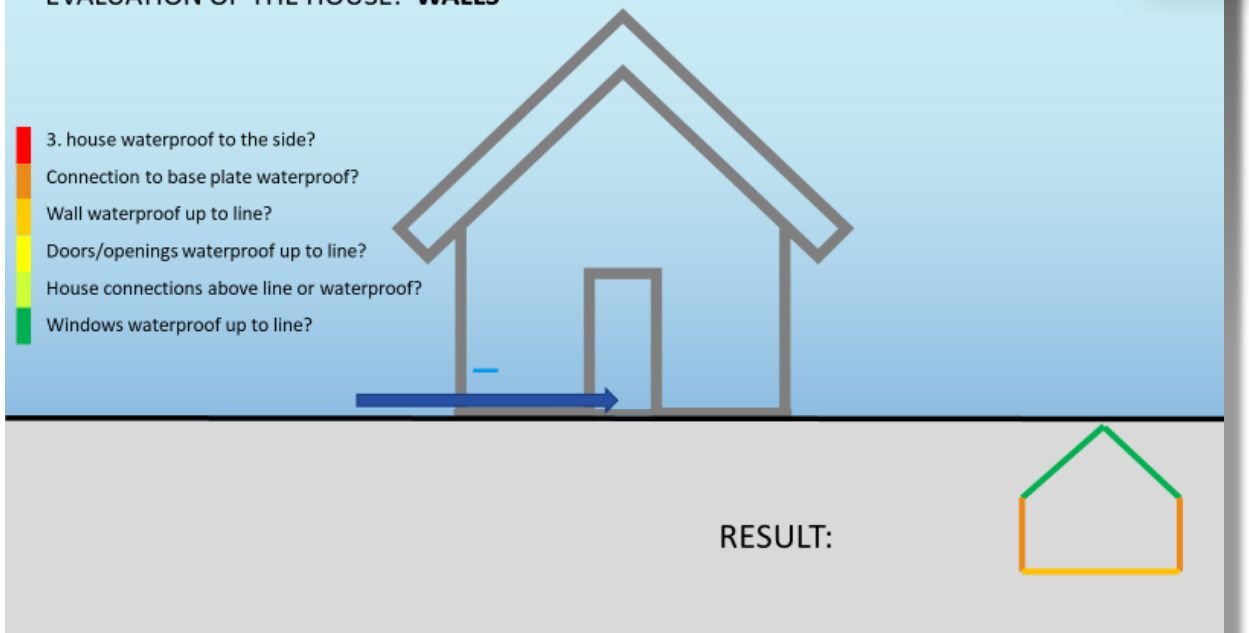


EVALUATION OF THE HOUSE: **FOUNDATION**

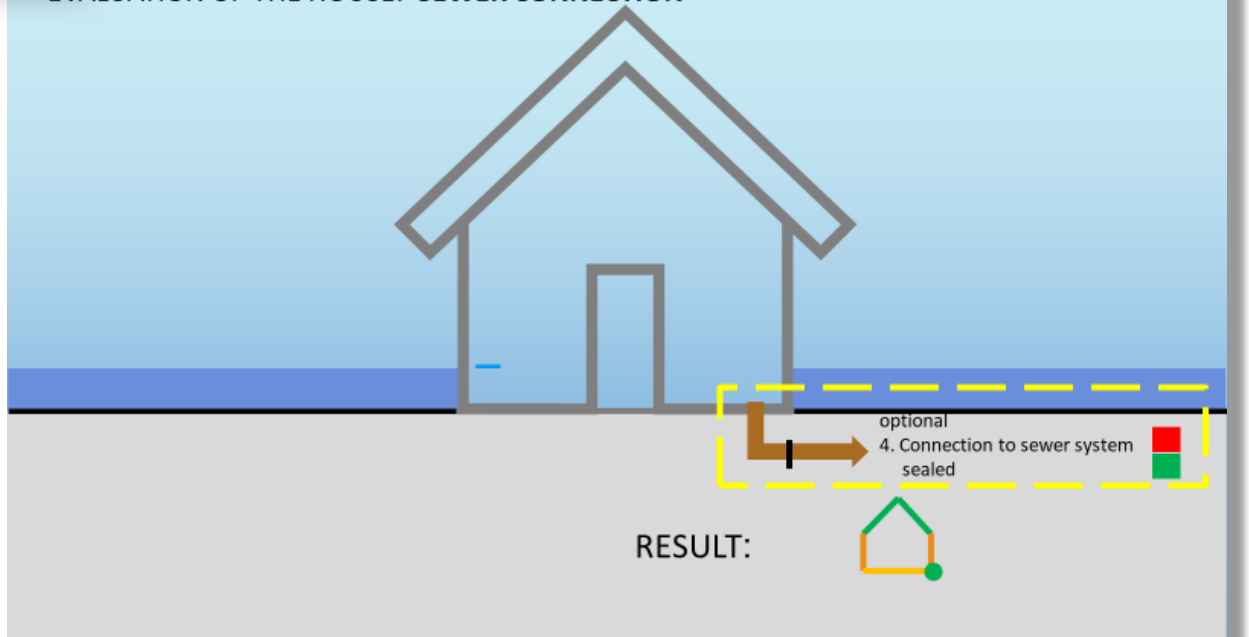


FLOOD LABEL GHANA

EVALUATION OF THE HOUSE: **WALLS**



EVALUATION OF THE HOUSE: **SEWER CONNECTION**



CONCLUSION

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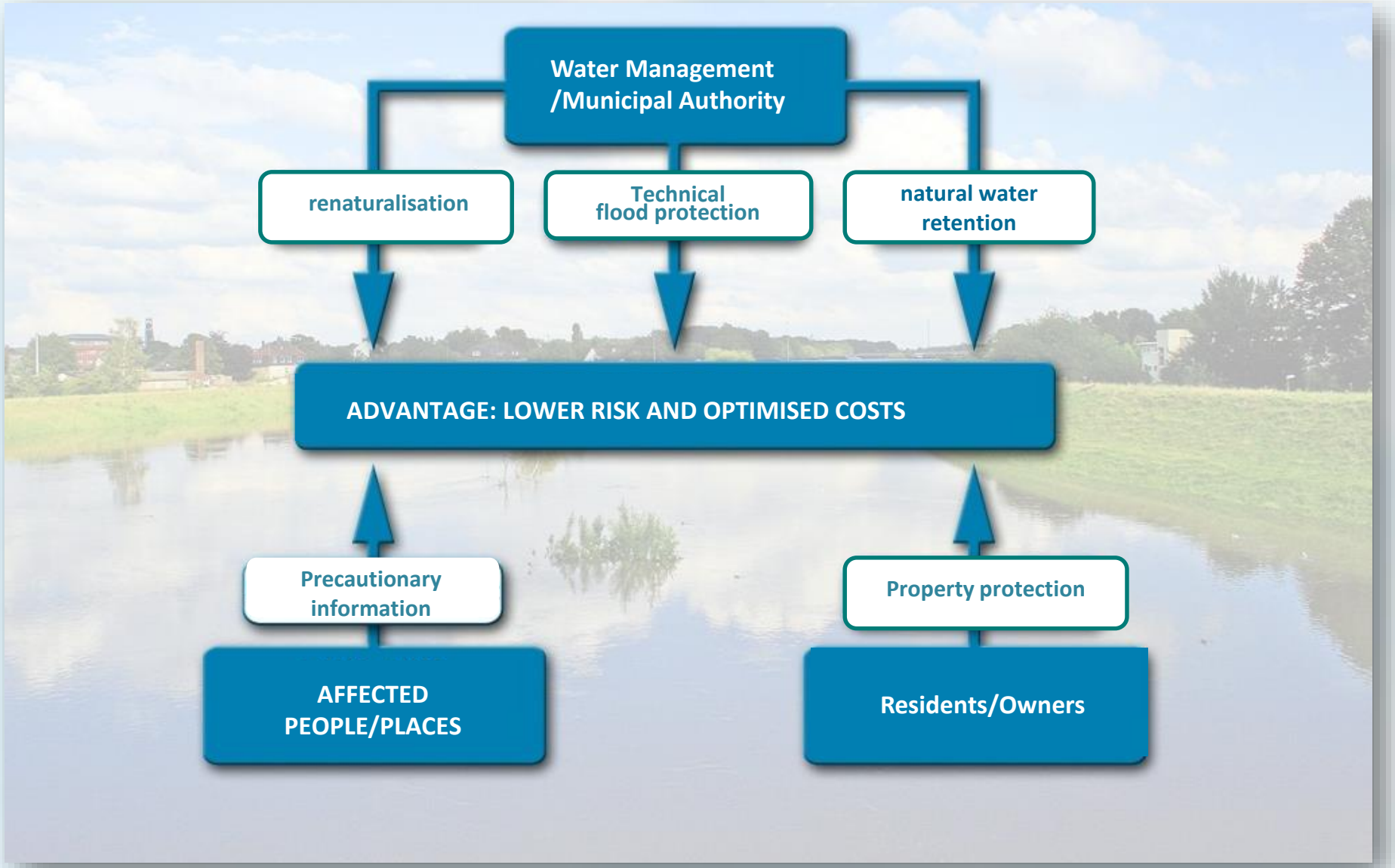
Self-provision against flood increases the resilience of society significantly.

- **Self-provision measures are cost-efficient.**
- **Self-provision pays off!**
- **The willingness to take precautions has to be activated.**

Flood management concept



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LET‘S EMPOWER CITIZENS‘ RESILIENCE TOGETHER!

www.floodlable.com
georg.johann@hkc-online.de

Image: The Atlantic