

# PLANETARY BOUNDARIES HOW ISRAEL AND GERMANY TAKE ON CLIMATE CHANGE

A WEBINAR SERIES

## WATER



**WERNER THEIS**  
**FORMER HEAD OF SECTION AT THE**  
**MINISTRY OF ENVIRONMENT RHINELAND-**  
**PALATINATE, GERMANY**

Wednesday  
25 May, 2022  
7.30 PM (IST)  
18.30 Uhr (CET)

on WebEx

a cooperation of





## **Werner Theis**

Attorney-at-Law (Germany) and  
Lecturer at the University Koblenz-Landau

Head of Kunz' Competence Team Environment,  
Climate, Energy

Chairman of the Registration Committee at the  
Chamber of Engineers Rhineland-Palatinate

Former Assistant Secretary

Mayor (ret.)

[werner.theis@kunzrechtsanwaelte.de](mailto:werner.theis@kunzrechtsanwaelte.de)

KUNZ Rechtsanwälte  
Koblenz, Mainz, Köln, Düsseldorf

[www.kunzrechtsanwaelte.de](http://www.kunzrechtsanwaelte.de)

KUNZ Rechtsanwälte  
Partnerschaftsgesellschaft mbB



**DEVASTATING FLOODS IN RHINELAND-PALATINATE FROM 1882 - 2021**

---



© Wiki-Commons / Bettina Altendorf

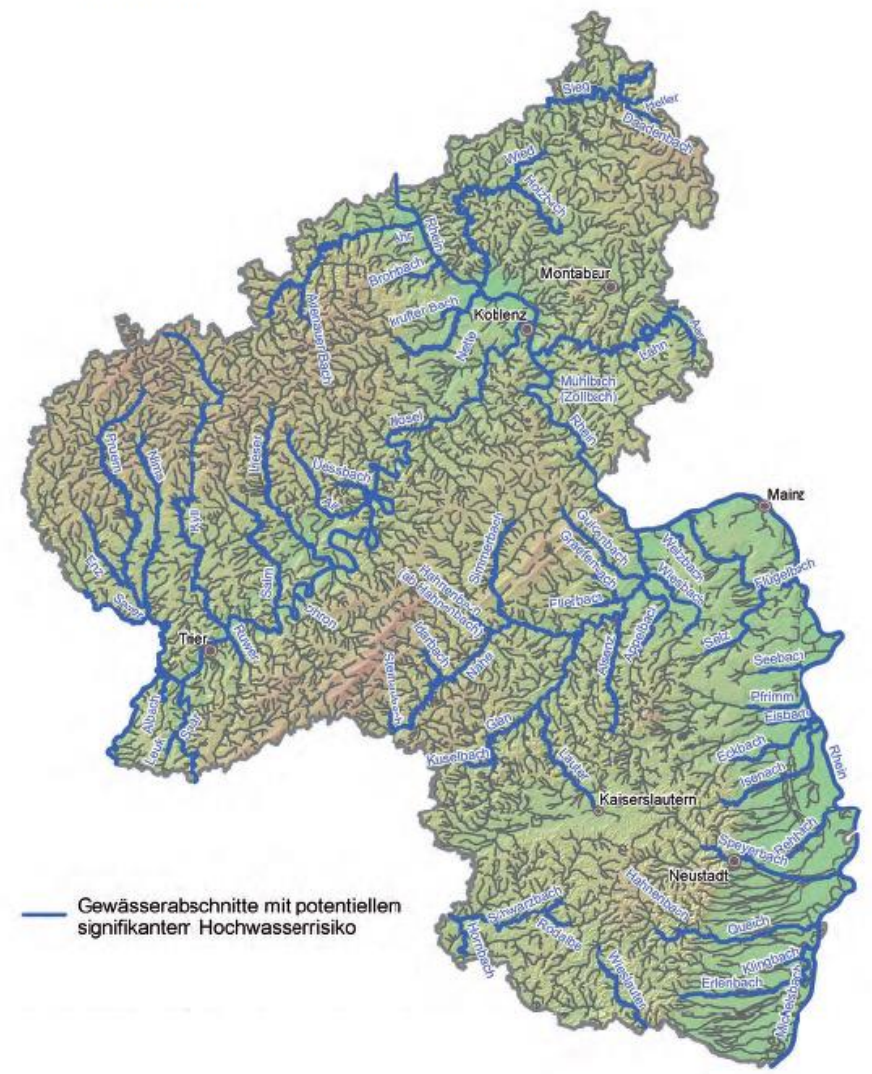
## Federal State of Rhineland Palatinate

Covers an area of approx. 20 000 km<sup>2</sup>, 4 million people

61 water sections

Length: 2000 km

Anlage 6: Gewässerabschnitte mit potenziell signifikantem Hochwasserrisiko in Rheinland-Pfalz



— Gewässerabschnitte mit potentiellen signifikantem Hochwasserrisiko

# AGENDA

1. The Tasks of Water Management
2. Water Management and Climate Change
3. Important Basics
4. Climate Change and Floods/Heavy Rain
5. Climate-Adapted Flood/Heavy Rain Management / Protection of Important Infrastructure
6. Sustainable Security of Water Supply in Times of Climate Change
7. Climate Neutral Decarbonized Water Management

# 1. THE TASKS OF WATER MANAGEMENT IN GERMANY

- Protection of water from human interference
  - Wastewater disposal
  - Sustainable use in industry, trade, agriculture, private households
- Use of water for people
  - Drinking water, agriculture/food, industrial production: BASF, Chemical Company, needs at its production site in RLP about 1 700 million cbm water/a, agricultural watering areas in RLP need approx. 25 Mio cbm water/a, all together in RLP 2 500 million cbm/a
- Protection of people against water
  - Flood/heavy rain protection

# Water Responsibilities in Germany

## Flood Risk Management

- Federal States of Germany and Municipalities

## Waste Water Treatment and Water supply

- Municipalities

## 2. WATER MANAGEMENT AND CLIMATE CHANGE

- Managing floods/severe rain in compliance with the requirements of climate change, protection of critical infrastructure
- The federal state applies a strategy based on coordination aimed at safeguarding water supply and wastewater disposal
- The water industry as an energy producer:  
Climate-protecting CO<sup>2</sup>-free, decarbonized water management through interdisciplinary action and digitalization

Even in times of climate change:

- Adaptation of the organization to digitalization
- Adaptation of the organization to demographic development
- Safety management to protect critical infrastructure



## 3. IMPORTANT BASICS

- Sustainability and eco-efficiency

- All measures must be

Economically reasonable, meeting criteria regarding water management, affordable/financeable

We need

- Efficient, legally sensible and permissible organization
- Expertise

# 4. CLIMATE CHANGE AND FLOODS/HEAVY RAIN

## Impact on Rhineland-Palatinate and Germany

- Increase in drought in the summer half-year with more heavy rainfall events
- In the winter half-year, increase in ordinary to moderate flood events

### **The Problem:**

The heavy rainfall causes small creeks and rivers to swell into raging rivers within a few hours, causing considerable damage in villages and towns and endangering human lives.

## **5. CLIMATE-ADAPTED FLOOD/HEAVY RAIN MANAGEMENT / PROTECTION OF IMPORTANT INFRASTRUCTURE**

### **Important components of the flood concept in Rhineland-Palatinate**

- Promotion of natural water retention on the surface/especially through renaturation program of water flow (Aktion Blau Plus)
- Technical flood protection through safe dikes, retention areas/polders and local protection measures, especially for critical infrastructure (supply of drinking water, electricity, etc.)
- Comprehensive flood risk management: local, regional, supraregional
- Flood-compatible planning, construction, redevelopment (flood resilient cities)

# EXAMPLE: TECHNICAL FLOOD PROTECTION ON THE RHINE

- In cooperation with France and the state of Baden Württemberg, about 287 million cbm of retention space/polders are to be realized on the Rhine( the biggest river in Germany) from Strasbourg(France) to Mainz. Rhineland-Palatinate has already built approx. 51 million cbm of polder space, B.W. and France approx.126 million cbm.
- Another 60 million cubic meters of reserve space for extreme flood events on the Rhine are being planned (287 million plus 60 million cbm)
- The rehabilitation of the Rhine dikes in Rhineland-Palatinate has been almost completed

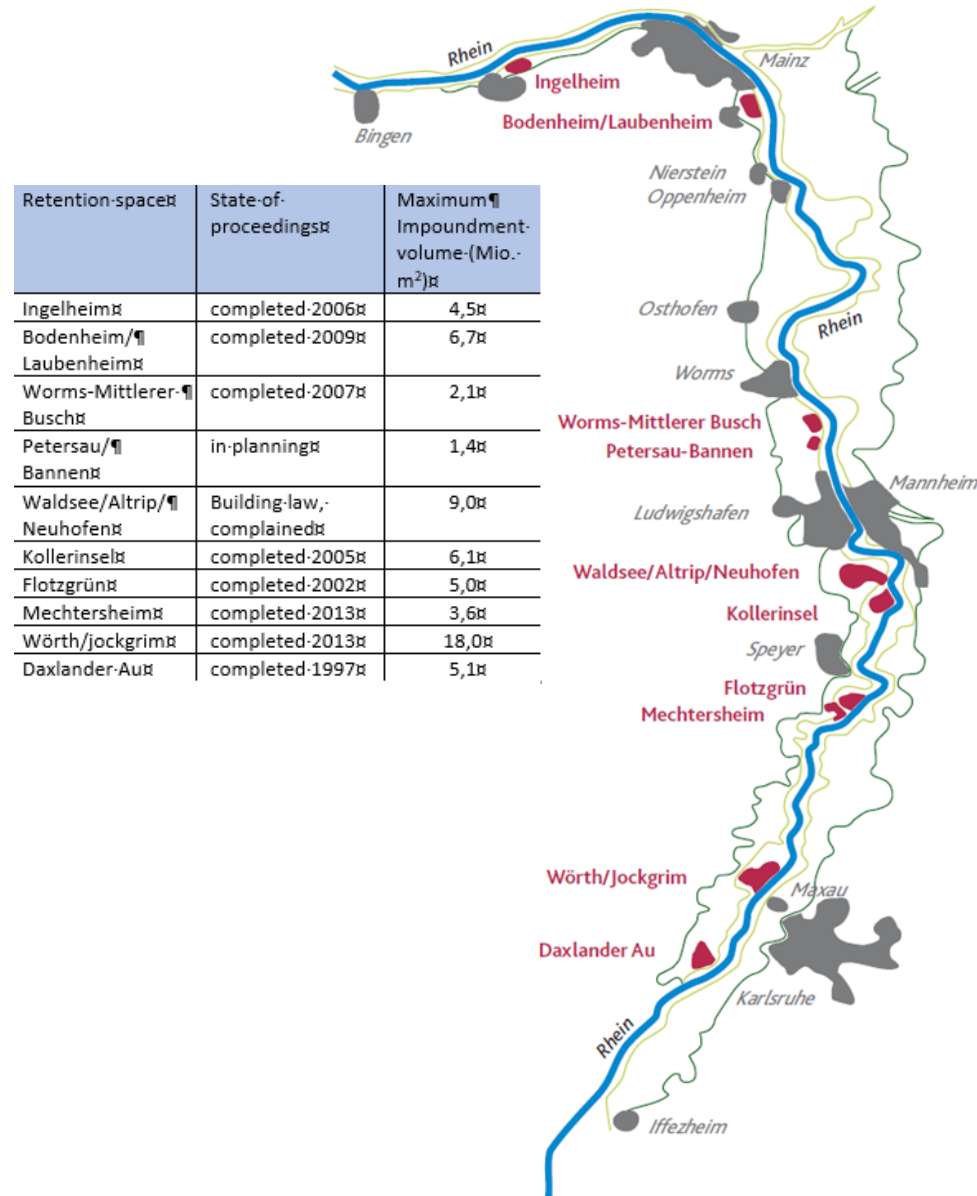


# POLDER MAP RLP APPROX. 150 KM

The polders already built in Rhineland-Palatinate, Baden-Württemberg and France can lower the flood level on the Upper Rhine by 20 to 30 cm.

Possible further water level lowering after completion of all planned polders:  
approx. 40 cm

Annex 5: Flood retention on the Upper Rhine in Rhineland-Palatinate





**Polder Ingelheim (geflutet beim Hochwasser 2011 und 2013)**

## Flood protection + urban development to promote acceptance

---



**Flood protection Bad Kreuznach**

# EXAMPLE: FLOOD RESILIENT CITIES

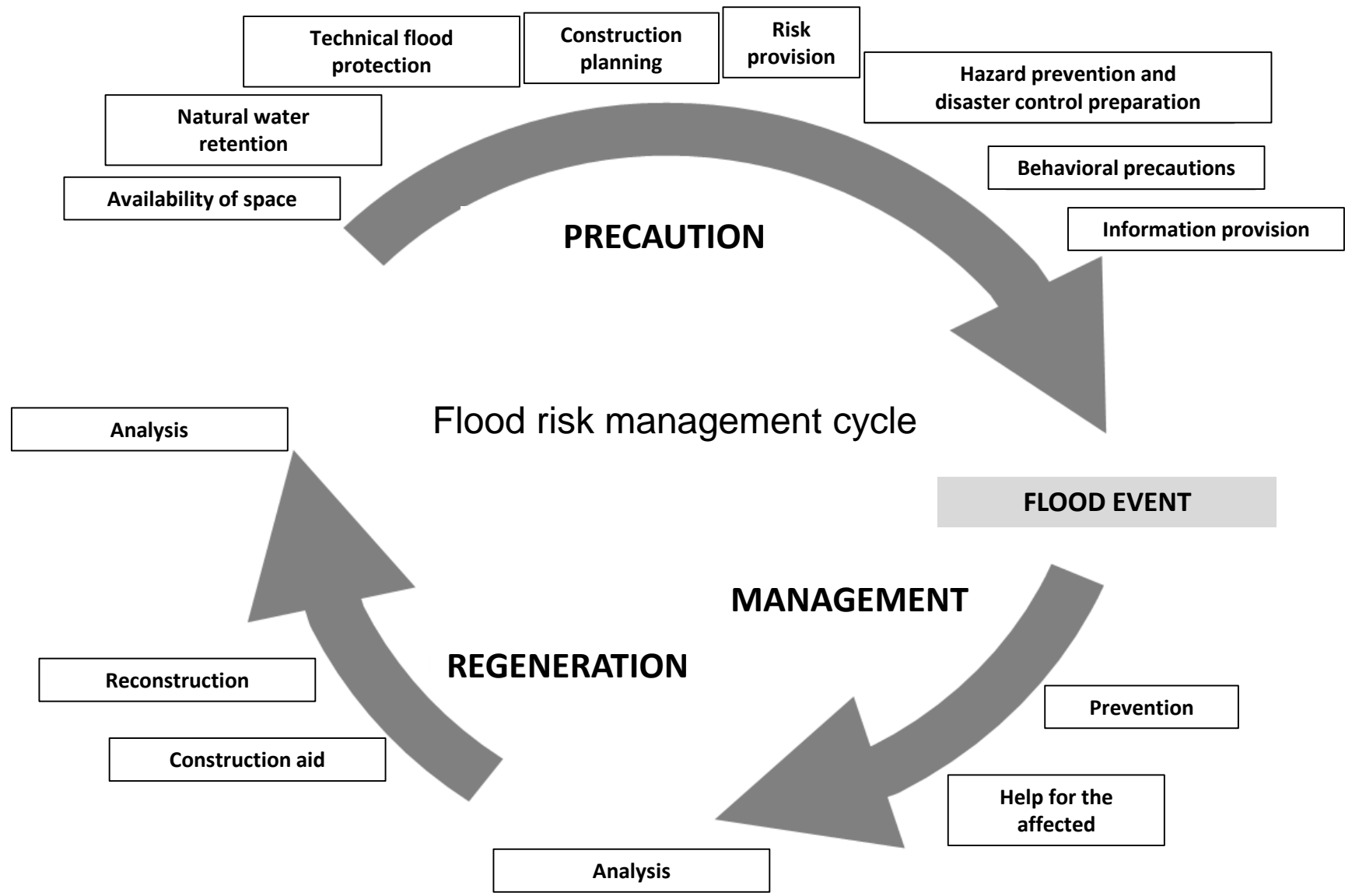
## GUIDING PRINCIPLES

- People have always settled by the water. This must be possible further on - but flood-adapted!
- Where technical protection is not possible or acceptable, inundation must be allowed. Living must be flood-adapted. This is also necessary behind dams and walls.
- Where new plannings and buildings are legally allowed
- the building construction must be stable and resistant
- the utilisation must be adapted to the highest possible water levels (extreme floods)
- Forecasting and precautionary behaviour must be developed an optimal way
- In the existing building stock the same applies. Flooding must be calculated. Renovation must be flood-adapted.
- For the implementation of these principles the German federal state of Rhineland-Palatinate has established
- together with the municipal umbrella organisation an Information and Consultation Center for Flood Precaution
- together with the Technical University of KL a Competence Center for Food Management and Precautionary Building



# GENERAL PRINCIPLES FOR FLOOD/HEAVY RAIN MANAGEMENT

- Absolute protection against floods is not feasible. Therefore, flood risk management differentiating between all possible scenarios is required!!
- The degree of protection depends on the heaviness of the floods
- Distinction is to be made between
  - normal floods
  - great floods
  - and biblical floods





# MUNICIPAL PUBLIC FLOOD PREVENTION :

## Optimize/adapt urban planning of land use

- review and adapt existing development plans
- Optimize planned development plans

## Natural water retention

- Optimize management of agricultural and forestry areas
- Water retention in floodplains through renaturation (Aktion Blau Plus)

## Technical protection measures in public areas

- Planning of flood retention basins
- Planning of protective walls and dikes

## Flood-adapted planning, construction and renovation

- Designing all facilities in such a way that floods can be survived without damage as far as possible

## Ensuring supply and disposal

- check power supply, telecommunications, water supply and wastewater disposal systems and equip them so that they will function even during floods

## Prepare hazard prevention and disaster control(particularly necessary in case of biblical flood /Sintflut)

- Warning for flood events
- Establish alarm and response plans and expand existing ones for extreme events
- Evacuation planning
- Coordinate alarm and deployment planning at the district level

### **Very important:**

**It needs to be exercised regularly! Without exercising it won't work when the catastrophe happens!!**

## Organize self-help

- Fire department support
- Designate flood emergency routes
- Neighborhood outreach
- Traffic control and provision of parking space
- Determine and announce contact persons

## Information of the affected population and businesses

- Information about flood hazards
- Information on private flood precautions

# 6. SUSTAINABLE SECURITY OF WATER SUPPLY IN TIMES OF CLIMATE CHANGE

## **Problem:**

- Groundwater levels are falling
- In Rhineland-Palatinate, about 90 % of drinking water is being extracted from groundwater. Remainder from bank filtrate.

## **Solution**

- Create ecologically and economically sound interconnected systems through inter-municipal cooperation. Larger organizations can manage groundwater resources more sustainably across municipal boundaries and ensure drinking water supplies more cost-effectively than smaller organizations.
- Extracting more drinking water from bank filtrate

# 7. CLIMATE-NEUTRAL DECARBONIZED WATER MANAGEMENT

- Energy savings through decommissioning and new construction of wastewater treatment plants
- Installation of energy-efficient pumping systems
- Digitized pump management/process management
- Energy-efficient refurbishment or construction of energy-efficient buildings
- Concentration on a few and larger wastewater facilities or
- drinking water production facilities

# 7. CLIMATE NEUTRAL DECARBONIZED WATER MANAGEMENT

The water industry as a decentralized energy producer through

- Photovoltaics on buildings/high reservoirs
- Outdoor photovoltaics
- Energy generation from sewage sludge
- Conversion of the vehicle fleet to electromobility and much more



---

Thank you very  
much for your  
attention!

