

Online Seminar

Landscape, Democracy and the European Union

Session 6, November 11, 2020

14 00 – 15 30 CET

Today's lecturer: Dr. Ellen Fetzer

Seminar leaders: Dr. Ellen Fetzer & Prof. Dr. Michael Roth



Agenda for Session 6, November 11

- Flood risk as a European Issue
- The EU Directive on the assessment and management of flood risks or the 'The Floods Directive'
- Some examples and cases
- Discussion

European Key Documents in a Nutshell

Birds Directive
DG Environment
1979



European Commission

The graphic features a light green background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom right of the card.

Environmental Impact Assessment Directive
DG Environment
1985
+ amendments
synthesized in 2011



European Commission

The graphic features a light green background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom left of the card.

Natura 2000 Directive
DG Environment
1992



European Commission

The graphic features a light green background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom left of the card.

Water Framework Directive
DG Environment
2000



European Commission

The graphic features a light blue background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom left of the card.

Strategic Environmental Assessment Directive
DG Environment
2001



European Commission

The graphic features a light orange background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom right of the card.

Floods Directive
DG Environment
2007



European Commission

The graphic features a light blue background with a stylized landscape of grey lines representing hills. A large red exclamation mark is overlaid on the right side of the card.

Green Infrastructure Communication
DG Environment
2013



European Commission

The graphic features a light grey background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom left of the card.

Regional Development Policy
DG Regio
defined per funding period



European Commission

The graphic features a light orange background with a stylized landscape of grey lines representing hills. A large green checkmark is overlaid on the bottom left of the card.

Short recap: What is an EU Directive?

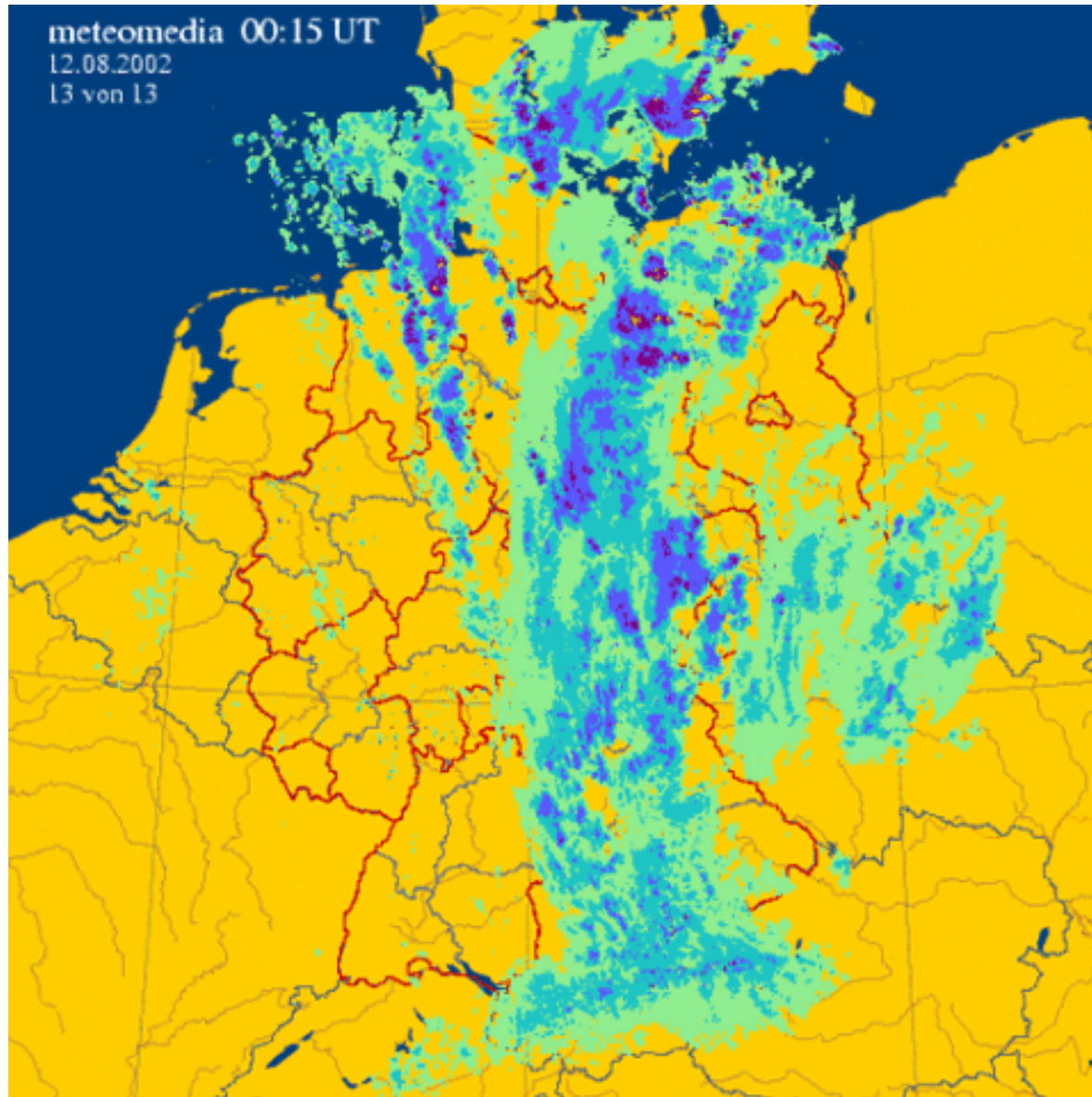
- Addressed to member States
- Binding as to the **result to be achieved**, but leaves to the national authorities the choice of form and methods (!)
- Entry into force subject to publication (rule)

Why should the European Union care about flood risk management?

Please write your ideas directly on the slide:

+ poll

12th of August 2002



Radar-based
rainfall forecast
on 12.08.2002
Source: metomedia

The rainfalls resulted from
an unusual accumulation
of low-pressure areas.



August 14, 2000

Satellite image of the
River Elbe between
Torgau and Aken on
14.08.2002



August 20, 2002

...and on 20.08.2002
Source: Wikipedia

What has happened?

- A multipolar strong rain event
- Countries affected: Austria, Croatia, Czech Republic, Germany, Hungary, Poland, Romania, Russia, Slovakia
- 110 people died
- 15 Billion Euro property damage



Schlottwitz, Saxonia, 13. August 2002, Source: Wikipedia



Grimma, Saxonia, 13. August 2002
Source: Berliner Zeitung



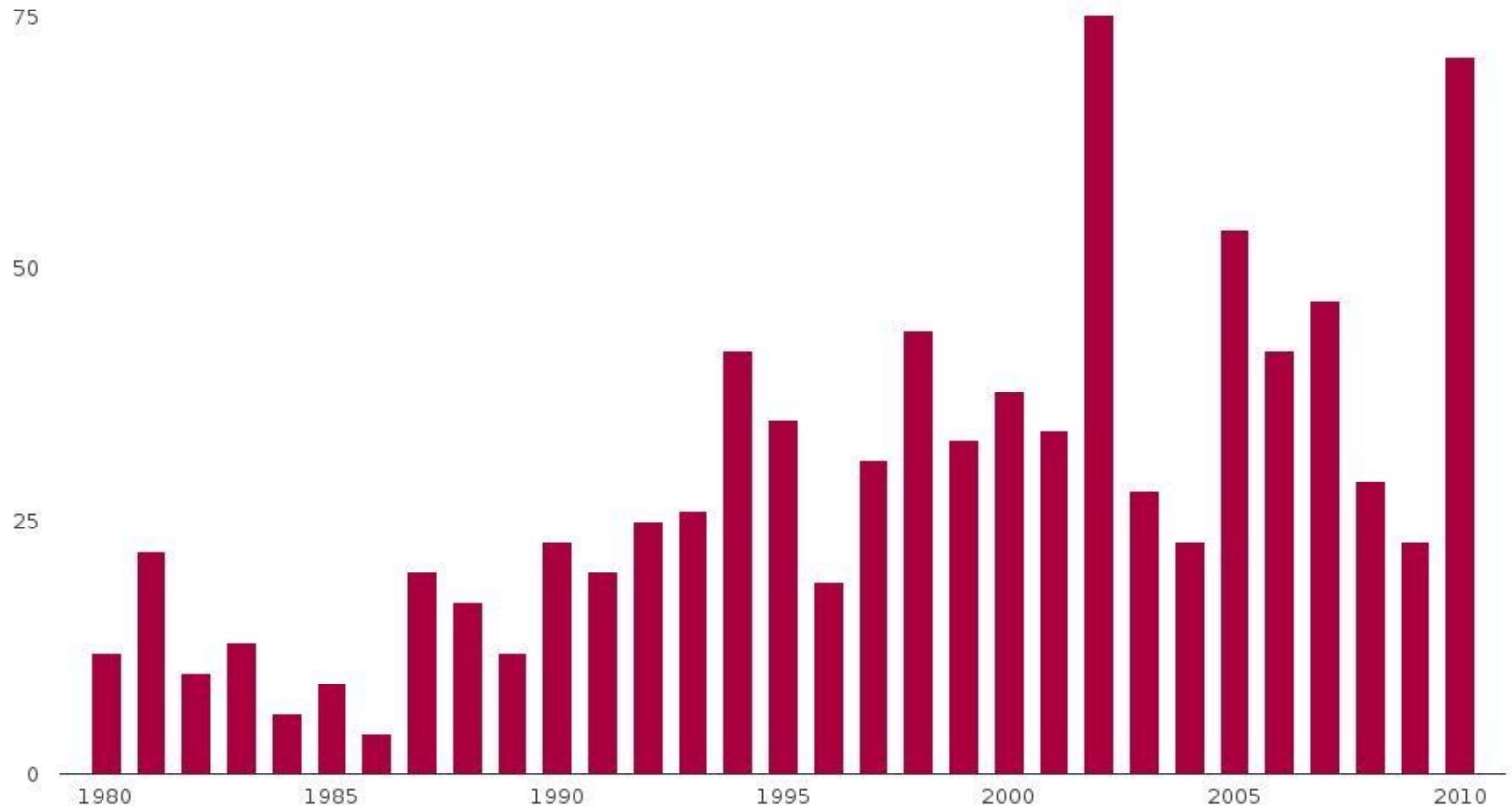
Dresden, Saxonia, August 17, 2002, Source: Archive/Michael Kappeler/ddp

What is the trend in river floods across Europe?

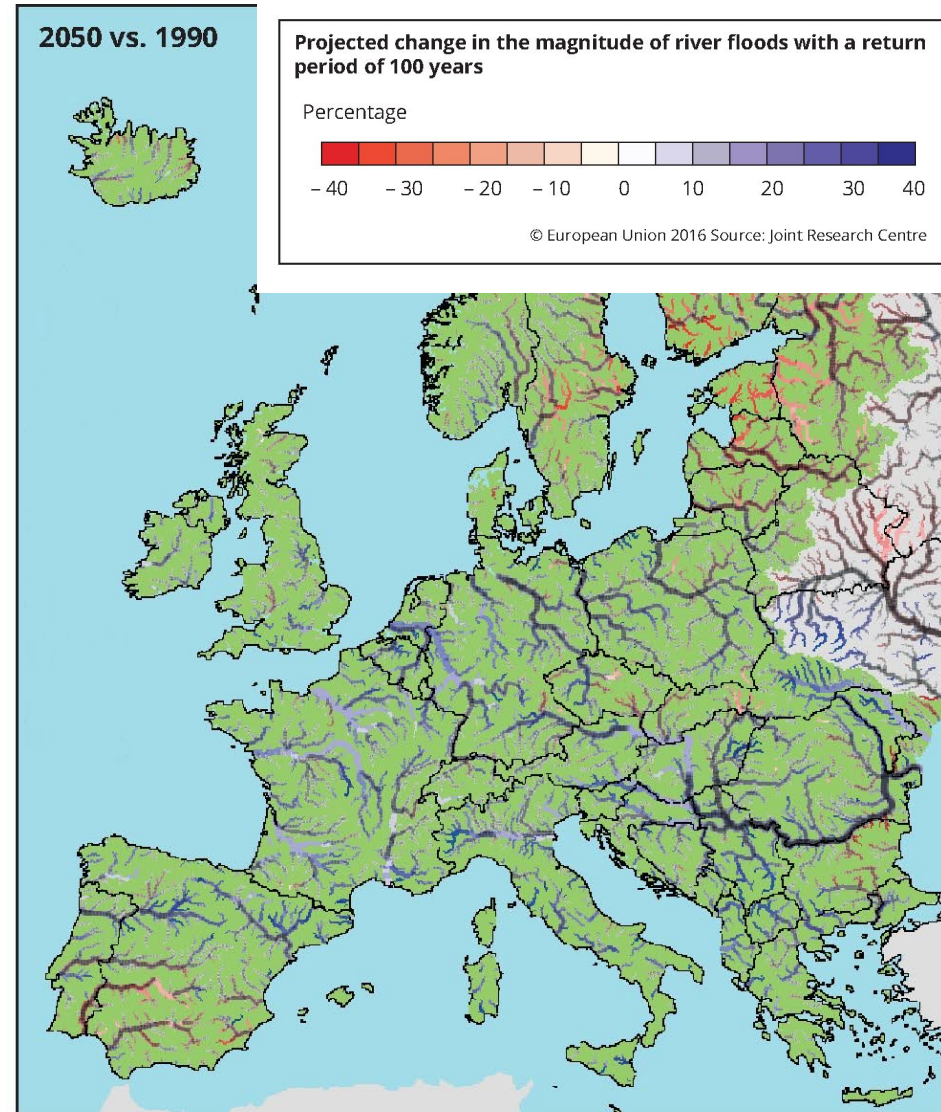
- Almost 1 500 floods have been reported for Europe between 1980 and 2010, of which **more than half** have occurred **since 2000**.
- The number of very severe flood events in Europe increased over the period 1980–2010, but with large interannual variability. This increase has been attributed to **better reporting, land-use changes** and **increased heavy precipitation** in parts of Europe, **but it is not currently possible to quantify the importance of these factors**.
- **Global warming is projected** to intensify the hydrological cycle and increase the occurrence and frequency of flood events in large parts of Europe.
- **Pluvial floods and flash floods**, which are triggered by intense local precipitation events, are **likely** to become **more frequent** throughout Europe.
- However, **quantitative projections** of changes in flood frequency and magnitude remain **highly uncertain**.

<https://www.eea.europa.eu/data-and-maps/indicators/river-floods-2/assessment>

Number of severe floods in Europe

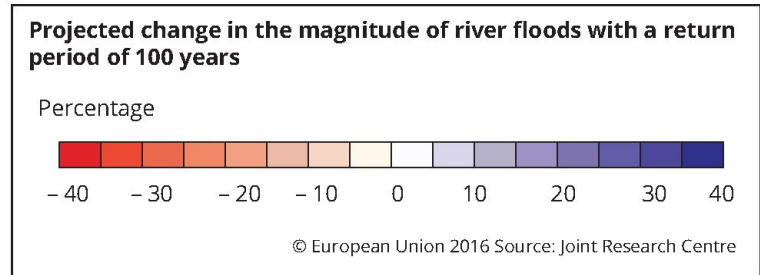


Data sources: European past floods provided by European Environment Agency (EEA)



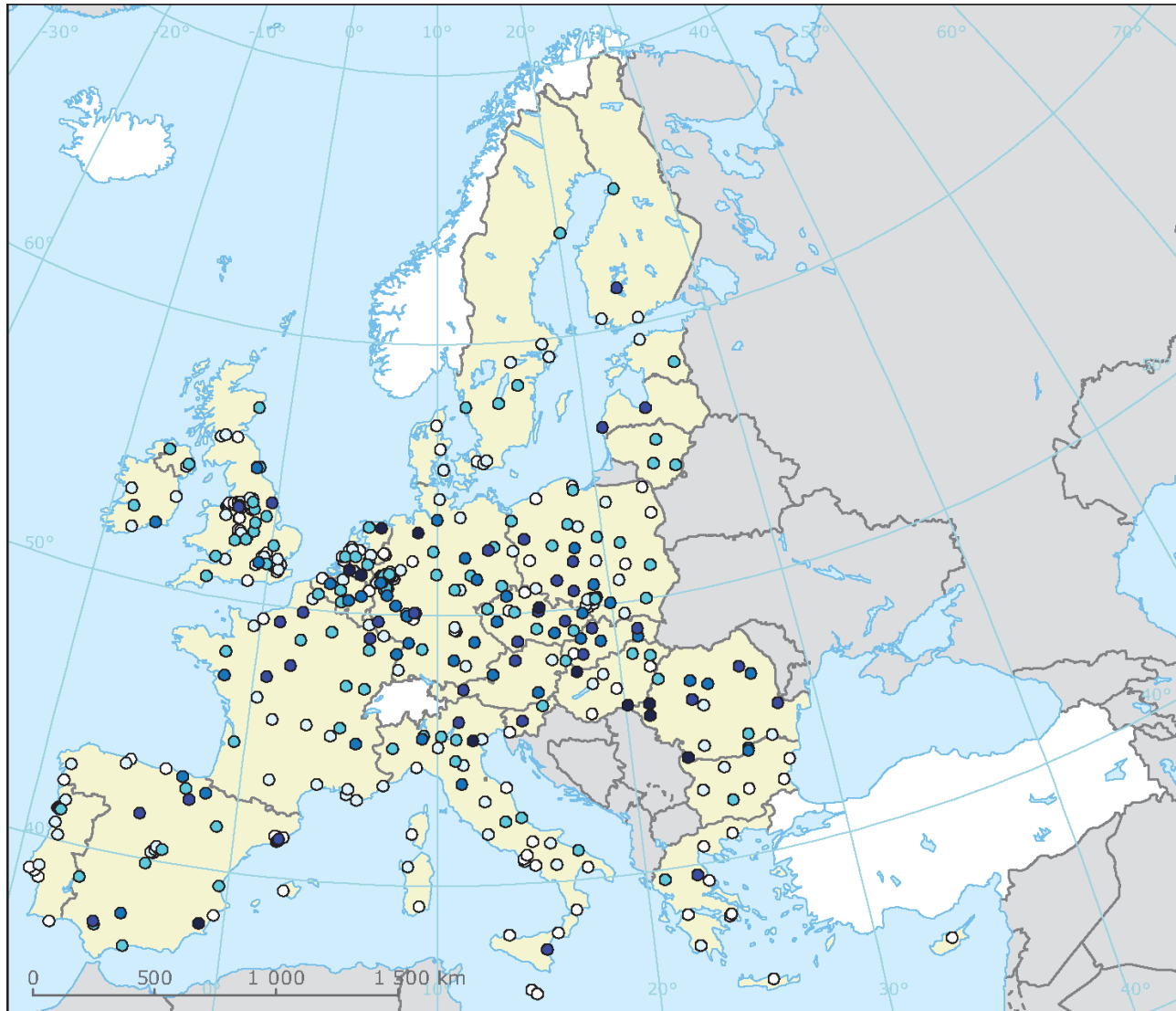
Projected change in river floods with a return period of 100 years

Source: EEA, Copyright holder: Joint Research Centre (JRC).



Projected change in river floods with a return period of 100 years

Source: EEA, Copyright holder: Joint Research Centre (JRC).



Urban area potentially affected by river flooding, 2071-2100

Percentage

- No flood risk
- 0.01-5
- 5-10
- 10-15
- 15-30
- > 30

□ No data

■ Outside coverage

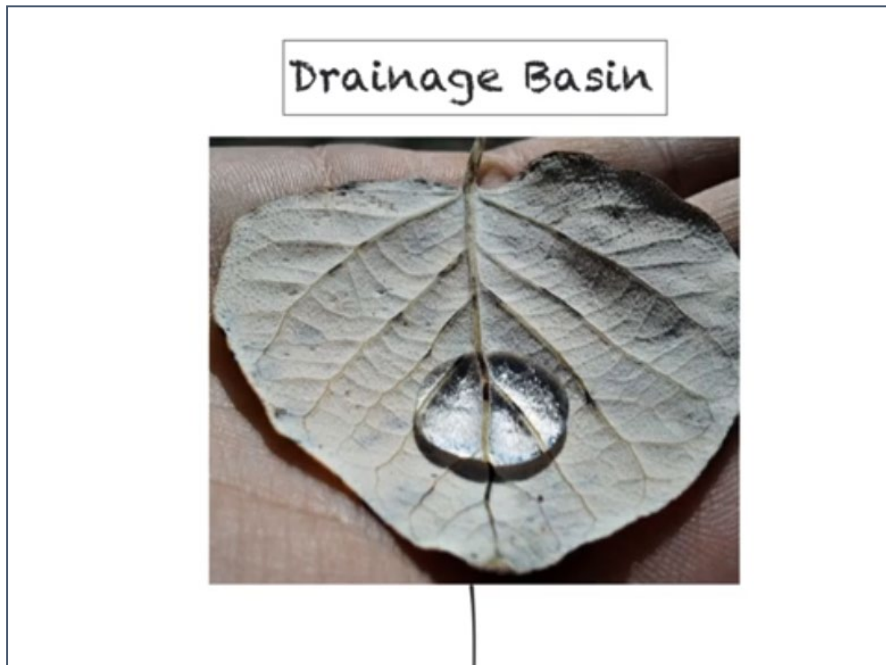
Urban areas at risk of river flooding

Source: EEA

Let's get some terminology right

What is a catchment area?

Synonyme: drainage basin



Drainage Basin explained by Geog Raphy
<https://www.youtube.com/watch?v=ehaFtEvRVU8>

Let's get some terminology right

What is a floodplain?



Floodplain explained by Geog Raphy
<https://www.youtube.com/watch?v=z3J8yK9wBFk>

Why should we care about floodplains?

Estimates suggest that today, **70-90 %** of Europe's floodplain area is **ecologically degraded** because of human activities, in particular those taking place since the 1950s.



Image:

Daimler Factories on the river Neckar

Source: Preview luftbildsuche.de

Text Source: European Environment Agency

<https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>



Neckar im Stadtgebiet Stuttgart vor Ausbau

Bild - Fotograf: Unbekannt (1959)

Bundesanstalt für Wasserbau

This is the same landscape in 1959

Why should we care about floodplains?

Protection and restoration of floodplains is **encouraged** by the Water Framework Directive, the Floods Directive, the Habitat and Birds Directives, the EU 2020 Biodiversity Strategy, the Green Infrastructure initiative, and the EU Climate Change Adaptation Strategy.



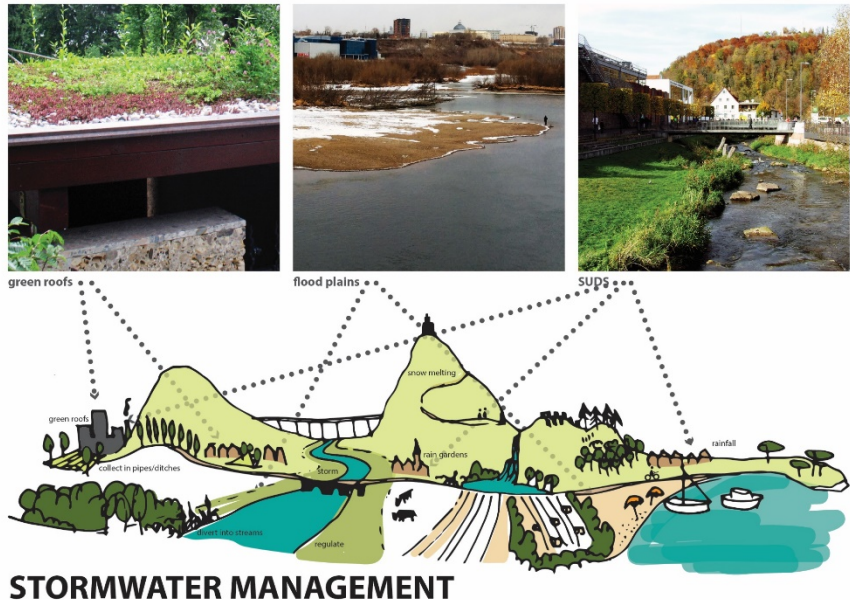
Text Source: European Environment Agency

<https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>

Why should we care about floodplains?

Natural water retention measures are cost effective and viable alternatives to structural flood protection.

They support **multiple ecosystem functions** and services needed to achieve the objectives of several EU policies.



Text Source: European Environment Agency

<https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>

Why should we care about floodplains?

Shifting the management focus towards natural retention measures represents a transition towards **ecosystem based management**.

This needs to be incorporated into river basin and **flood risk management plans**, conservation plans and climate change adaptation plans.



Suburban retention pond, Picture: Daniel X. O'Neil

Text Source: European Environment Agency

<https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>

Why should we care about floodplains?

Restoration requires public support, investment and time. EU and national funding instruments are available to support restoration.

Once implemented, natural water retention measures deliver valuable **regulating ecosystem services** and **high quality cultural services**.

Regulating ecosystem services are for example flood prevention, climate regulation and water purification



Isarplan Munich, Foto: Scarlett Berner

Text Source: European Environment Agency

<https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>

The EU Directive on the assessment and management of flood risks



ENVIRONMENT

Home About us Policies Funding Legal compliance News & outreach

European Commission > Environment > Water > Flood risk >

Home About us Policies Funding Legal compliance News & outreach

Water

The EU Floods Directive

What does the Floods Directive comprise?

(1) Flood Risk Assessment by December 2011

...based on information already available or easily obtainable:

- records and studies on **long-term trends** (for example demography)
- Information on the **impact of climate changes** on flood events
- maps of the **river basin districts** showing river basins, topography, land use;
- description of the floods that have occurred in the past
- **assets** taking into account the topography
- hydrological and other technical data dealing with floodplains
- existing flood control infrastructures
- and **vulnerability** of the assets to be protected.

This preliminary assessment has been reviewed and updated in 2018 and the process will be repeated **every 6 years**.

(Müller, U., Implementation of the Flood Risk Management Directive in Selected European Countries, 2013)

What does the Floods Directive comprise?

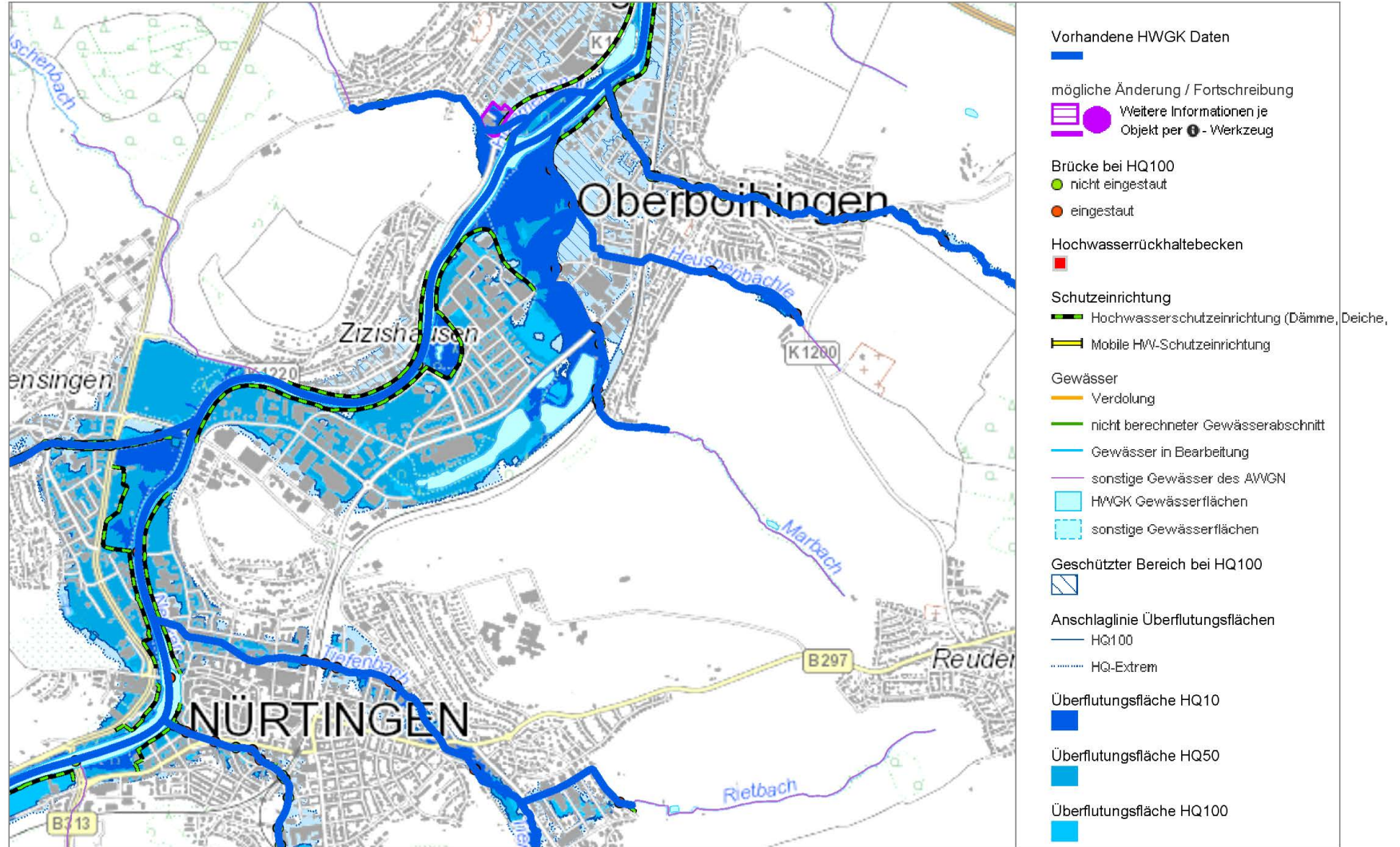
(2) Flood Hazard + Risk Maps by December 2013

- **be drawn up** for the areas and zones exposed to significant flood risk as identified according to the given criteria.
- The maps must be prepared for **low-probability floods** (extreme events), **medium-probability floods** (≥ 100 years) and, where appropriate, for **high probability floods**.
- The **flood hazard maps** should show the **flood extent**, water depth or water level as appropriate, and, where appropriate, the flow velocity or relevant water flows.
- The **flood risk maps** should contain information on the number of inhabitants potentially affected, the type of economic activity of the **area potentially affected**

The maps have been **updated in 2019** and then **every 6 years**.

(Müller, U., 2013)

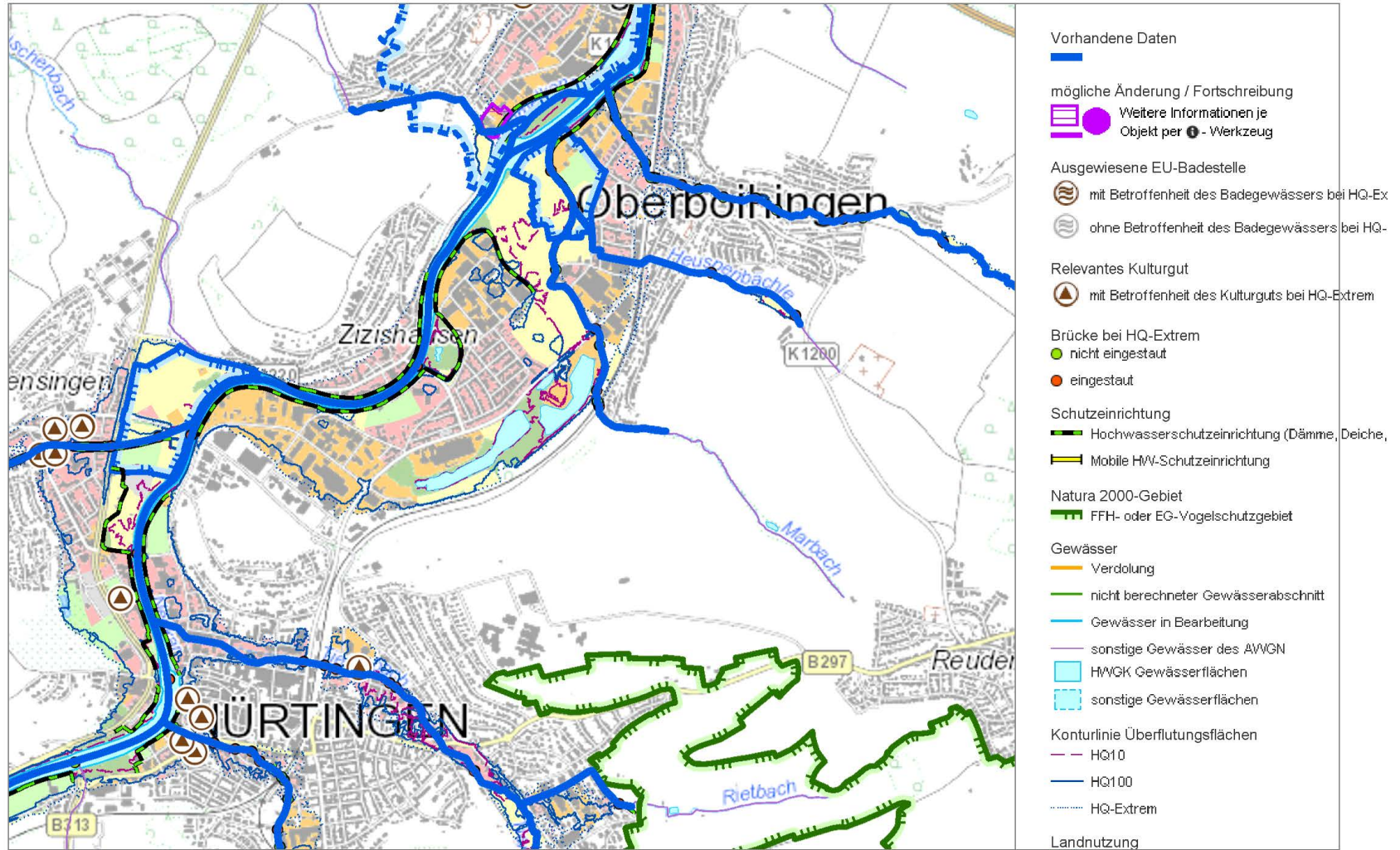
Flood Hazard Map for the area north of Nürtingen, Germany



07.12.2019

<https://udo.lubw.baden-wuerttemberg.de>

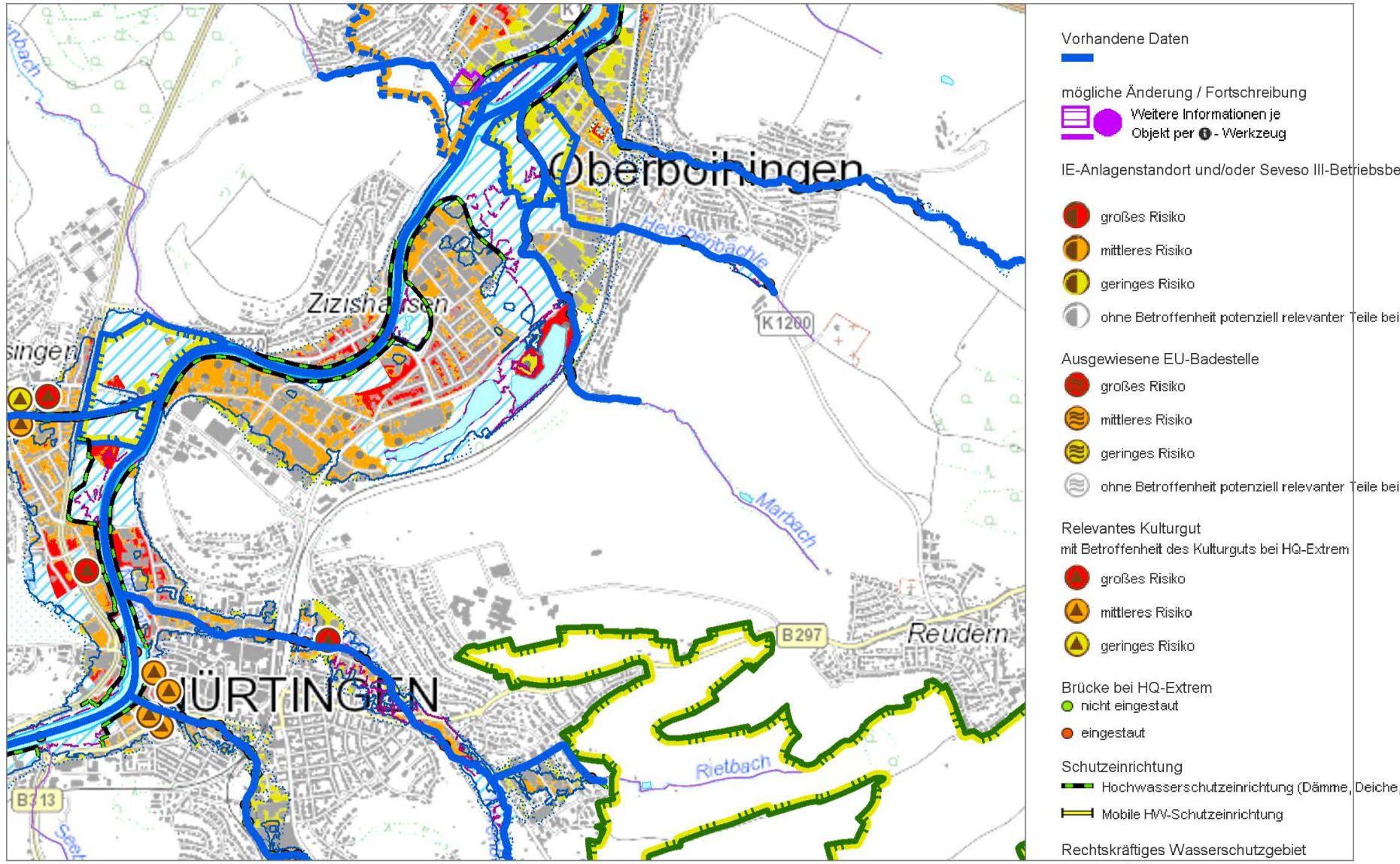
Flood Risk Map for the area north of Nürtingen, DE



07.12.2019

<https://udo.lubw.baden-wuerttemberg.de>

Flood risk assessment map for the same area



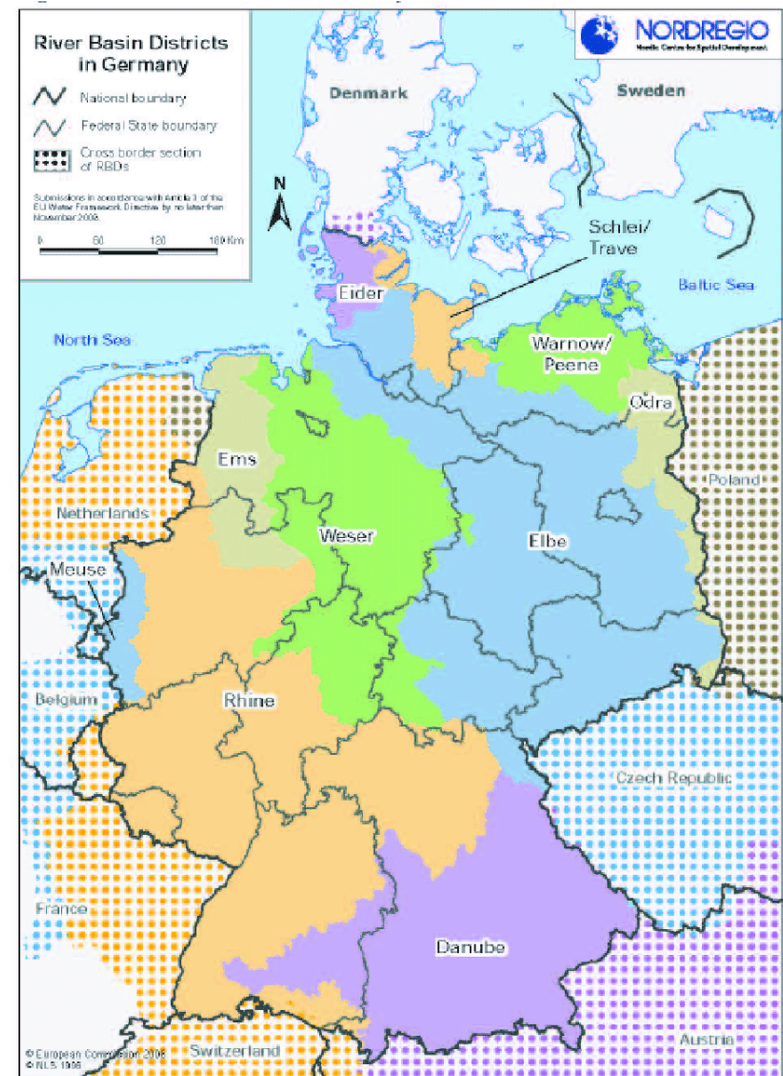
07.12.2019

What does the Floods Directive comprise?

(3) Flood Risk Management Plans

By **2015**: The flood risk management plans are to be coordinated at the level of the **river basin district**.

https://www.researchgate.net/figure/River-Basin-Districts-in-Germany_fig2_256461727, accessed 10.11.2020



River Basin Districts in Poland



Map presenting the areas of river basins in Poland. Resource: <http://geoportal.kzgw.gov.pl/imap/>

Quoted from: Małgorzata Dudzińska, APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM TOOLS IN A BROAD NATURAL SCIENCE, 2014

What does the Floods Risk Management plan comprise? (1)

- **Delineation** of the areas exposed to significant flood risk.
- Flood hazard maps and flood risk maps.
- Definition and description of appropriate **flood risk management objectives** focusing on
 - reduction of potential adverse consequences for protected assets (human health, the environment, cultural heritage, and economic activity)
 - nonstructural flood prevention measures
 - reduction of the likelihood of flooding.
- **Measures** for achieving the objectives.

What does the Floods Risk Management plan comprise? (2)

- Taking into account costs and benefits, flood conveyance and retention areas, natural flood plains, the environmental objectives of the WFD, soil and water management, spatial planning, land use, nature conservation, navigation, and port infrastructure.
- Taking into account all aspects of flood risk management that focus on (1) prevention, protection, preparedness; (2) flood forecasts; and (3) early warning systems.

What does the Floods Risk Management plan comprise? (3)

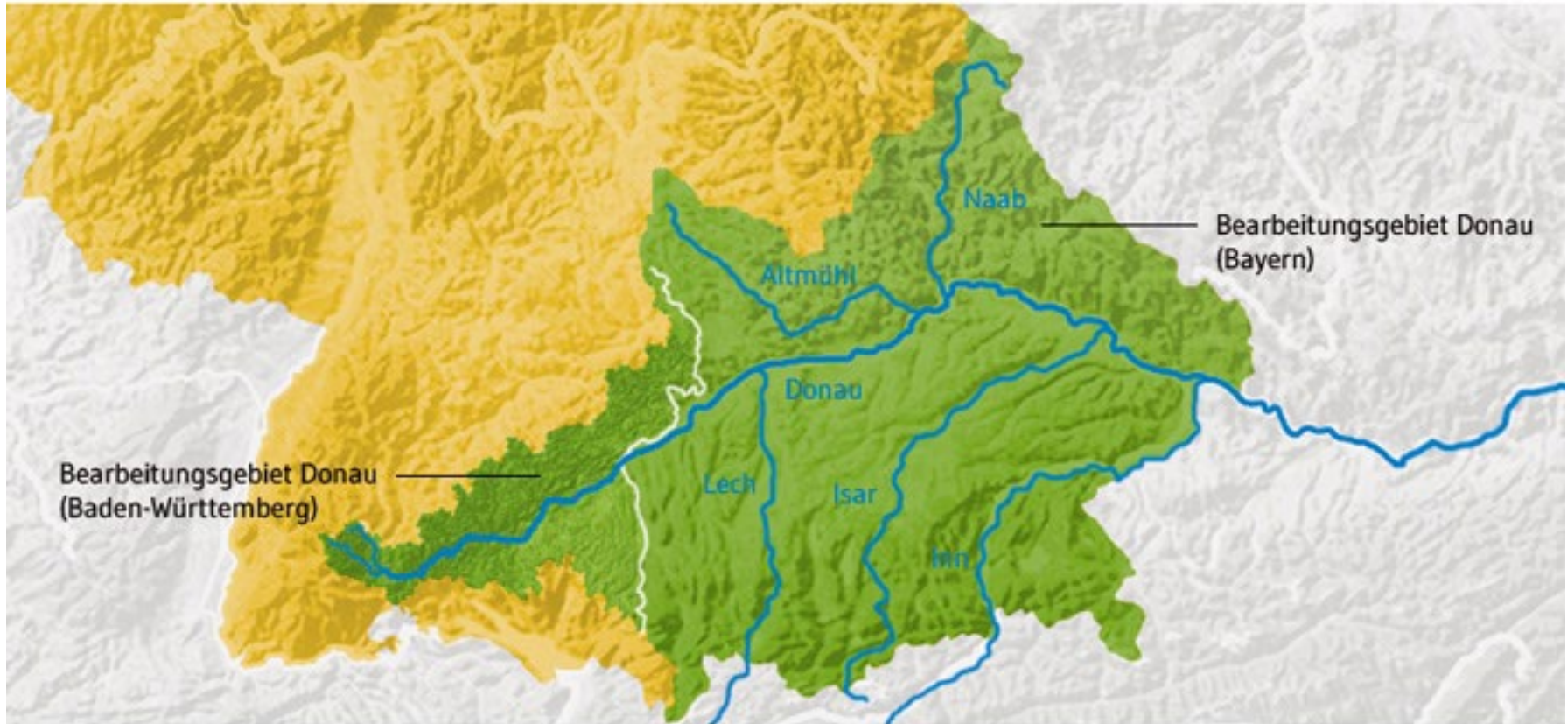
- Where appropriate, the characteristics of the particular river basin or subbasin.
- Where appropriate, promotion of sustainable land use practices.
- Where appropriate, improvement of water retention.
- Observation of the upstream/downstream principle.

Example: The Danube River Basin District



<https://www.hochwasser.baden-wuerttemberg.de/flussgebietseinheit-donau>

German part of the Danube River Basin District



<https://www.hochwasser.baden-wuerttemberg.de/deutscher-teil-der-flussgebietseinheit-donau>, Quelle: xx Design Partner

The Danube River Basin District in the Federal State of Baden-Württemberg



<https://www.hochwasser.baden-wuerttemberg.de/>

flussgebietseinheit-donau-in-baden-wuerttemberg, Quelle: xx Design Partner

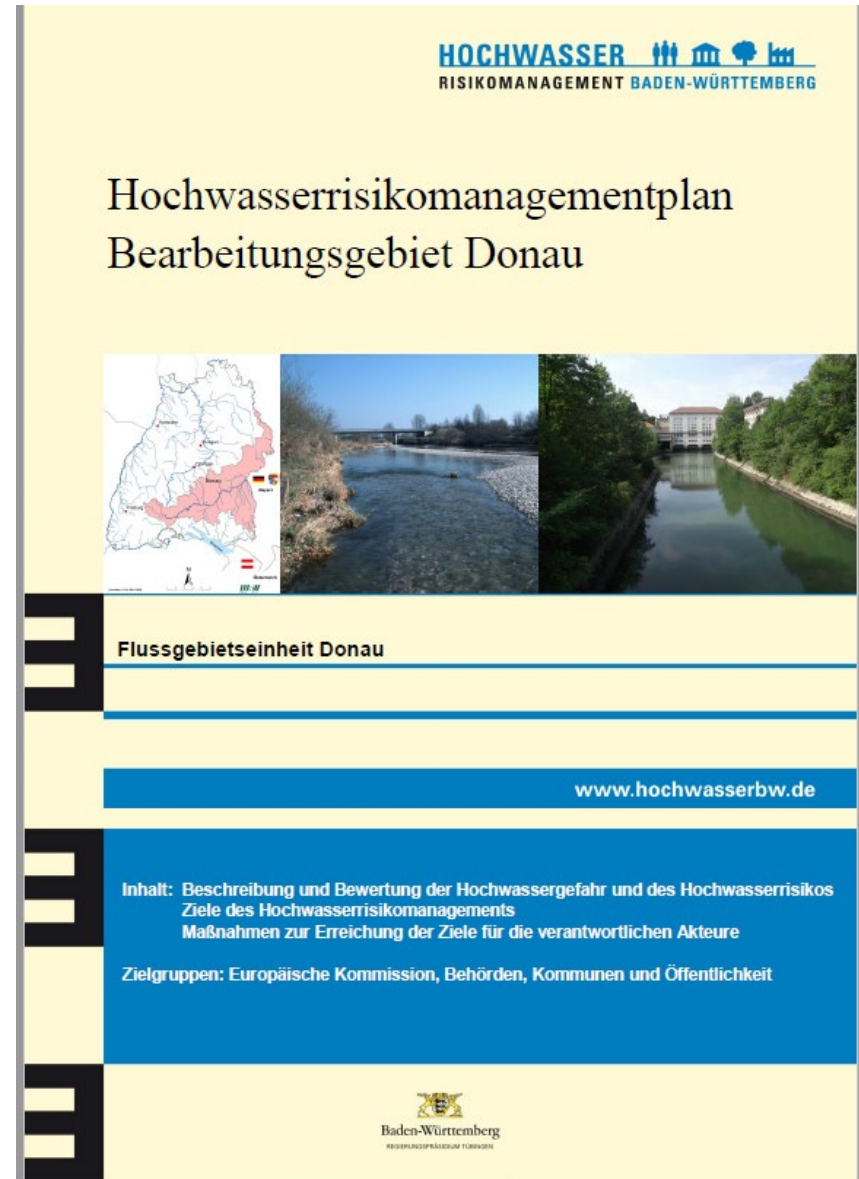
Flood Risk Management Plan

German governance level:
Federal state of Baden-Württemberg

River basin district: Danube

Published in October 2015

www.hochwasserbw.de



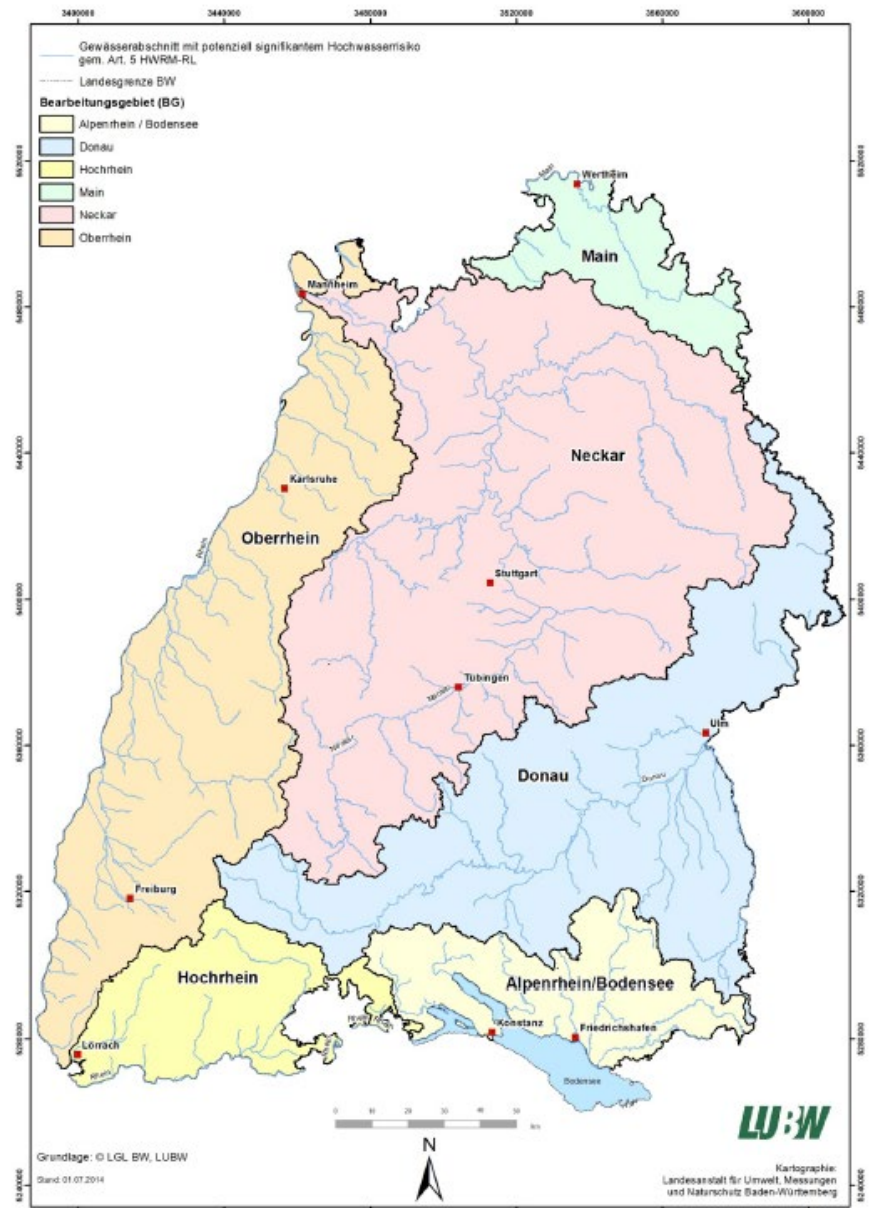
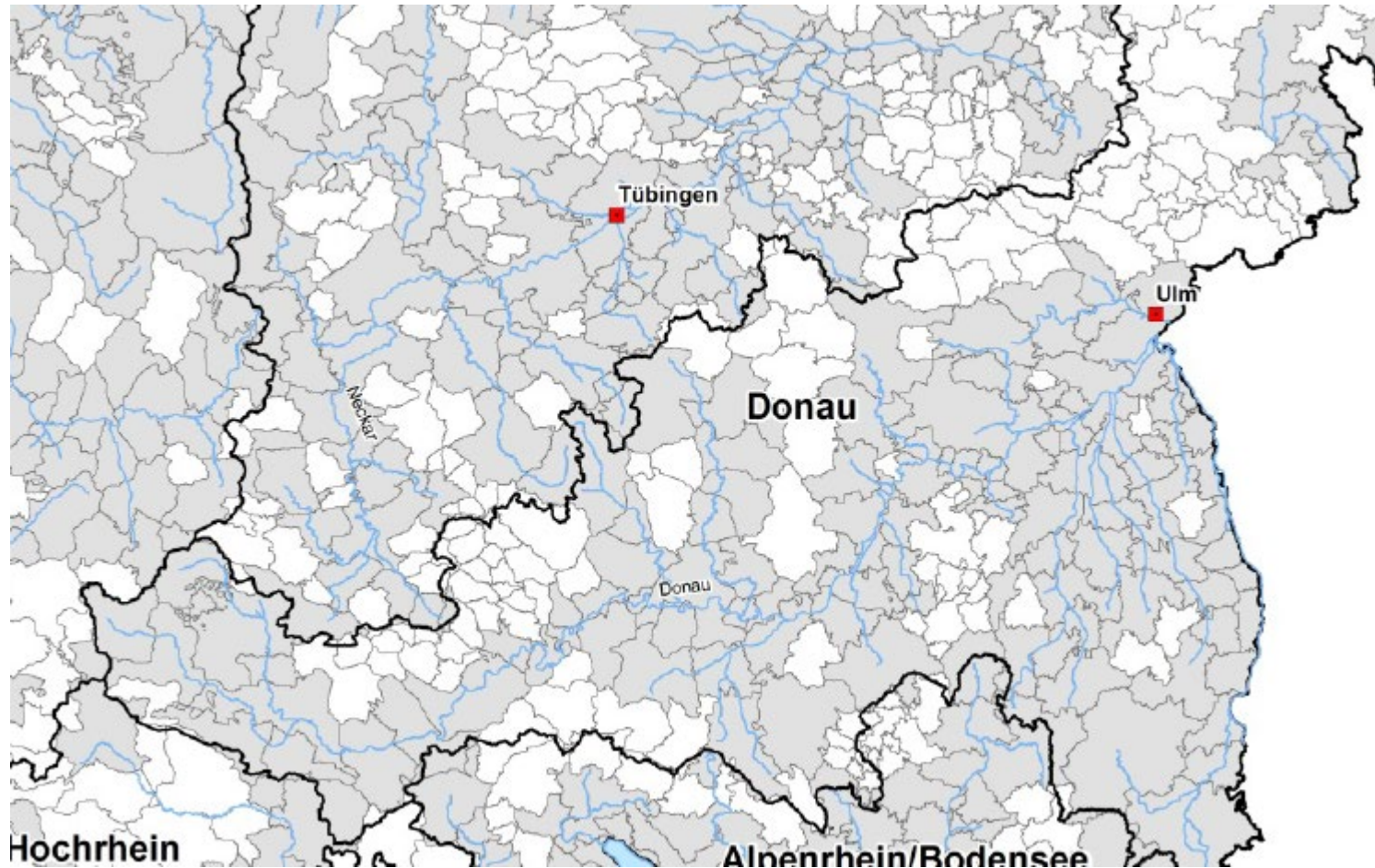


Abbildung 6 Überblick über die Bearbeitungsgebiete in Baden-Württemberg

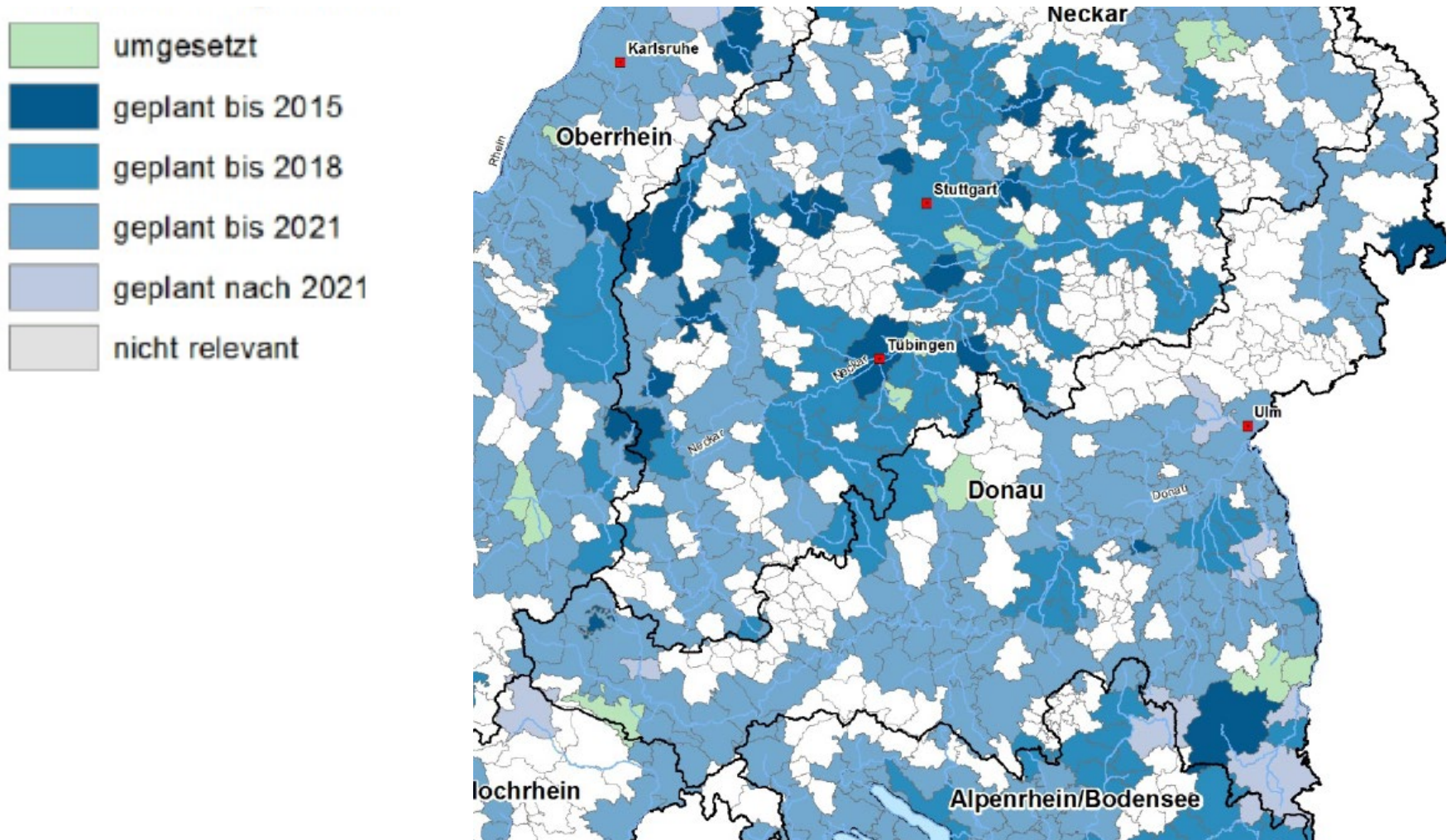
Overview of the river basin
Districts in Baden-Württemberg
Hochwasserrisikomanagementplan Donau, p. 41



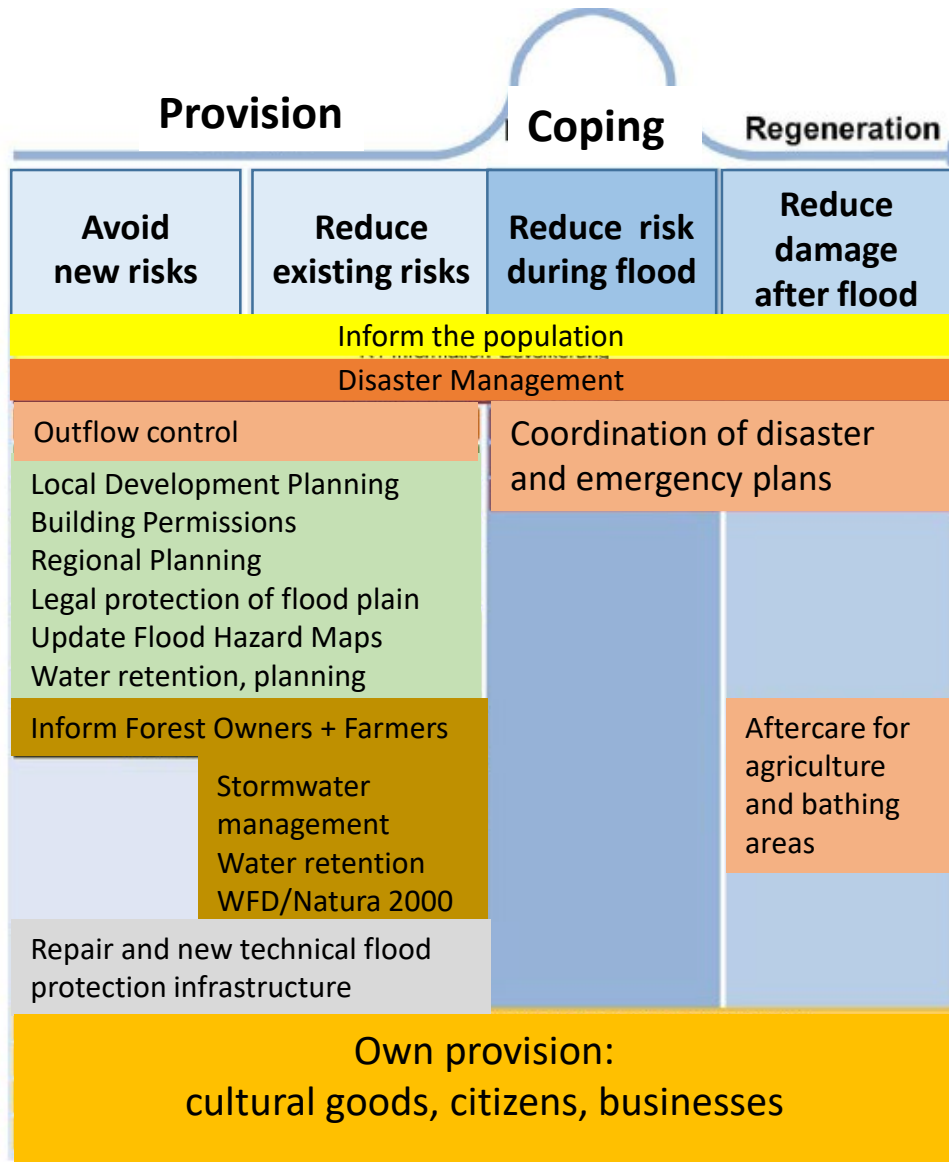
Coordination units within the Danube river basin district
Hochwasserrisikomanagementplan Donau, p. 42



In grey: the municipalities affected by an extreme flood event
Hochwasserrisikomanagementplan Donau, p. 44



Status of the implementation of flood prevention measures in the local land use plans (Flächennutzungspläne), Hochwasserrisikomanagementplan Donau, p. 121



Which types of measures does the Danube Flood Risk Management Plan comprise?

Adapted from:
Hochwasserrisikomanagementplan Donau, p. 84

The actual design decisions are still at the municipality level



June 2019 in Nürtingen: Explanatory walk with citizens about flood protection issues along the Tiefenbach valley. A citizen council has been established on that basis.

Picture: NTZ



Flood protection wall in Grimma, Saxonia, source: bild.de



Renaturalised urban brook in Eitdorf

Source: Georg Lamberty / Planungsbüro Zumbroich



Master plan Fulda-Aue: Reconstructing the floodplain of river Fulda by opening and reconnecting water meadows, decrease water runoff speed during flood events.

source: Marco Linke
Medieningenieurbüro Manntau



**Widening up of the river Fulda
in Rothenburg**

source: Marco Linke
Medieningenieurbüro Manntau

Some conclusions: The Floods Directive seems to lead us from a Safety Approach towards a Risk Approach

Table 1. Difference between safety and risk approaches

	Safety Approach	Risk Approach
Central question	How can we protect ourselves	What safety at what cost
Collected events	Frequent	Frequent and infrequent
Significance of the hazards	Not known	Known, evaluation included
Action planning	Technically	Interdisciplinary
Comparison of measures	Hardly possible	Efficacy can be compared, acceptance based on efficacy
Control of the use of resources	Sectoral	Active, prioritization of overall view
Safety	For the present generation, high in individual sectors	Solidarity with future generations, balanced for the overall system

Source: Grünewald (2003).

Original source: Grünewald (2003) Flood Prevention in Germany–Learning from Disaster 2002 in the Elbe Basin, here quoted from Müller, Uwe (2013): Implementation of the Flood Risk Management Directive in Selected European Countries

Summary of the Floods Directive (1)

Multilevel governance at the bioregional scale

- River basin scale as the unit of management
- but limits to transboundary cooperation

Adaptability

- Six year cycle allows for adaptation to climate change requirements

Effective Public Participation and Access to Justice

- Public accessibility of maps and plans + inclusion into their production and update
- But the ability of citizens to challenge decisions is limited

Effectiveness in goal achievement

- Still difficult in transboundary situations, different concepts and approaches

Priest, S. J., C. Suykens, H. F. M. W. Van Rijswijk, T. Schellenberger, S. B. Goytia, Z. W. Kundzewicz, W. J. Van Doorn-Hoekveld, J.-C. Beyers, and S. Homewood. 2016. The European Union approach to flood risk management and improving societal resilience: lessons from the implementation of the Floods Directive in six European countries. *Ecology and Society* 21(4):50. <https://doi.org/10.5751/ES-08913-210450>

Summary of the Floods Directive (2)

Goodness of fit

- Countries are flexible to select appropriate management objectives
- some requirements like management plans and participation might be far away from existing approaches

Diversification

- The FD aims for a more diversified approach, including nature-based solutions
- but this is **not** a fixed requirement

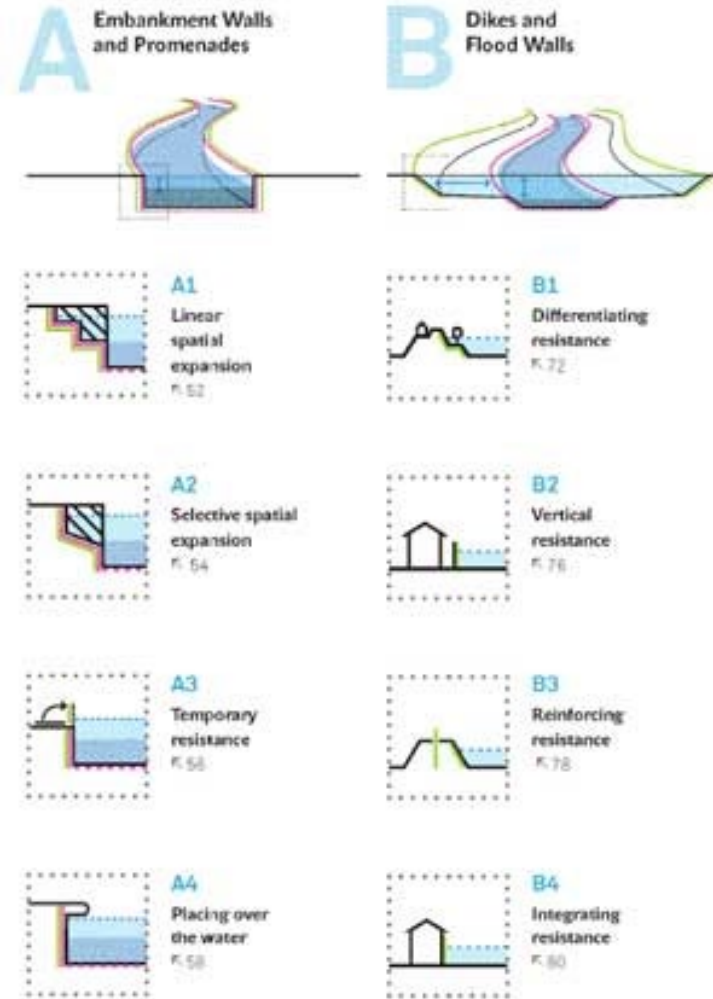
Priest, S. J., C. Suykens, H. F. M. W. Van Rijswijk, T. Schellenberger, S. B. Goytia, Z. W. Kundzewicz, W. J. Van Doorn-Hoekveld, J.-C. Beyers, and S. Homewood. 2016. The European Union approach to flood risk management and improving societal resilience: lessons from the implementation of the Floods Directive in six European countries. *Ecology and Society* 21(4):50. <https://doi.org/10.5751/ES-08913-210450>

Transboundary Coordination

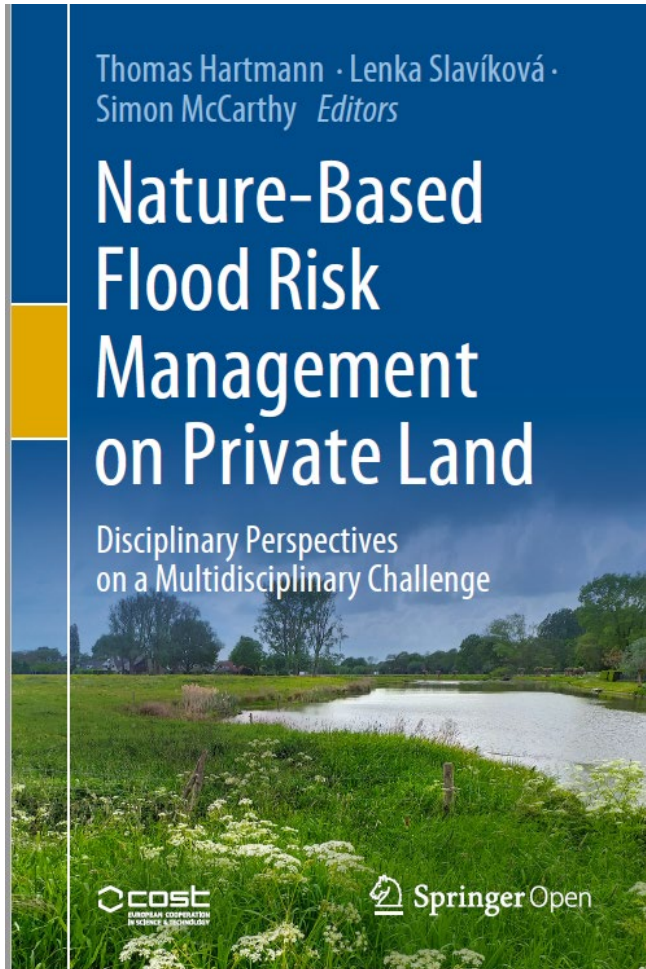


The screenshot shows the homepage of the International Commission for the Protection of the Rhine (ICPR). The browser address bar displays <https://www.iks.org/en/>. The page features a large header image of a river valley with a town. On the left, there is a logo for IKSR, CIPR, and ICBR, which includes a stylized bird and a circular arrangement of stars. Below the logo are the flags of Germany, France, the Netherlands, and the United Kingdom. A navigation menu includes links for Home, Sitemap, Imprint, and Data privacy. The main content area has a 'Welcome' message and a news item titled 'The president of the ICPR attending the meeting of the Commission on Sustainable Development'. On the right side, there are three buttons: 'About us', 'Office of the ICPR', and 'Meetings/Documents'. A search bar at the top right contains the text 'Your key word'. At the bottom left of the screenshot, there is a URL: <https://doodle.com/poll/2d463b3petyxt6mp>.

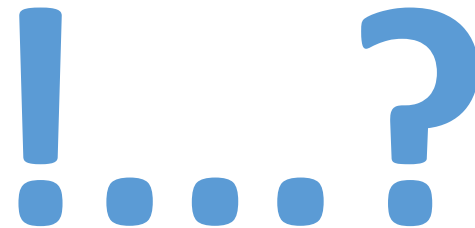
Further Reading



Further Reading



Any comments or questions?



Seminar Process 2020/2021

From Europe to the European Union

Landscape and Agriculture in the EU

Landscape and Regional Development Policy in the EU

A

B

C

01.04.-24.04.20

08.05.-39.05.20

05.06.-02.07.20

Summer
2020

A.1

A.2

A.3

B.1

B.2

B.3

B.4

C.1

C.2

C.3

C.4

Concept Map

Concept Map

Assignments

Self-chosen study

Winter
2020/2021

A.1

A.2

A.3

A.4

D.1

D.2

D.3

D.4

E.1

E.2

E.3

F.1

F.2

F.3

09.10.-30.10.20

06.11.-27.11.20

03.12.-17.12.20

08.01.-22.01.21

A'

D

E

F

From Europe to the European Union

Environment and Nature Protection in the EU

Landscape and Climate Change

Conceptual Connections

Next seminar session

Wednesday, November 18

14 00 – 15 30



Focus Topic: Natura 2000 and Habitat Protection

Our speaker: Jose Maria Fernandez Garcia (Spain)

Biodiversity Project Manager at Hazi Foundation

Thank you very much for your attention

