A future task in good hands

Federal Agency for Nature Conservation

Floodplains in Germany

Synergies with nature conservation, WFD and flood protection

BfN II 3.2 „Inland water, floodplain ecosystems and water balance“
Dr. Stephanie Natho





Who we are…

- is the scientific authority for national and international nature conservation and landscape management (Bonn – Leipzig – isle of Vilm)
- provides the scientific basis for political decisions with respect to nature conservation
- cooperates with the authorities of the federal states
- is one of the research agencies of the German Ministry of Environment

Large Scale Conservation Projects

30 river and floodplain projects (1979-2013)

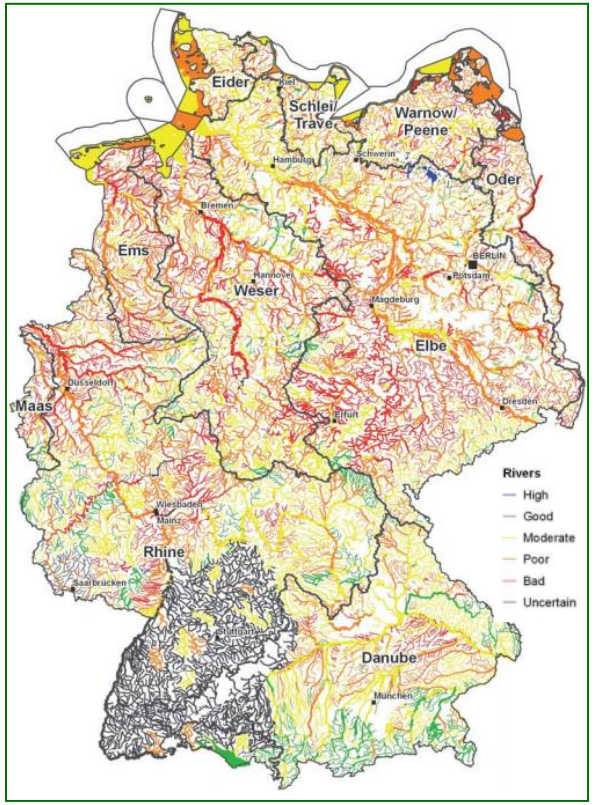
App. 60,000 ha of the core areas of Large Scale Conservation projects lie within the boundaries of floodplains

Total funding:
278.5 mill. € (1979-2013)

Sources: Federal Agency for Nature Conservation (BfN), 2013
Geobasisdata ©GeoBasis-DE/BKG 2011

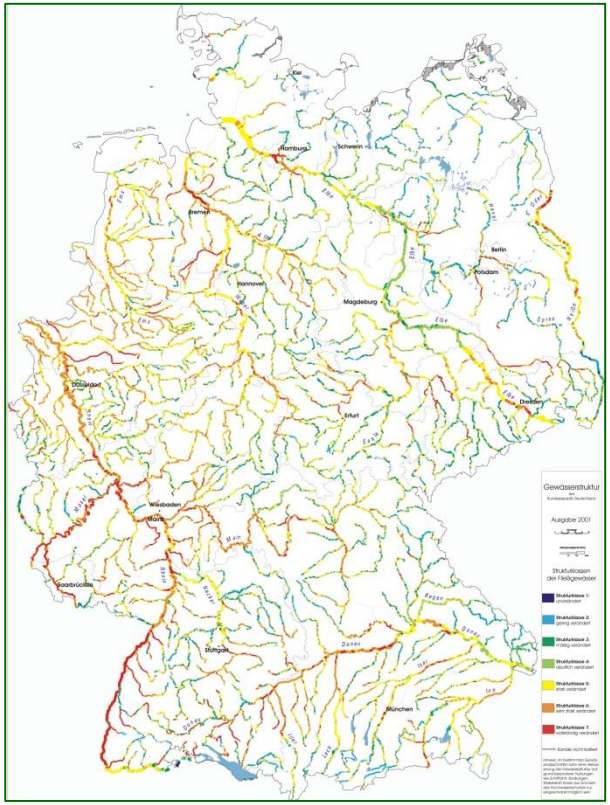
How to map the status of floodplains?

Ecological Status of surface water bodies



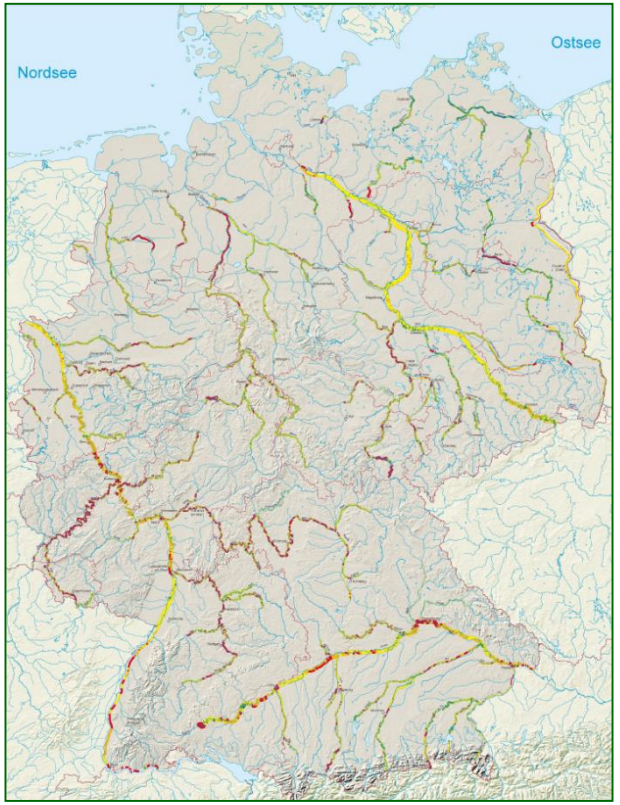
Source: BMU/UBA 2010, according to Portal Wasserblick/BfG, last update March 22 2010

Structural Quality of surface water bodies



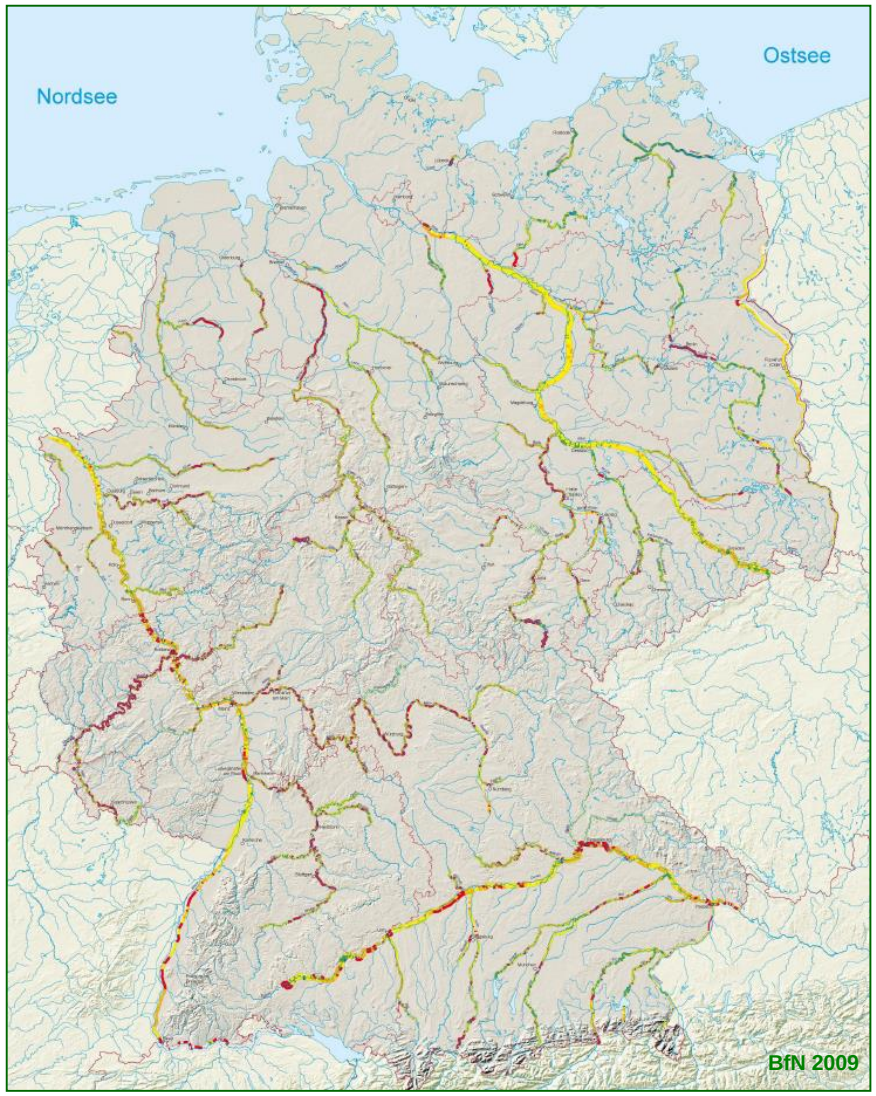
Source: UBA according to LAWA 2002

Status of Floodplains

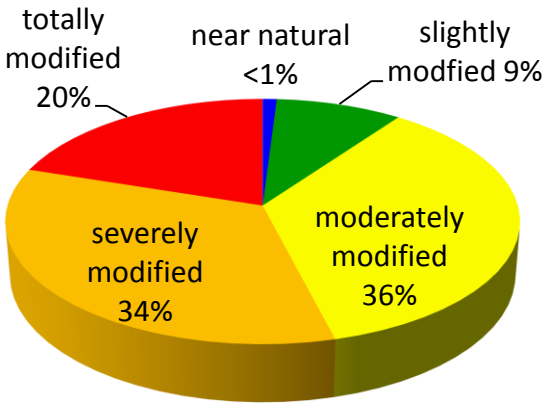


Source: BfN 2009

Floodplains – loss of naturalness

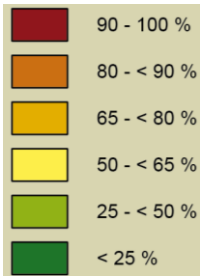


Status report of German floodplains

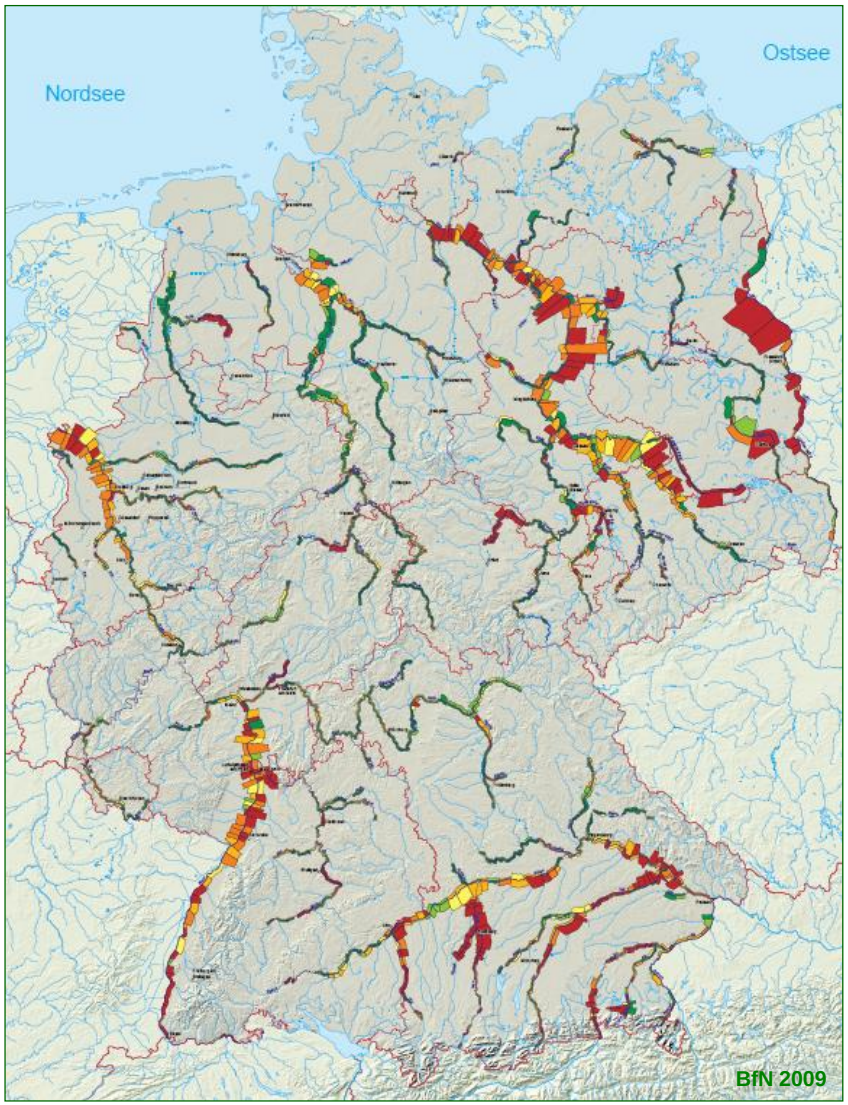


www.bfn.de/0324_auenzustandsbericht.html

Floodplains – loss of inundation area



Status report of German floodplains



- 15,000 km² of floodplains (4.4 % of Germany)
- Losses of 2/3 of floodplains available for inundation on the basis of a HQ100
- At large rivers (Elbe, Rhine, Danube) losses of up to 90%
- BUT lower losses do not necessarily mean a better status!

www.bfn.de/0324_auenzustandsbericht.html

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Loss of inundation areas

Foto: A. Künzelmann

Legitimations: Long way to go…


Foto: S. Natho


Foto: S. Natho


Foto: J. Purps


Foto: S. Natho

2002: EU-WFD: good ecological status till 2015

2005: Amendment Act for the improvement of a preventive flood control: including e.g. introduction of „inundation areas“ for flood water retention to the Federal Water Act

2007: EU-Floods Directive: Floodrisk management plans with focus on prevention: give rivers more space!

2007: National Strategy on Biological Diversity: increase of active floodplains by 10% till 2020

2009: Amendment to the Federal Water Act: Implementation of Floods Directive

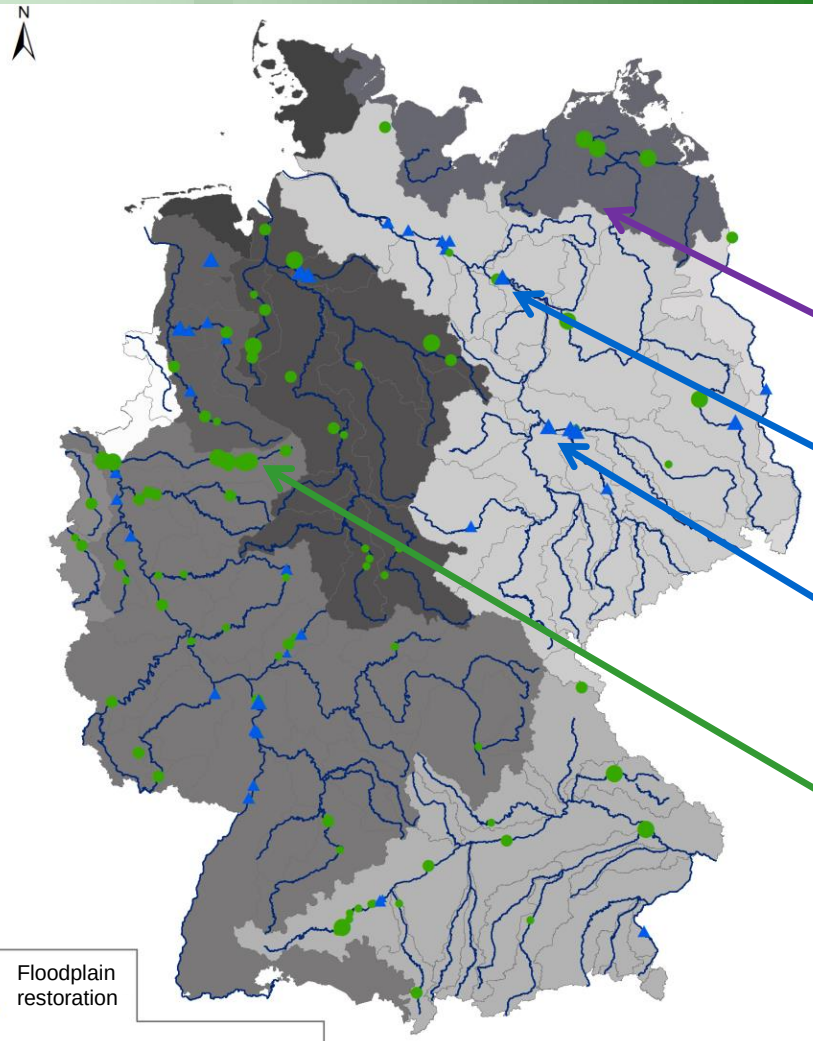
2011: EU Strategy on Biodiversity: Restoration of 15% of degraded ecosystems with high priority to floodplains

2013: Coalition agreement: give rivers more space!

2015: ……

2020: ……

Floodplain Restoration Projects in Germany



- 146 projects
- 37 with dyke relocations
- Check for 91: effect on floodplain status

Mire Kieve (under construction)

Dyke relocation Lenzen (2009)

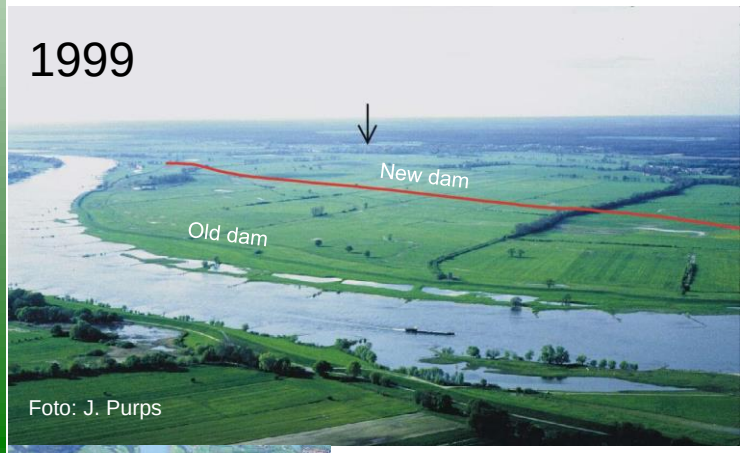
Mittlere Elbe: Dyke relocation Lödderitzer Forst (under construction)

Restoration Lippe Aue (several projects – partly finished/under construction)

Examples of positive effects of floodplain restoration projects

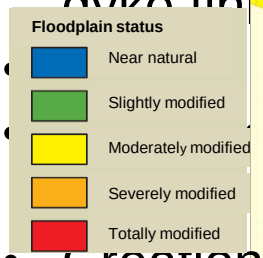


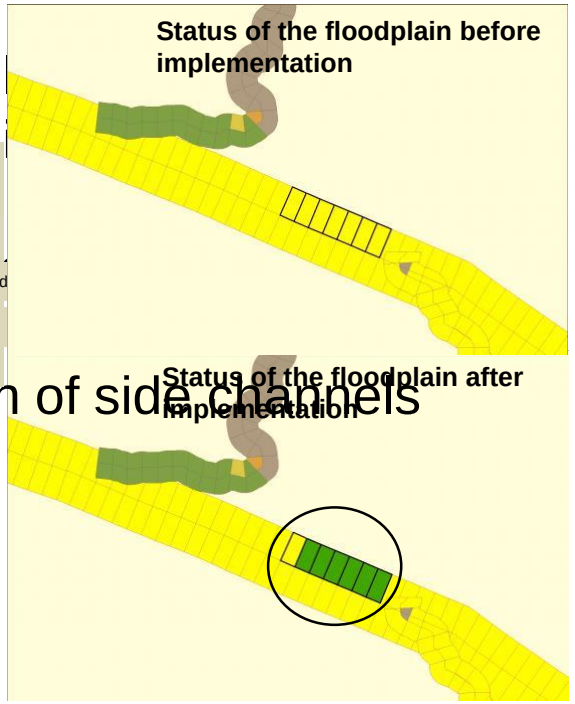


Lenzener Elbtalaue

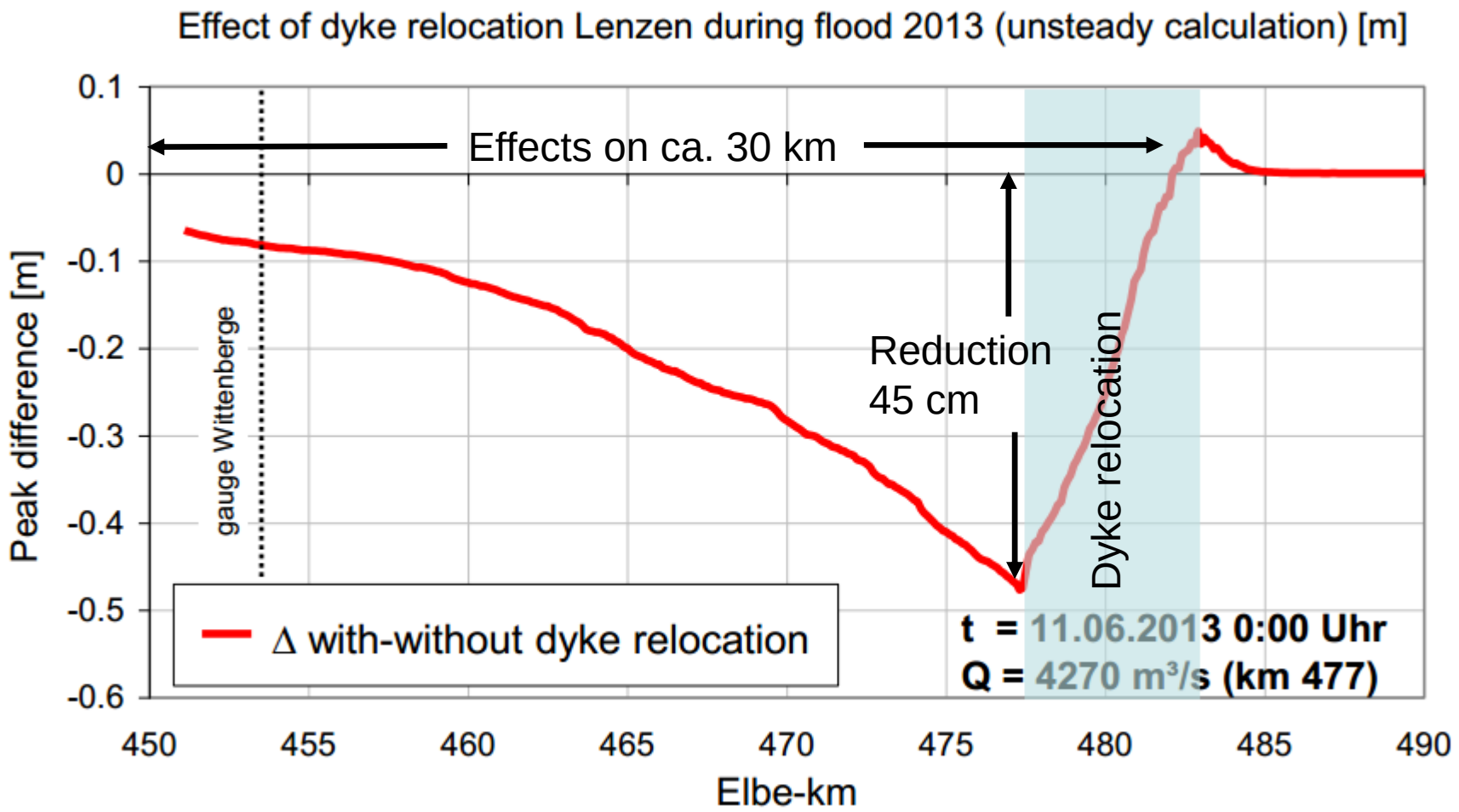
- Dyke re
- Creation of side channels





- Status of floodplains
- FFH habitat types
- Biodiversity
- Recreation (Elberadweg)
- Nutrient retention
- Natural flooding/flood control

Floodplain restoration and Flood protection



Source: M. Hatz, BfG - Presentation IKSE on 21.11.2013

Economic value of floodplain restoration

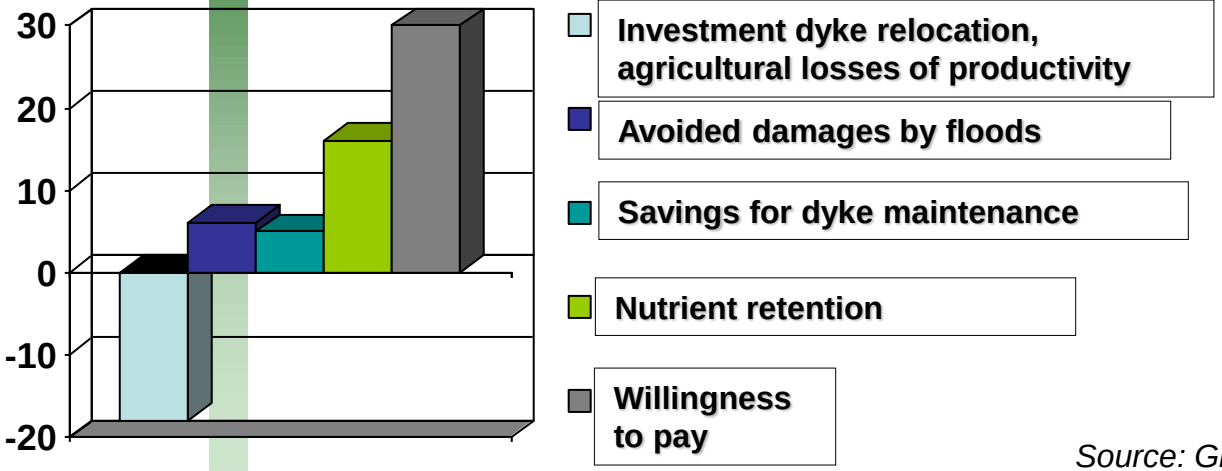
Scenario:

Dyke relocation for regaining 35,000 ha of floodplains along the Elbe

Cost-Benefit-ratio 1:3

incl. ecosystem services and payment for biodiversity

Annual cost and benefits in EUR (maximum scenario dyke relocation)

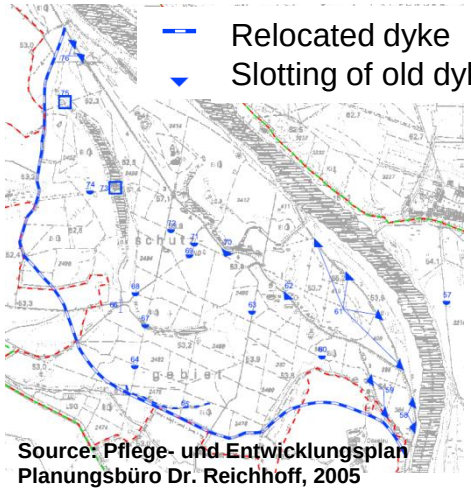


Source: Grossmann et. al 2010

Examples of positive effects of floodplain restoration projects




Fotos: B. Neukirchen



Source: Pflege- und Entwicklungsplan
Planungsbüro Dr. Reichhoff, 2005

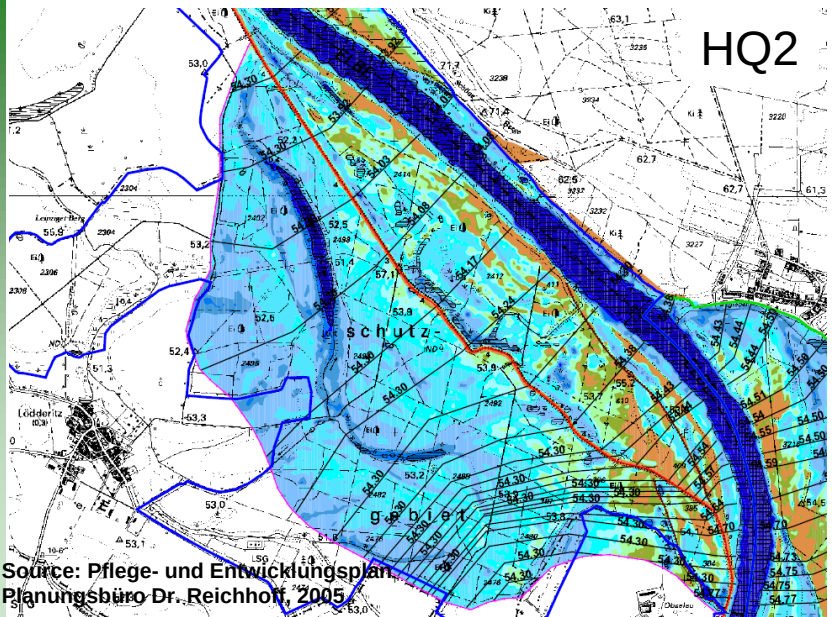
Mittlere Elbe:Lödderitzer Forst

- Status of floodplains
- FFH habitat types
- Biodiversity
- Nutrient retention
- Natural flooding/flood control

Flagship: combination of nature conservation and flood protection

Dyke relocation

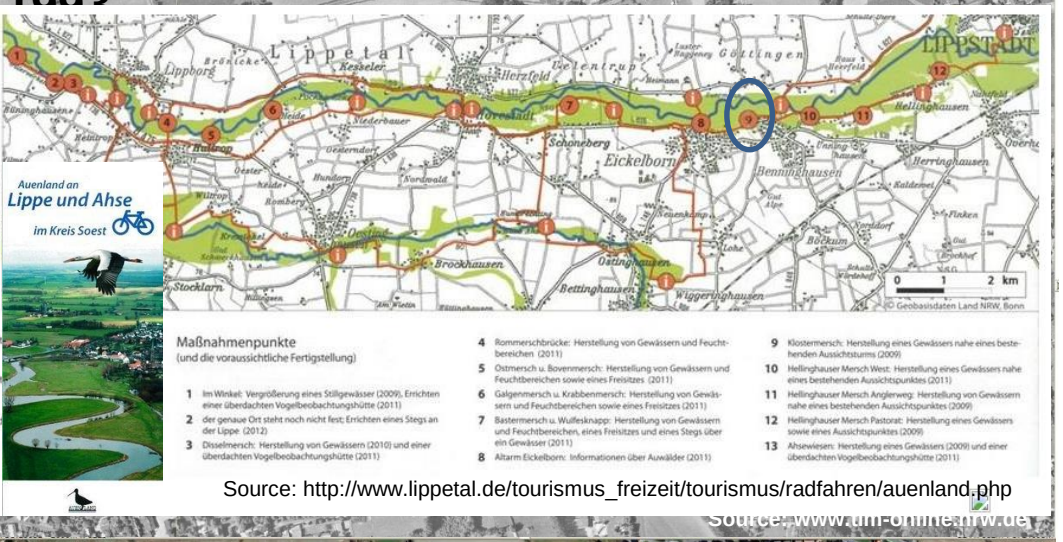
600 ha



Source: Pflege- und Entwicklungsplan
Planungsbüro Dr. Reichhoff, 2005

Examples of positive effects of floodplain restoration projects

1993



Source: http://www.lippetal.de/tourismus_freizeit/tourismus/radfahren/auenland.php

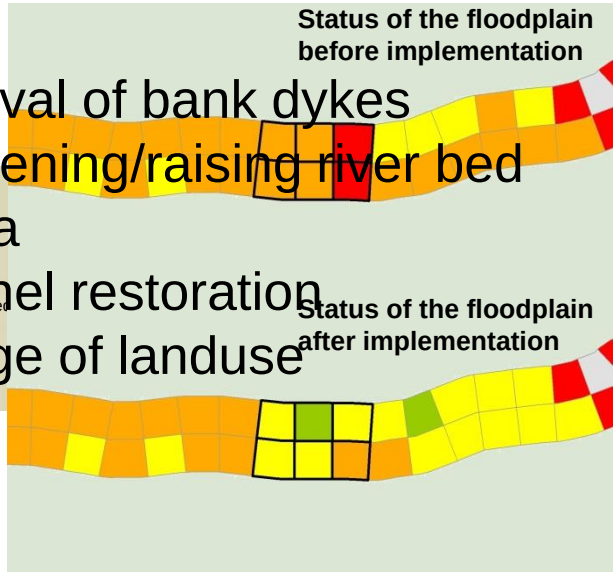
Source: www.tim-online.nrw.de

ca. 2010

Source: www.tim-online.nrw.de

Lippe Klostermersch

- Removal of bank dykes
- Broadening/raising river bed
- 130 ha
- Channel restoration
- Change of landuse



- Status of floodplains
- Structural water quality (WFD)
- Biodiversity/FFH habitats
- Leisure activities/recreation
- Natural flooding

Thanks to Joachim Drüke for his support for pictures.

Evaluation of Ecosystem Services - nutrient retention in active floodplains

The sum of inundated floodplains in Germany retain up to

42,000 t nitrogen and 1,200 t phosphorus

– per year.

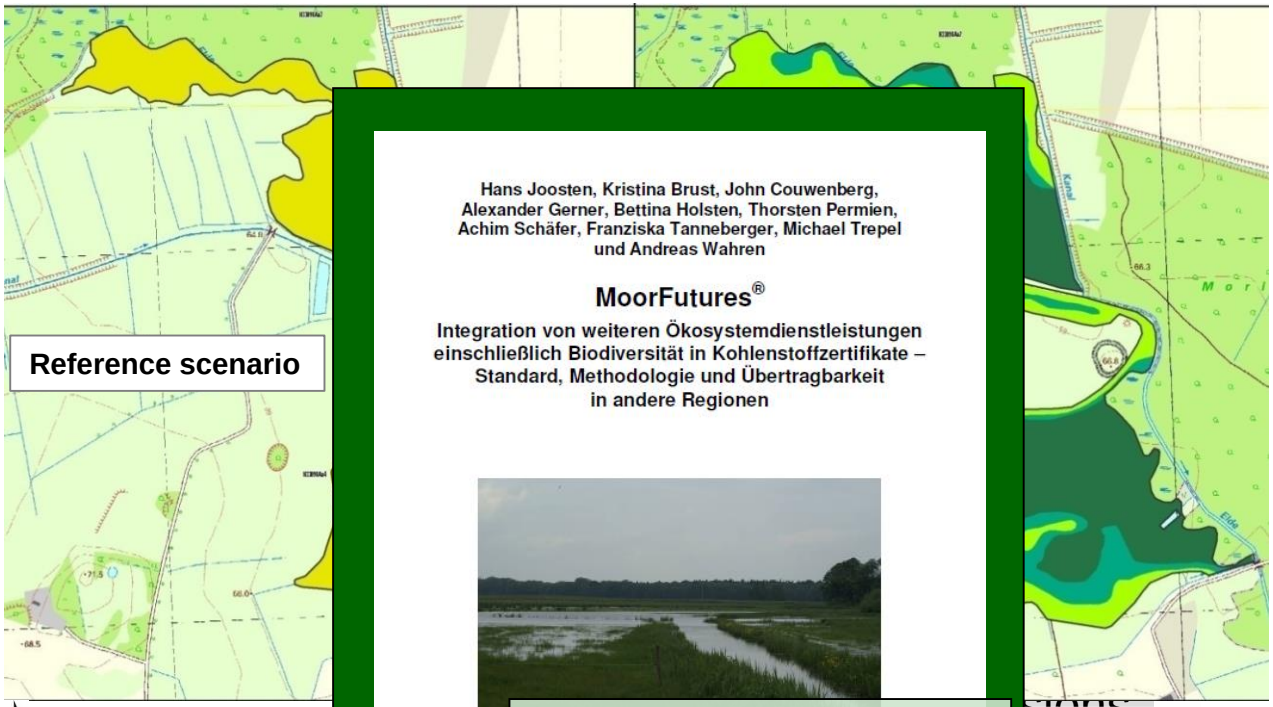
This equals a purification service of 500 Mill. € per year.

Source: Scholz et al. (2012)

Examples of projects:

Moor Futures

Ihre Investitionen in Klimaschutz.



Source: C. Tegetmeyer

www.moorfutures.de
www.bfn.de

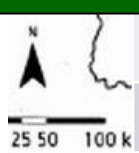
Project area:
Polder Kieve

- 65 ha, drained fen

Market-based instrument:
MoorFutures

- GHG-Red. certification
- 50 years project lifetime
- 35 € per MoorFuture (~1 t CO_2-eq)

	Reference scenario	Project scenario
	1,300 t CO2-eq/a	530 t CO_2-eq/a
	1.1 t N/a	0.3 t N/a
	0 W	1,820 kW
Peatland biodiversity	new habitats for peatland species	
Groundwater recharge	reserves enlarged by 150,000 m³	



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Concluding remarks


Foto: J. Purps


Source: www.tim-online.nrw.de


Foto: B. Neukirchen

- Several floodplain restoration projects carried out in Germany – including 37 dyke relocation projects
- Carrying out a floodplain status inventory before and after implementation allows aggregated evaluation of success (morphodynamics, hydrodynamics, vegetation & landuse)
- Floodplain restoration results in multiple benefits for society namely nature conservation (biodiversity, FFH etc.), flood control, nutrient retention, carbon storage, WFD, recreation
- But to reach aims of WFD, FFH, more funds are needed
- New chances for floodplain restoration projects according to the coalition agreement 2013:

  a) national flood protection program with dyke relocations as one measure

  b) „Blaues Band“ to create a network of floodplain restoration networks along federal water ways (out of use)

Further reading

Cost-Efficiency

http://www.bfn.de/fileadmin/MDB/documents/themen/biologischevielfalt/Klimaseite/26.06.rivers-10.45Dehnhardt.pdf

https://www.landschaftsoekonomie.tu-berlin.de/fileadmin/a0731/uploads/publikationen/workingpapers/wp01104.pdf

Lippe:

http://www.bfn.de/fileadmin/MDB/documents/themen/landschaftsundbiotopschutz/Tagung_2008/Zimball_Lueneburg_2008.pdf

http://www.hamm.de/en/lifeplus-projekt.html

Havel and Elbe

http://www.climatebuffer.eu/visits/elbe-havel-rivers/elbe-river/index.html

BfN: Large Scale Conservation Projects:

http://www.bfn.de/0203_mittlere_elbe+M5054de7a952.html

http://www.bfn.de/0203_lenzen+M52087573ab0.html

Thanks for your attention