



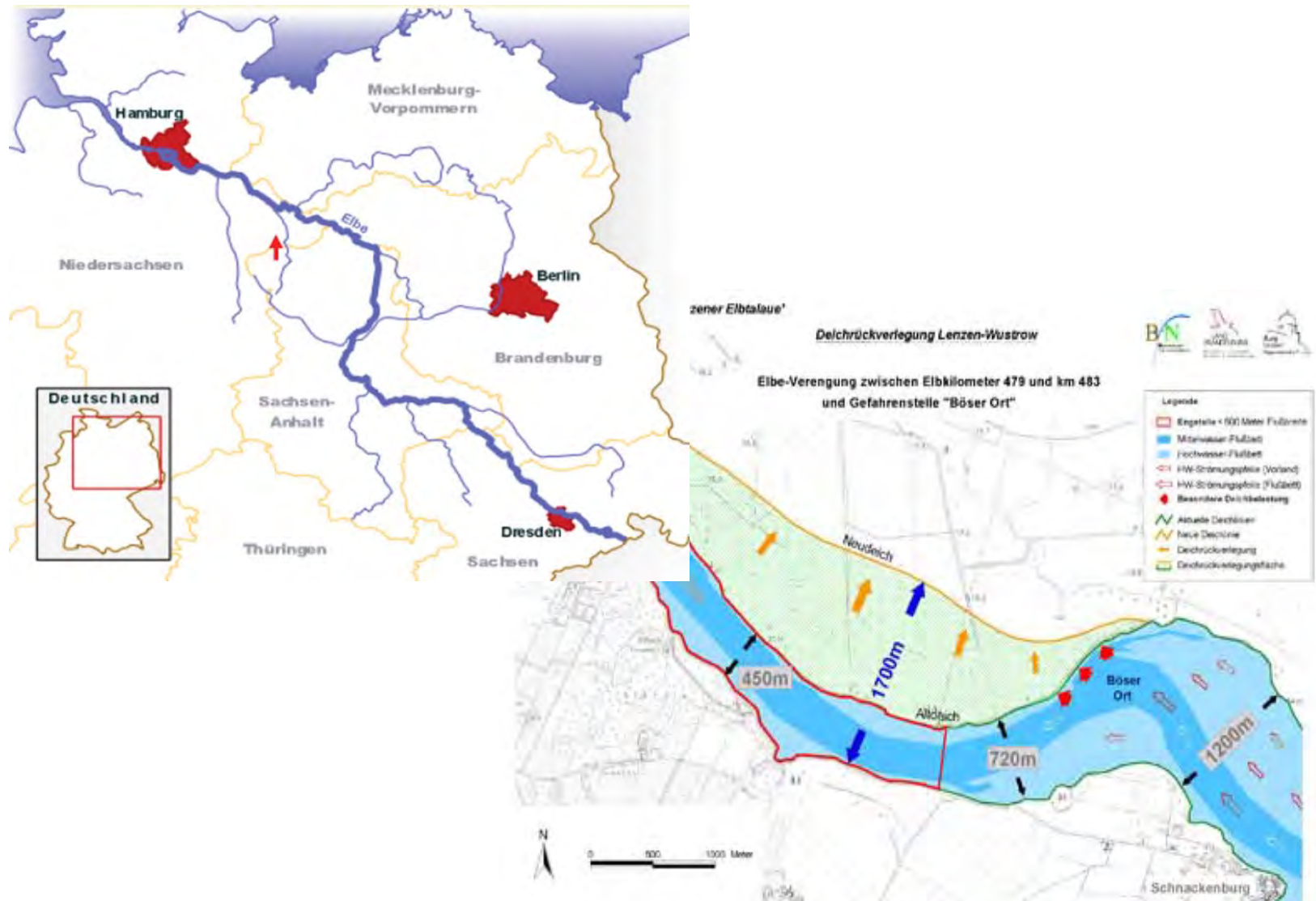
# Natural Water Retention Measures

Regional Workshop (Western Network),  
1<sup>st</sup> meeting 22-23 January 2014

## Natural Areas: Restoration of river alluvial plain at river Elbe/Germany

Thomas Borchers, German Federal Environment Ministry

# Restoration of river alluvial plain at Lenzen/Elbe (I)





# Restoration of river alluvial plain at Lenzen/Elbe (II)

## Large-scale nature conservation project

### Objectives (multi functional)

- ecological restoration of a functional hydrological active floodplain habitat (i.a. hard- and softwood forests, periodically inundated grassland)
- improved flood protection
- improved river hydro morphology

### Means

- relocate the dyke back inland to enlarge the enclosed area by about 420 ha and cutaways in the old dyke
  - mosaic of new flood channels, semi-open meadow countryside and alluvial forest, change of agricultural uses
  - carried out in the context of a pending dyke renovation
  - feasibility study 1992, project period 2002-2011 (TIME)
  - comprehensive land consolidation: 60 land owners affected (TALK)
  - >> 10 Mio € invested (MONEY)



Source: Christian Damm



Auwald bei Lenzen im Jahre 1776



# Restoration of river alluvial plain at Lenzen/Elbe (III)

## – Synergies

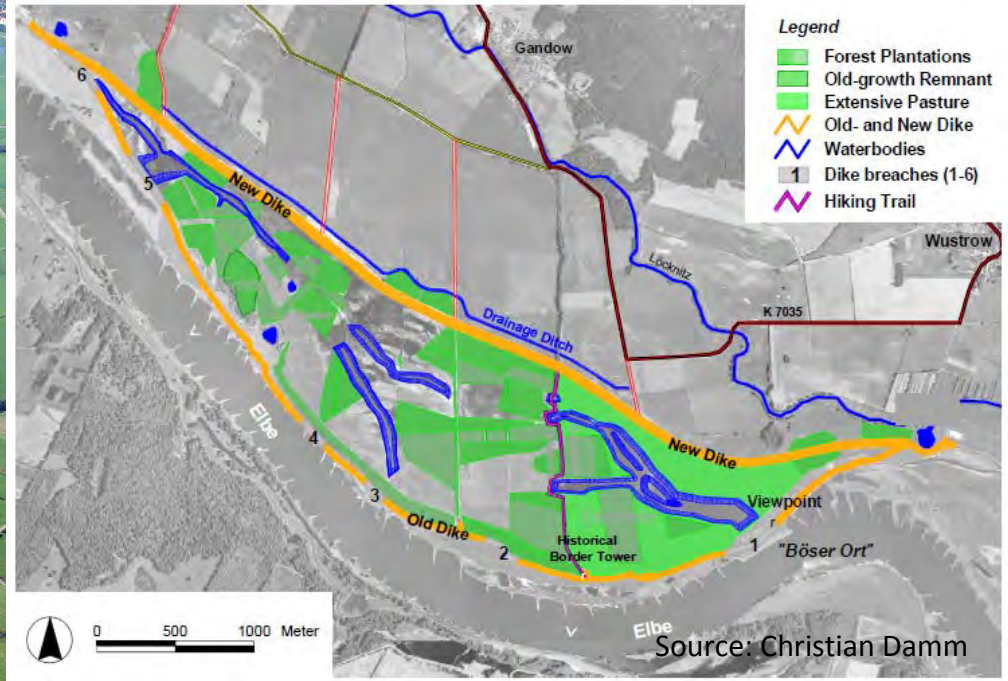
- objectives of Natura 2000, WFD and FD
- no-regret-measure for adaptation to and mitigation of CC
- helps to improve flood protection, groundwater recharge, nutrient reduction, afforestation ...

## – Effects

- the high water levels in 2011 as well 2013 in the area were up to 45 cm lower than in 2006 flood. About 5 km upstream near Schnackenburg the peak water level decreased by more than 20 cm.
- the area's on going development is monitored continuously and will be evaluated in 2015 and 2020c



Source: Christian Damm



Source: Nora Künkler

## Restoration of river alluvial plain

Analysis and Evaluation of **Ecosystem Functions and Services** of larger floodplains in Germany. German Federal Agency for Nature Conservation (2013):

- Flood retention (as shown that it has increased significantly)
- Nutrient retention (nitrogen retention increases by 141%, phosphorus by 186%)
- Carbon stocks and carbon sinks for greenhouse gas emissions (by establishing alluvial forests)
- Habitat functions (shown by an index of species and habitats biodiversity)
- Recreation and tourism

Potential of saving 500 Mio € by retention of water/floods, nutrients, substances, carbon sink

## Further Information:

**DAMM Christian (2013): Ecological restoration and dike relocation on the river Elbe, Germany. Scientific Annals of the Danube Delta Institute.**

**Large scale nature conservation project Lenzen:** <http://www.naturschutzgrossprojekt-lenzen.de/>

**Elbe river alluvial plain at Lenzen (Lenzener Elbtalau):** [http://www.bfn.de/0203\\_lenzen+M52087573ab0.html](http://www.bfn.de/0203_lenzen+M52087573ab0.html)

**Analysis of the Hydraulic Effects of a Dike Relocation:**

<http://www.baw.de/en/wasserbau/projekte/binnenprojekte/gewaessermodellierung/index.html>

**Rerouted levee stands the test:** <http://phys.org/news/2013-06-rerouted-levee.html>

**Land Consolidation as a Tool for Flood Prevention:**

[http://www.fig.net/pub/fig2006/papers/ts80/ts80\\_01\\_drees\\_sunderhaft\\_0853.pdf](http://www.fig.net/pub/fig2006/papers/ts80/ts80_01_drees_sunderhaft_0853.pdf)

**EU Water Policy's linkages to biodiversity:**

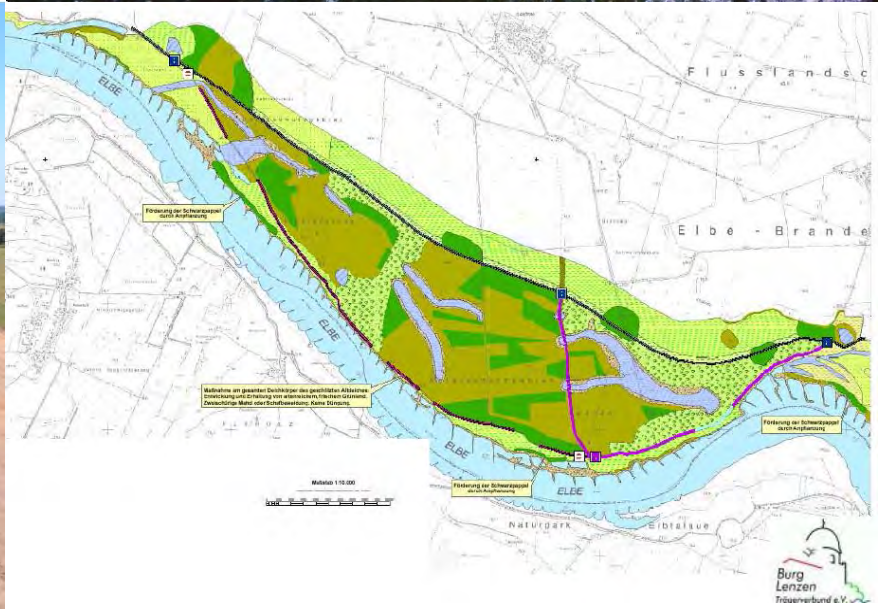
[http://ec.europa.eu/environment/archives/greenweek2010/sites/default/files/speeches\\_presentations/jekel\\_26.pdf](http://ec.europa.eu/environment/archives/greenweek2010/sites/default/files/speeches_presentations/jekel_26.pdf)

**SCHOLZ et al. (2012): Ökosystemfunktionen von Flussauen. Naturschutz und Biologische Vielfalt, Heft 124, 258 S.**

<http://www.bfn.de/0324flussauen-oekosystemleistung.html>

[http://www.bfn.de/0401\\_pm.html?&no\\_cache=1&tx\\_ttnews%5Btt\\_news%5D=4474&cHash=d41deeb0132a7a37dcae28b33b782575](http://www.bfn.de/0401_pm.html?&no_cache=1&tx_ttnews%5Btt_news%5D=4474&cHash=d41deeb0132a7a37dcae28b33b782575)





Source: Christian Damm (2012)