



Restoration potential for floodplains in the Danube River Basin

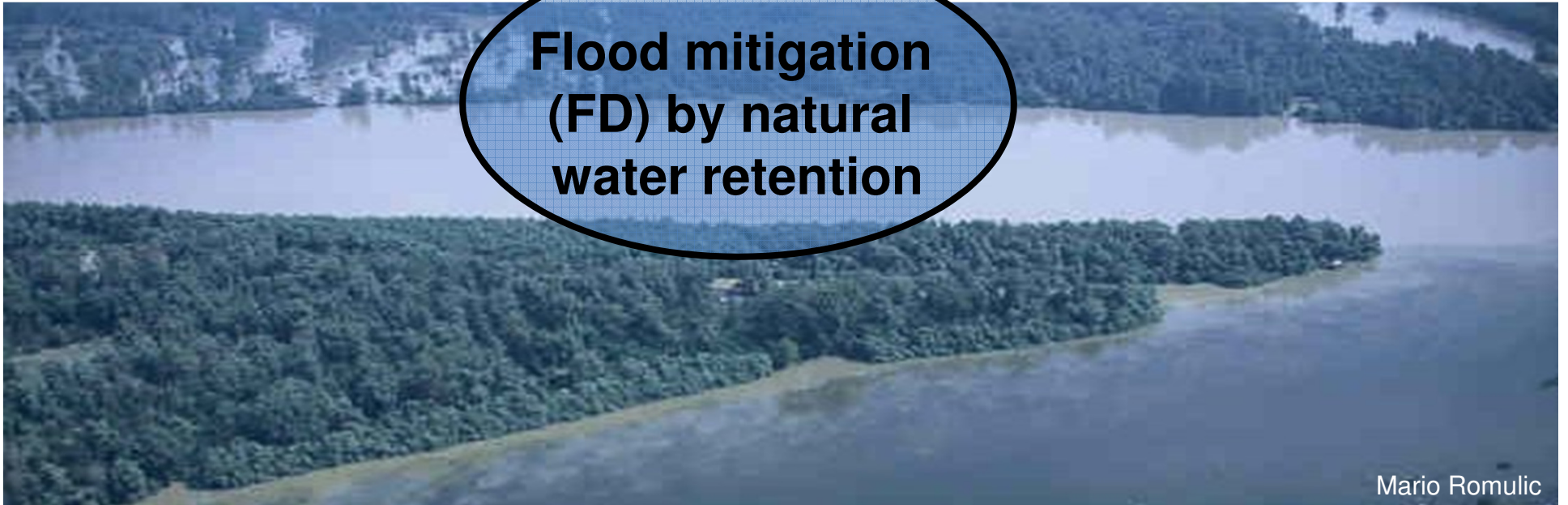
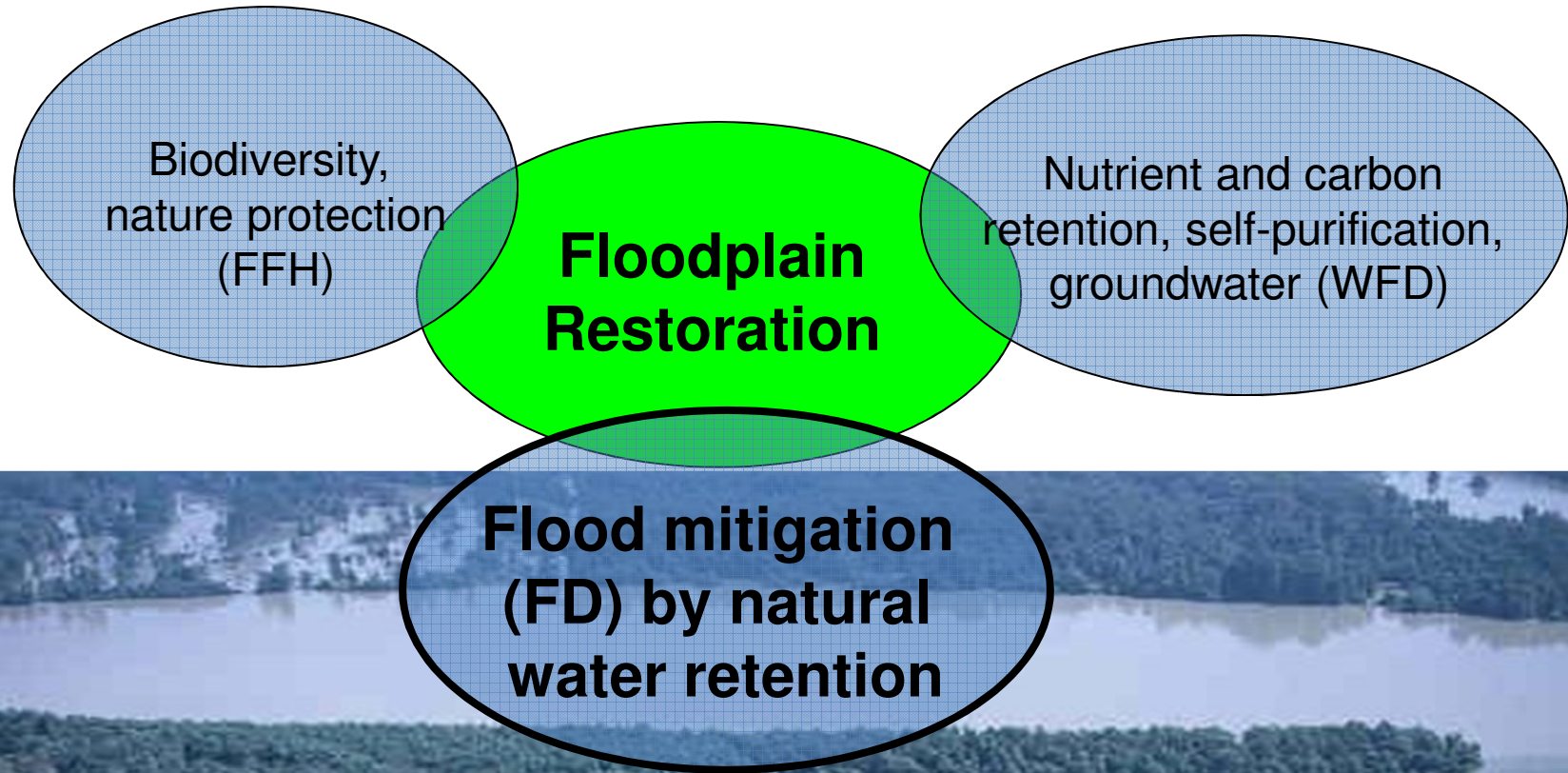
1st Danube Regional Workshop on
NWRM, Szentendre 2014



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Vienna



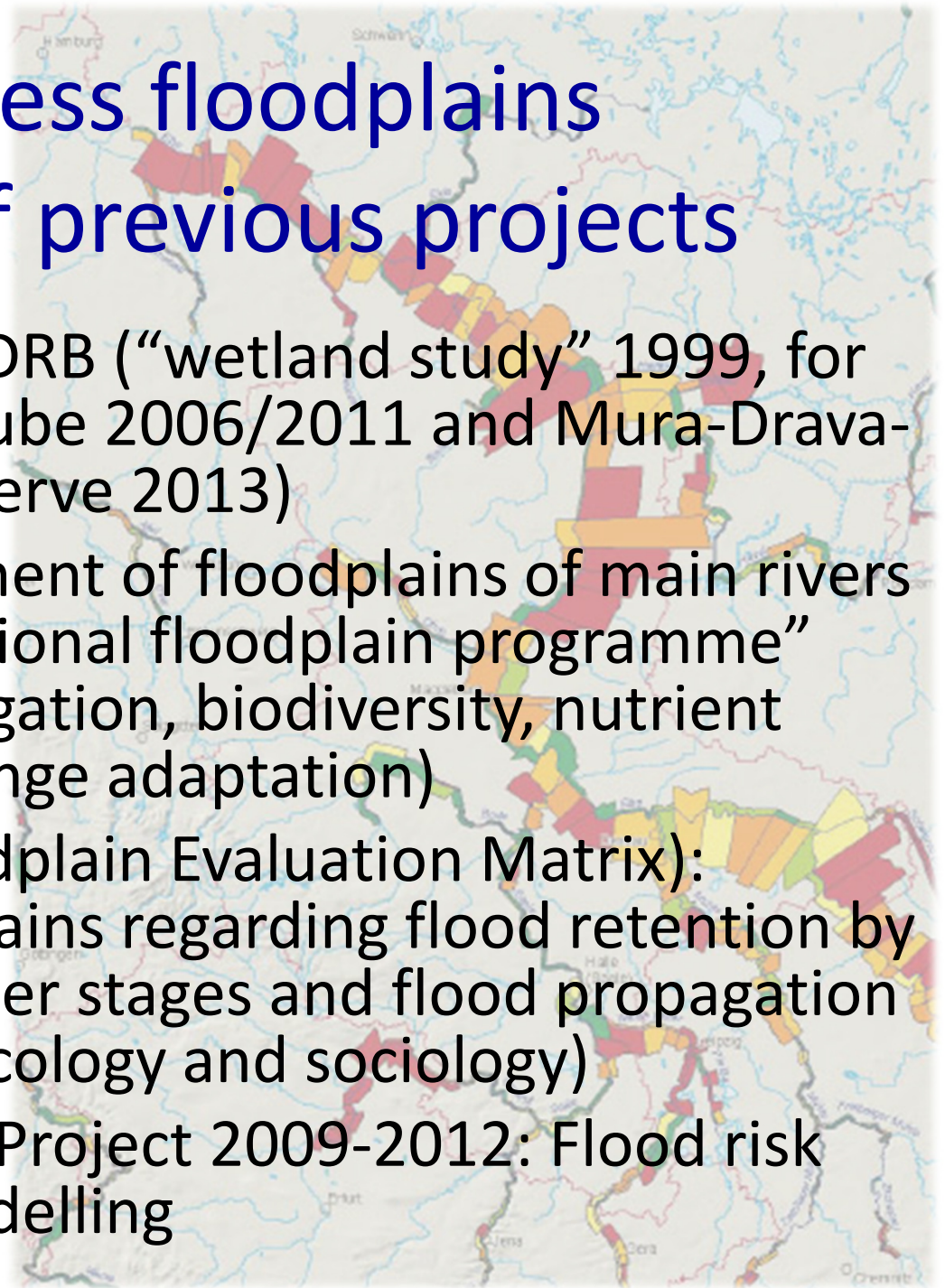
Context „Floodplain restoration“



How to assess floodplains

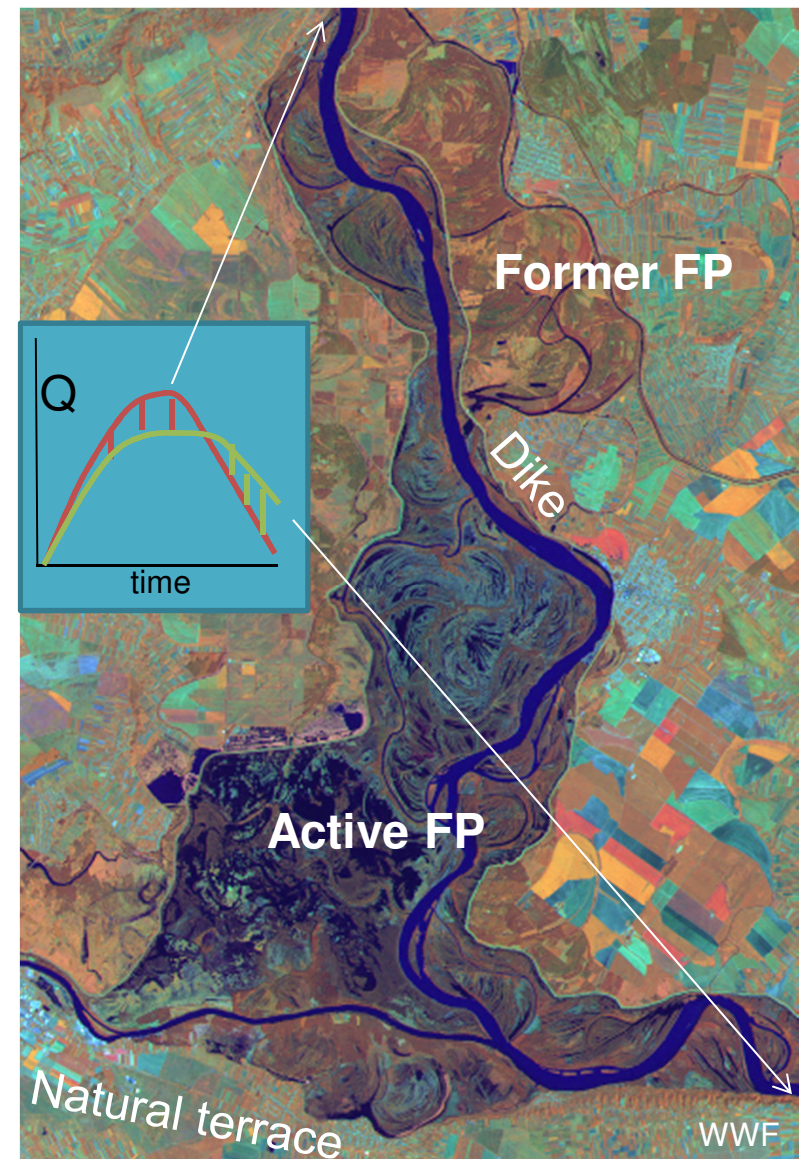
Experiences of previous projects

- WWF assessments in DRB (“wetland study” 1999, for DRB 2010, Lower Danube 2006/2011 and Mura-Drava-Danube Biosphere reserve 2013)
- Balancing and assessment of floodplains of main rivers in Germany” and “National floodplain programme” 2008-2010 (flood mitigation, biodiversity, nutrient retention, climate change adaptation)
- 2008/2013 FEM (Floodplain Evaluation Matrix): Assessment of floodplains regarding flood retention by discharge volume, water stages and flood propagation (in conjunction with ecology and sociology)
- Danube Flood Risk EC Project 2009-2012: Flood risk maps by hydraulic modelling



Flood retention in floodplains

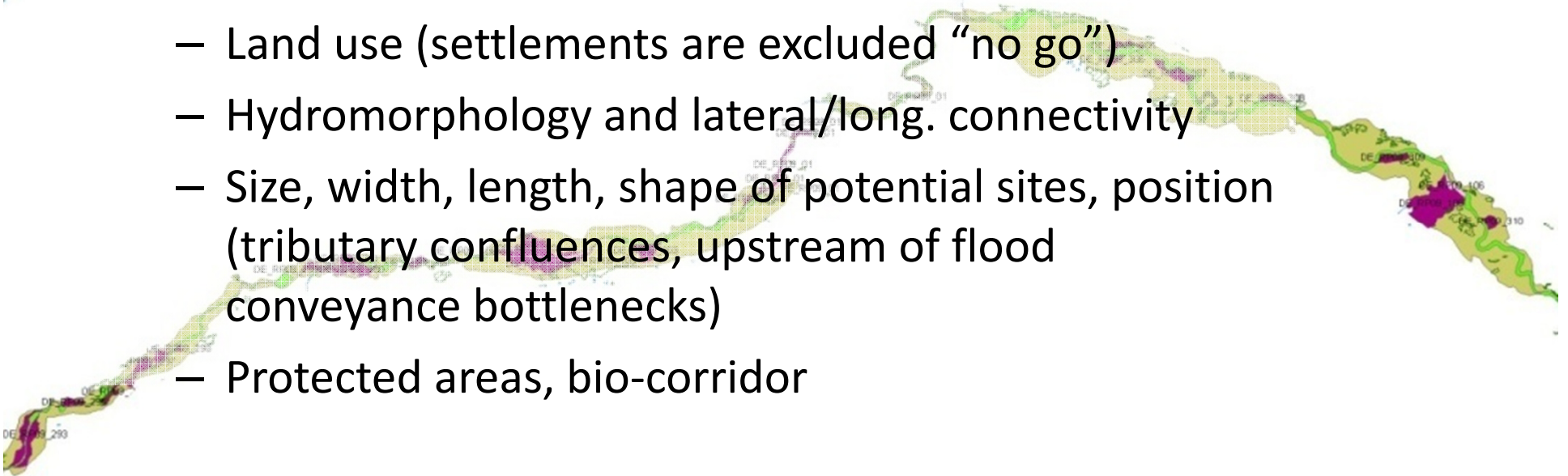
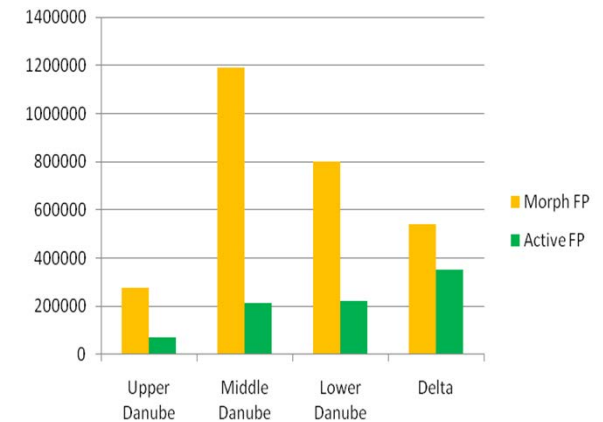
- Reduction of flood wave volume, water stages and in particular propagation speed
 - Retention volume defined by size, slope, shape (width) and roughness of floodplain area
- ❖ Pragmatic approach for large scale retention capacity estimation: Inventory of **active and former** floodplain; calculation of capacity by size and average water depth



Large scale Floodplain assessment

1. **Floodplain delineation:** Significant loss of active floodplains
2. **Floodplain assessment:** Land use/habitats, hydromorphological conditions, coverage of protected areas
3. **Potential sites for floodplain restoration in former floodplain (iterative selection and prioritisation):**

- Land use (settlements are excluded “no go”)
- Hydromorphology and lateral/long. connectivity
- Size, width, length, shape of potential sites, position (tributary confluences, upstream of flood conveyance bottlenecks)
- Protected areas, bio-corridor

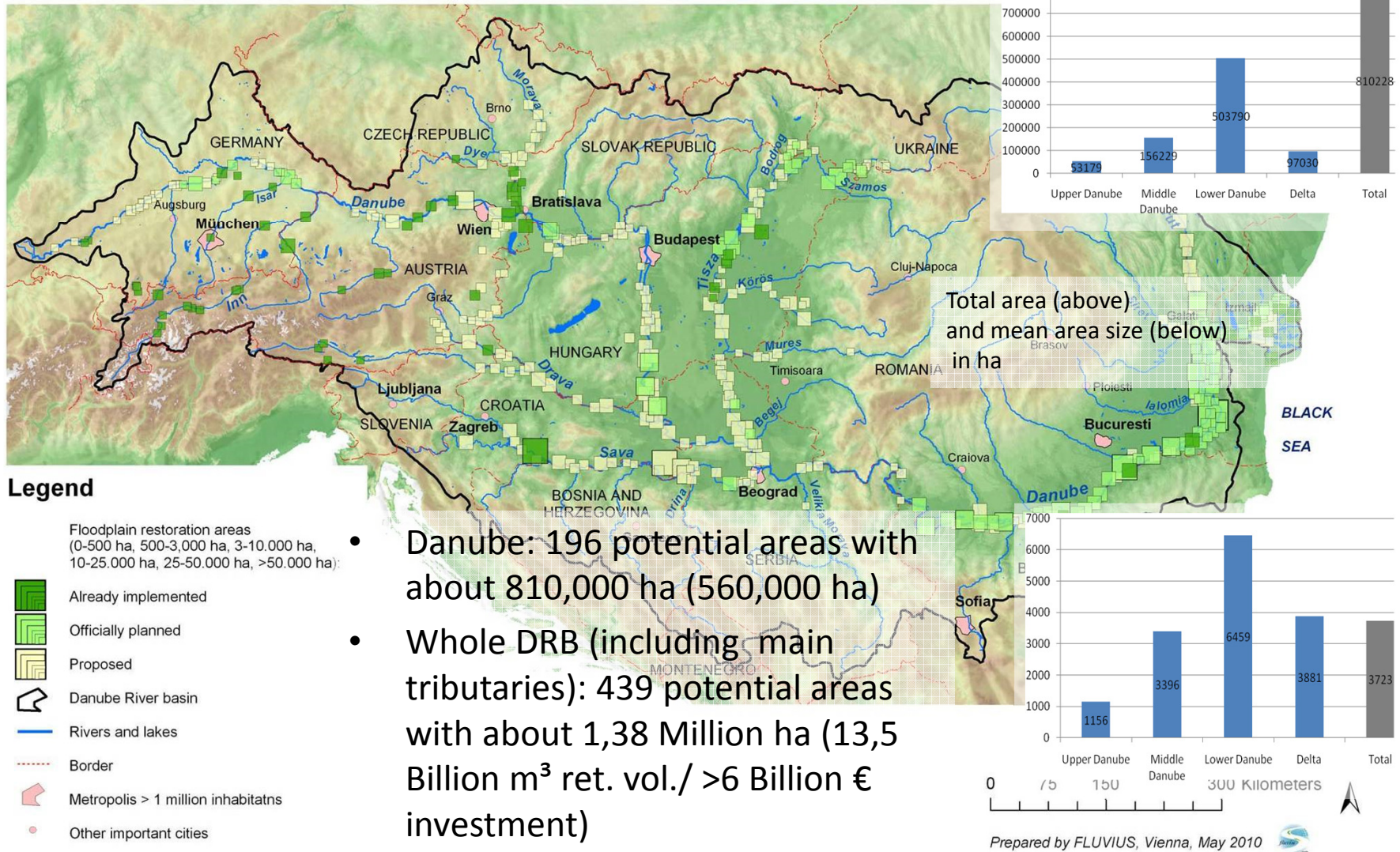


Danube River basin



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Floodplain restoration areas (implemented, planned, proposed)
along the Danube and major tributaries



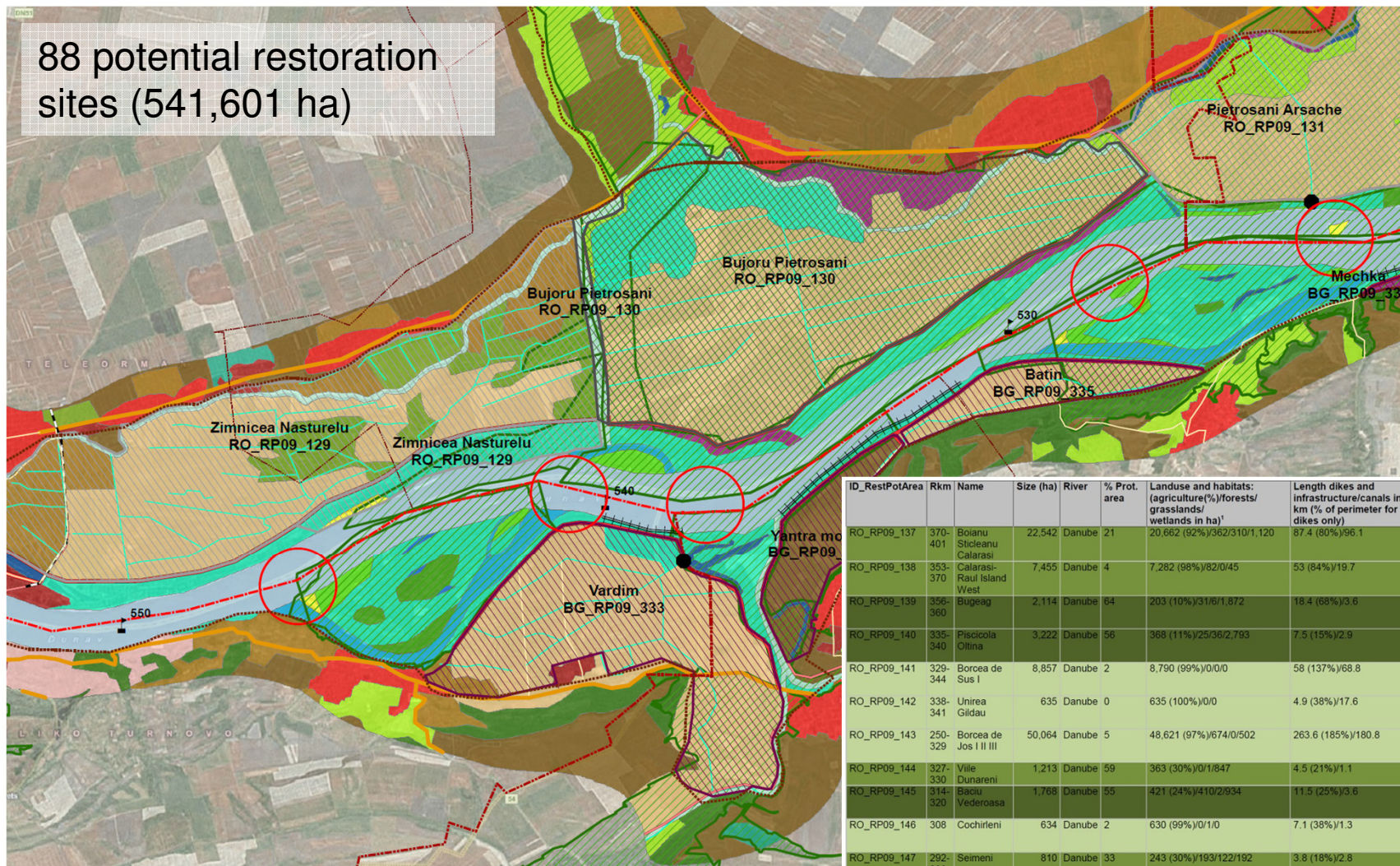
- Danube: 196 potential areas with about 810,000 ha (560,000 ha)
- Whole DRB (including main tributaries): 439 potential areas with about 1,38 Million ha (13,5 Billion m³ ret. vol./ >6 Billion € investment)

Lower Danube (without delta)

Floodplain restoration areas along the Lower Danube
Map 20



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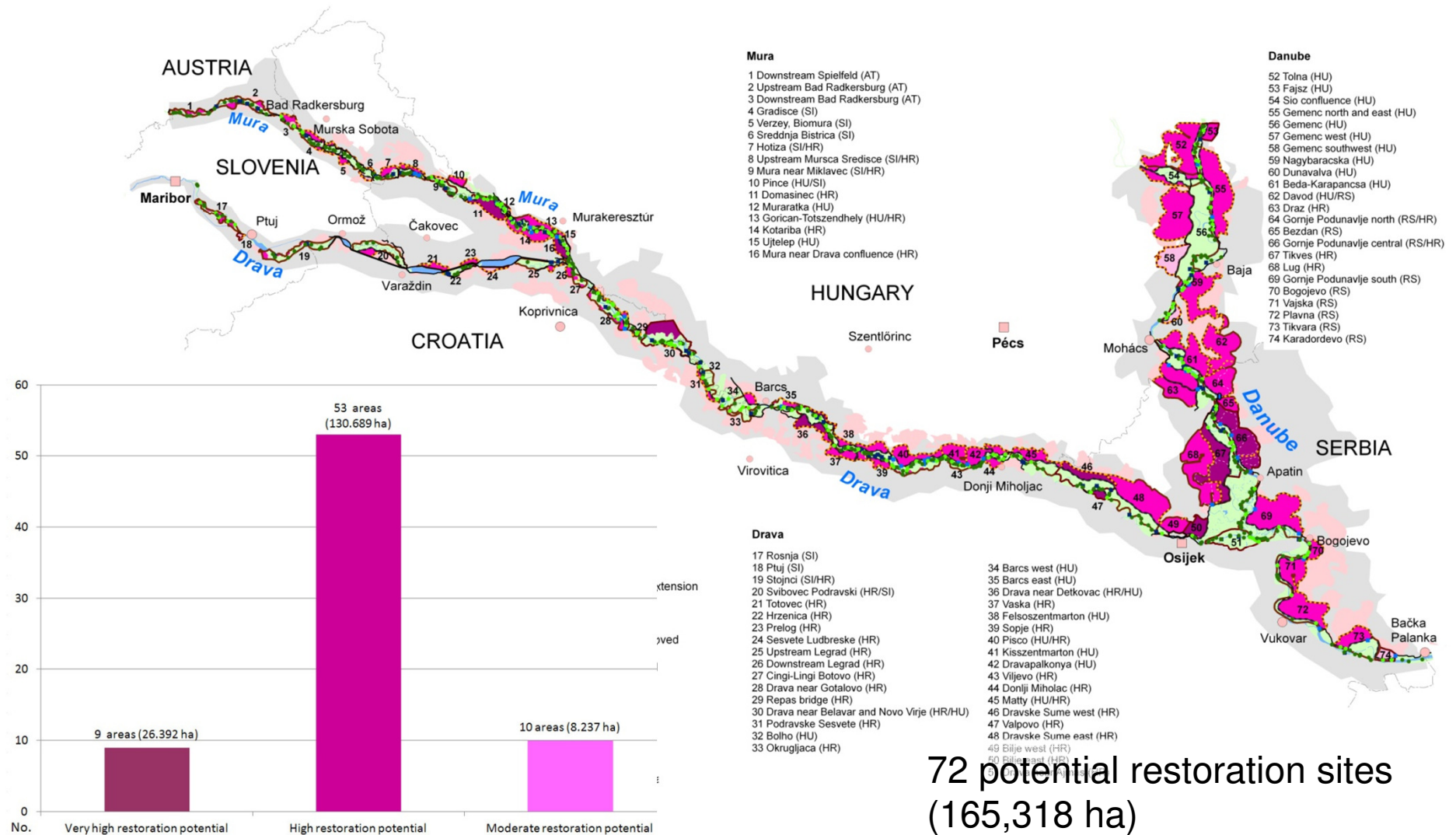
88 potential restoration sites (541,601 ha)

ID_RestPotArea	Rkm	Name	Size (ha)	River	% Prot. area	Landuse and habitats: (agriculture(%)/forests/grasslands/wetlands in ha) ¹	Length dikes and infrastructure/canals in km (% of perimeter for dikes only)	Priority (and status)
RO_RP09_137	370-401	Bolanu Sticleanu Calarasi	22,542	Danube	21	20,662 (92%)/362/310/1,120	87.4 (80%)/56.1	High (officially planned)
RO_RP09_138	353-370	Calarasi-Raul Island West	7,455	Danube	4	7,282 (98%)/82/0/45	53 (84%)/19.7	High (officially planned)
RO_RP09_139	356-360	Bugeag	2,114	Danube	64	203 (10%)/31/6/1,872	16.4 (68%)/3.6	Very high (officially planned)
RO_RP09_140	335-340	Piscicola Olina	3,222	Danube	56	368 (11%)/25/36/2,793	7.5 (15%)/2.9	Very high (officially planned)
RO_RP09_141	329-344	Borcea de Sus I	8,857	Danube	2	8,790 (99%)/0/0/0	58 (137%)/68.8	Low (officially planned)
RO_RP09_142	338-341	Unirea Gildau	635	Danube	0	635 (100%)/0/0	4.9 (38%)/17.6	Low (officially planned)
RO_RP09_143	250-329	Borcea de Jos I II III	50,064	Danube	5	48,621 (97%)/674/0/502	263.6 (185%)/180.8	Low (officially planned)
RO_RP09_144	327-330	Vile Dunareni	1,213	Danube	59	363 (30%)/0/1/847	4.5 (21%)/1.1	High (officially planned)
RO_RP09_145	314-320	Bacu Vederoasa	1,768	Danube	55	421 (24%)/410/2/934	11.5 (25%)/3.6	Very high (officially planned)
RO_RP09_146	308	Cochirfeni	634	Danube	2	630 (99%)/0/1/0	7.1 (38%)/1.3	Low (officially planned)
RO_RP09_147	292-298	Seimeni	810	Danube	33	243 (30%)/193/122/192	3.8 (18%)/2.8	High (officially planned)

Mura-Drava-Danube-TBR

Assessment of the Restoration Potential in the TBR MDD

Potential Restoration Areas and all Restoration Measures



Conclusions

- Understanding better the longitudinal and lateral river-floodplain continuum as whole management unit (flood development in the catchment, dif. flood types)
- Floodplain restoration in a larger scale could significantly support flood mitigation (volume and propagation) as a core ecosystem service (e.g. In Germany > 4000 ha in last 15 years). Polders as a local instrument to reduce flood peaks should be seen as complementary solution.
- Larger and more intact floodplains can better mitigate climate change effects (floods and droughts)
- Development of national floodplain restoration Action Plans to support/ supported by river management and flood protection regulations timelines