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SESSION

RIVER RESTORATION:
A SHARED CHALLENGE.

Assessment of the Restoration Potential in the Transboundary UNESCO Biosphere Reserve "Mura-Drava-Danube"

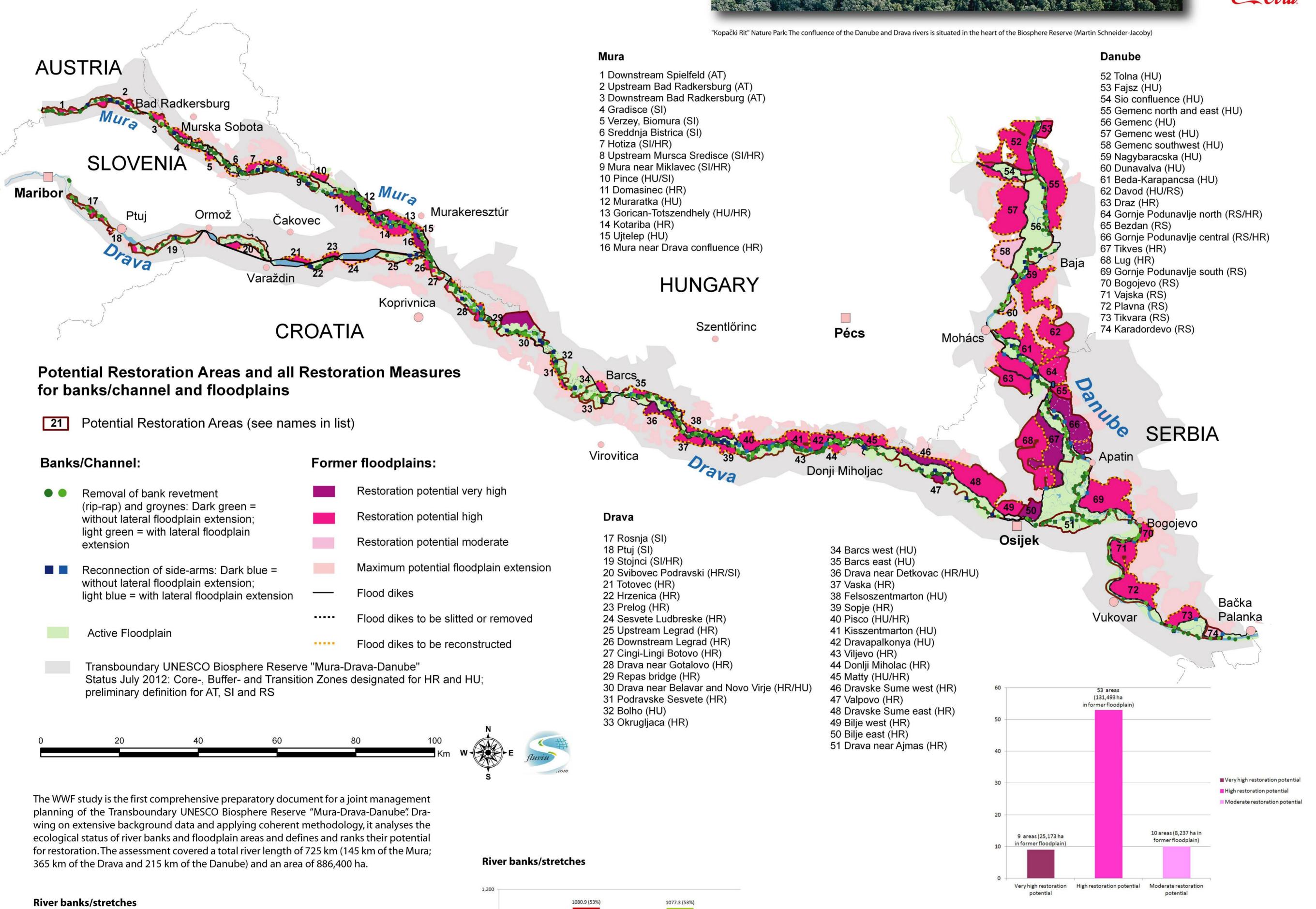
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Spanning Austria, Croatia, Hungary, Serbia and Slovenia, the lower courses of the Drava and Mura rivers and related sections of the Danube are among Europe's most ecologically important river and floodplain areas, the "Amazon of Europe". In March 2011, the environment ministers of all five countries agreed to jointly protect and manage the area as a Transboundary UNESCO Biosphere Reserve, under the name "Mura-Drava-Danube" (TBR MDD).

The aim of the restoration potential study is to provide impetus for necessary restoration efforts and to serve as a base line document for future restoration planning in the area. One particular aim is to support the proposals of the ministerial agreement and follow-up for joint zoning and management planning in the Transboundary UNESCO Biosphere Reserve in Austria, Croatia, Hungary, Slovenia and Serbia. It is also intended to provide support for implementation of the "Drava Declaration" and management, an international agreement on river and floodplain restoration along the Drava. This declaration was signed by the heads of delegations to the ICPDR (International Commission for the Protection of the Danube River) from Slovenia, Austria, Hungary and Croatia as well as the representative of the Republic of Italy.







The river banks – right and left – are in a natural state over a length of about 190 km (9%), in a near-natural state over 765 km (38 %) and already altered/impacted over 1,081 km (53%).

There is wide variation between different river sections and countries, however. In stretches such as the Mura along the border between Austria and Slovenia, 95% of river banks are fixed by embankments (by stones, so-called rip-rap), while on some stretches of the Mura and Drava in Croatia and Hungary, and the Danube between Croatia and Serbia (Nature Park Kopacki Rit), this figure is less than 40%.

Other river structures, such as open gravel and sand banks, show a similar picture. About 70% (about 1,700 ha) of this typical riparian habitat type has already been lost over the last 100 years. It still makes up some 731 ha, however, a reasonable size for bar breeding birds and sensitive pioneer species.

The proposed restoration could considerably change the relative proportions of impacted and natural river banks (see Figure 1). About 652 km (60%) of impacted banks (1080,9 km) could be restored to highly dynamic banks (from now 188,8 km to 528,3 km) and other near-natural banks (from 764,9 km to 1077,3 km), while destroyed banks could be reduced to 429 km in total (21% against 53% before restoration). 340 km (31 %) of new highly dynamic banks and 312 km (29 %) of other near-natural banks would be achieved. This would significantly increase lateral erosion and bed load supply, and create new habitats for endangered species. Furthermore, a total of 120 major side-channels with a length of 519 km could be reconnected with the rivers.

Floodplains

The active floodplain area distributed along all of the river stretches totals 132,341 ha, which is 22% of its former extent, the "morphological floodplain". The remaining 465,136 ha or 78% has been lost through the construction of flood protection dikes (Figure 2).

In different countries, the loss of active floodplains varies from 66% to 90%. About 91,040 ha of the morphological floodplain outside the flood dikes consist of typical floodplain remnants (oxbows, forest and grasslands in the "former floodplain").

Restoration would result in about 297,244 ha of active floodplain, reducing the overall loss to 50% and reconnecting 164,900 ha (28%) to the rivers (Figure 2).

1080.9 (53%) 1077.3 (53%) 1077.3 (53%) | Highly dynamic banks (steep and shallow banks) | Others (mostly nearly natural banks) | Major bank revetments and structures (rip-rap, groynes, side-arm closures) | Side-channel reconnection | 120 (518.9) km

After Restoration

Figure 1: Status and restoration potential of river banks (total length, percentage for both river banks in km). Only main and permanent side channels were analysed for this study.

STATUS 2013

Floodplains 500,000 450,000 400,000 350,000 297,244 300,233 (50%)300,000 250,000 Floodplain outside dikes 200,000 132,341 (22%) 150,000 100,000 50,000 STATUS 2013 After Restoration

Figure 2: Status and restoration potential of floodplains.

Prioritisation of floodplain reconnection

Altogether 74 potential priority restoration areas have been identified along the three rivers (compare list of potential areas in the map). The total area is 251,212 ha, and includes land on both active and morphological floodplains. The 74 areas contain most of the stretches proposed for bank and channel restoration, which should be seen as an integral part of the comprehensive plan for restoration of the whole area.

Figure 3: Prioritisation of floodplain areas for reconnection (compare map).

Figure 3 shows the detailed distribution of prioritisation classes (based on landuse/habitats, nature protection, flood retention potential and hydromorphological situation). The calculation is based on only 72 areas, since two contain no floodplain extension. The first category, "very high potential", is represented by nine areas (13% or 25,173 ha), the second category, "high potential" by 53 areas (74% or 131,493 ha) and the third, "moderate" category by ten areas (13 % or 8,237 ha). In areas of highest priority, an average of about 10 km of dikes must be removed or relocated.



"River Recreation" at the Confluence of Mura and Drava Rivers near Legrad, Croatia (Tanja Nikowitz, WWF)