D. 3.1.1

List of jointly accepted data sources and criteria to build up DFGIS and DFInv

Activity: *3.1*

Activity-Leader:

SZTE – University of Szeged, Hungary

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1. Introduction

Among all natural disasters, floods have the greatest damage potential worldwide (UNISDR 2015). In recent years, awareness was raised, leading to the development of new approaches in integrated flood risk management as demanded by the EU Floods Directive (2007/60/EC) by integrating non-structural and structural measures for flood protection. Such new methods of flood mitigation should especially focus on preserving and/or restoring floodplains (Habersack, Schober & Hauer 2015). Therefore, WP3 of the Danube Floodplain project has the purpose to review and update active and potential floodplain areas including data collection and analyses of these data using GIS. The aim is to provide a spatial reference framework with accompanied database based on comprehensive inventory of floodplain areas and their multicriteria analysis along the Danube River and selected tributaries. The resulting actual and potential floodplain areas inventory will provide the main spatial reference base (geodatabase), where other hydrological, hydraulic, ecological and socio-economic parameters will be analysed (Activity 3.1).

In the first step for this approach, active and potential floodplains were identified. The floodplains will be displayed in the Danube GIS and the Danube Floodplain GIS (DFGIS). Active floodplains were originally defined as all areas which are still flooded during an HQ_{100} but have been extensively edited and potential floodplains are areas which are currently not flooded, but have the theoretical potential to be reconnected to the river system again. The definition of the active and potential floodplains was a joint effort of all partners in the framework of Activity 3.2.

In the next step, both floodplain types were evaluated with the Floodplain Evaluation Matrix (FEM), which is a holistic, integrative tool for the assessment of hydrological, hydraulic, ecological and socio-economic effects of a floodplain (Activity 3.2).

In the last step, based on the FEM parameters, all active and potential floodplains along the Danube and selected tributaries were ranked to identify priority areas for preservation and/or restoration ("restoration demand"). The results of the ranking are stored in a spatial database, the DFGIS and are published on a public web map and in the Danube GIS. A summary of the ratings and restoration demand is published as the Danube Floodplain inventory (DFInv) (Activity 3.1).

Activity 3.1 is responsible for the following deliverables:

D 3.1.1. List of jointly accepted data sources and criteria to build up DFGIS and DFInv

D 3.1.2. Geodatabase and Danube Floodplain GIS for active and potentially restorable floodplains

D 3.1.3. Danube Floodplain inventory for active and potentially restorable floodplains

2. Deliverable D 3.1.1. List of jointly accepted data sources and criteria to build up DFGIS and DFInv

For the geodatabase, each FEM parameter is defined with a fieldname, data type and unit. Table 1 provides the structure used to store the parameters in attribute tables of shape files of the active and potential floodplains of the Danube and selected tributaries. A detailed description of each parameter is given in "Report on data included within database" (D 3.2.2). The attribute table of each floodplain polygon is filled with the results of the FEM calculations and evaluations and the shapefiles are uploaded in the DFGIS.

Table 1: Parameter structure for geodatabase of active and potential floodplains (blue colouring indicates minimum, green colouring medium, yellow colouring extended FEM-parameters)

Name of field	data type/length	Full name of the parameter	Unit
DFGIS_ID	text/50	ID of the floodplains	
FP_Type	text/50	Floodplain type	
Location	text/50	Location of the Floodplain	
Transbound	text/10	Does the Floodplain cross country boundary	Yes/no
HQ100	numeric, integer	HQ100	m³/s
Km_from	numeric, double	Starting river kilometer	km
Km_to	numeric, double	End river kilometer	km
PDF	text/254	Link to the DFInv PDF file	
SHP	text/254	Link to the zip file with the shape files	
Area	numeric, double	Area (ha)	ha
FPlength	numeric, double	Length of the floodplain	km
Chan_width	numeric, integer	Width of the channel	m
R_delta_Q	numeric, integer	FEM Rating of peak reduction ΔQ	1, 3 or 5
R_delta_t	numeric, integer	FEM Rating of flood wave translation Δt	1, 3 or 5
R_delta_h	numeric, integer	FEM Rating of water level change Δh	1, 3 or 5
R_C_fp_wb	numeric, integer	FEM Rating of Connectivity	1, 3 or 5
R_Prot_spp	numeric, integer	FEM Rating of Existence of protected species	1, 3 or 5
R_Building	numeric, integer	FEM Rating of potentially affected buildings	1, 3 or 5
R_Land_use	numeric, integer	FEM of Rating of Land use	1, 3 or 5
R_Hyd_eff	numeric, integer	FEM Rating of effects in case of extreme discharge	1, 3 or 5

R_delta_v	numeric, integer	FEM Rating of flow velocity Δv	1, 3 or 5
R_prot_hab	numeric, integer	FEM Rating of Existence of protected habitats	1, 3 or 5
R_veg_nat	numeric, integer	FEM Rating of Vegetation naturalness	1, 3 or 5
R_WL_dyn	numeric, integer	FEM Rating of water level dynamics	1, 3 or 5
R_pl_int	numeric, integer	FEM Rating of Presence of documented planning interests	1, 3 or 5
R_delt_Tau	numeric, integer	FEM Rating of bottom shear stress Δτ	1, 3 or 5
R_p_tp_hab	numeric, integer	FEM Rating of potential for typical habitats	1, 3 or 5
R_wb_stat	numeric, integer	FEM Rating of ecological water body status	1, 3 or 5
Restoratio	text/25	Restoration demand	lower, medium, higher