Study Project – Environmental Engineering

Workload: 12 ECTS, 360 Working hours

Setting up a Graphical User Interface for QGIS – an application for assessing Co-benefits of Nature-Based Solutions for Flood Risk

**Situation:**
During the last decades, Europe suffered major catastrophic floods in the Danube River Basin (DRB). Therefore, the Flood Directive asks for adequate and coordinated measures to reduce flood risk without conflicting Water Framework Directive objectives. To implement flood risk prevention while maximizing benefits for biodiversity conservation, a better understanding of the ecosystem services (ES) of floodplains is necessary.

This Study Project has the goal to set up a graphical user interface (GUI) for facilitating the application of an already existing script that assesses the ES of floodplain restoration measures. The script was written in python for QGIS and utilizes both spatial and non-spatial input variables. So far, it has been applied internally, but it should be made available to DRB local water authorities and to users, who are not familiar with the python programming language. The GUI should be tested on an application case, for which input data will be made available. The aim of this study project is to provide a new tool for decision-makers, who are involved in the planning of floodplain restoration measures (or any other NBS) and who want to estimate the corresponding co-benefits.

**Tasks:**
- Analyzing the available ES assessment script
- Testing the script without GUI for an available case study
- Setting up the GUI
- Testing the script with GUI for an available case study
- Interpreting the results

**Requirements:**
- Experience with databases is desirable (e.g. Microsoft Access, PostgreSQL)
- Knowledge of GIS (e.g. ArcMap, QGIS)
- Knowledge of basic statistics is desirable
- Basic programming skills are a requirement (e.g. R, MATLAB, python)

**Processing Time:**
from now

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