

LAND4FLOOD Training Course & Workshop

Technical aspects of Nature-Based Solutions allocation

On line, 23 September 2020

Preparatory materials for the participants



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Educational, Scientific and
Cultural Organization



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PREPARATORY TASK FOR THE ATTENDEES

The **aim** of this preparatory task is to **enable active participation** in the course, to **provide the participants** with **reliable information** during the lectures and to discuss after the lectures.

We encourage the participants to prepare case studies of interest in the sense of **LAND4FLOODS: Use of private land for flood protection**.

For example, all case studies with the planned or implemented Nature Based Solutions are suitable, either for the controlled or uncontrolled retention of flooded water in valleys, near urban areas, in the hinterland or in the coastal region, dealing with flood generation or retention in order to reduce flood peaks;

Please prepare the information, if available, for the **description of your chosen case study** area on the following worksheet, for example, perhaps what was described in your letter of motivation. It does not have to be exhaustive, it should **help** to focus **during the online training** and make **relevant materials available** to find information during the **discussions**.

In order to better organize the interactive discussions, please send the completed table to vesna.zupanc@bf.uni-lj.si or nejc.bezak@fgg.uni-lj.si by **Wednesday, 16.9.2020** if possible.

Below is filled out information for Savinja Valley case study as an example.



Area name and location

Savinja valley, east Slovenia, Central Eastern Europe

GENERAL INFORMATION

area size (ha)

Catchment area down to the Celje city is around 1200 km², the area of the natural floodplain areas along the Savinja river before the Celje city is more than 5 km².

topography
describe the shape

Briefly
de-
scribe
(max
150
words)

A valley with main river Savinja in the middle and its tributaries that have wild river nature coming from surrounding mountain crests;
Hilly headwater parts give torrential characteristics of the Savinja river with intense sediment transport during the floods;
the valley before the Celje city is generally relatively flat with surrounding hills

climate – yearly?
Period? Precipitation (amount and distribution, appearance of the storms)

Temperate continental climate, annual precipitation in Celje city is around 1200 mm, where in the headwater part of the catchment annual rainfall exceeds 1500 mm.

Main precipitation peak most often occurs in autumn while summer thunderstorms and spring combination of snow-melt and rainfall can also be problematic from the flood safety perspective.

In the past two decades storms were source of flood events (e.g. major flood events in the area occurred in 1990, 1998 and 2010.)

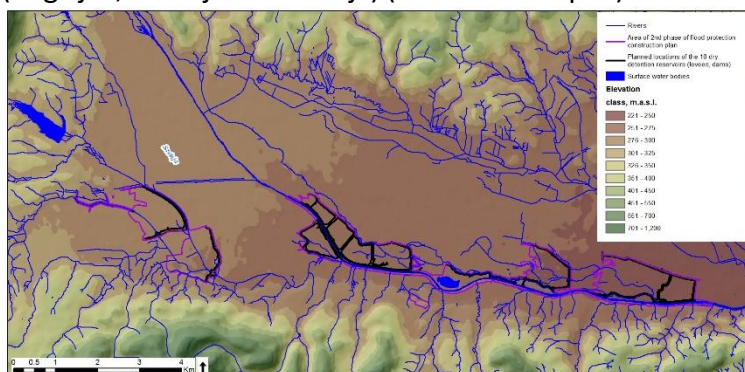
TECHNICAL CHALLENGES

Source of flood water surface water (streams torrential stream), salt (sea water)

Briefly describe (max 150 words)

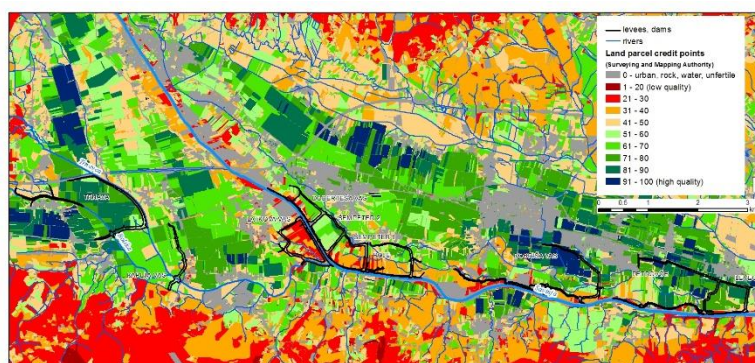
Torrential tributaries to the main river Savinja

Fragmented land use (urban and agricultural areas, infrastructure – highway, railway)
Particularly problematic is city of Celje, where three rivers meet (Voglajna, Hudinja and Savinja) (not on the map=+)



Soil type (for attendees not familiar with soil science e.g. heavy soils, with low permeability, shallow/deep soils, moor – swamp area)

Mixed shallow to semi-deep, stony Fluvisols (highly permeable) and Histosols (heavy soils, deep, low permeability). Below is a map of soil quality index.



Proposed/existing NBS

Dry detention ponds (with gates for retention of flood water) on several locations at the location of the natural floodplain retention areas that are now used for agriculture production

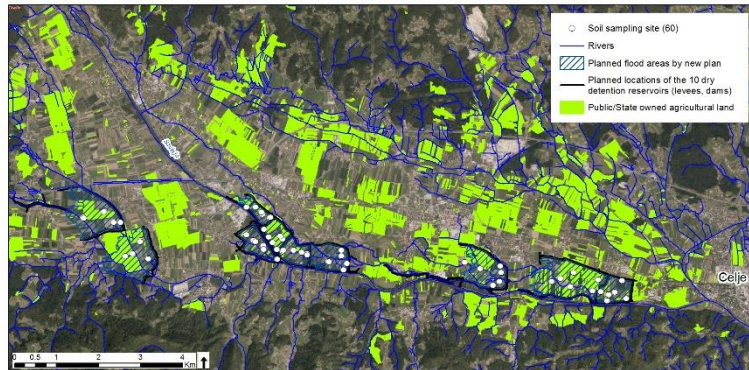
ECONOMICAL AND LEGAL ASPECT

Compensation mechanisms

Has there been a cost benefit analysis of using this piece of land for flood retention? If yes, what is the approximate level of costs and benefits?

Do land owners / farmers receive a compensation for their service? What kind (one-time upfront payment, annual payment, flood damage-based compensation etc.)? Does it cover their loss? Which players finance this compensation?

Most of the land in the planned dry retention is private owned, or under long-term rent contracts from the state.



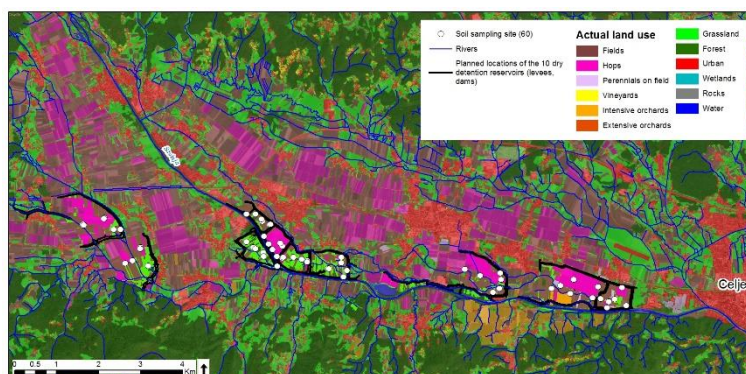
If dry detention ponds were installed, farmers would get on-time upfront payment, and be expected to use the land for agricultural production

STAKEHOLDERS PERSPECTIVE

GIS analysis of land use within the designated (or existing area) of dry reservoir if available or just a rough description of land use

Briefly describe information on surface area (ha, %) of land use by categories within and outside the designated area.

Hop production
Vegetable production
Corn
Meadows
Fruit orchards



Social aspect, as in are these changes threats to the livelihoods of the private land owners or private land users, for agricultural or other land use:
information of land-owners perspective on the NBS.

Disadvantages:

Loss of land use autonomy

As certain farmers (hop producers) have contracts with breweries with contracts stipulating certain quality of the hops, which could be endangered if the flooding water would change the quality of the soil.

Possible advantages:

Alternative locations for dry detention ponds (upstream)
Construction of wet reservoirs for irrigation water source
Flood protection of the remaining farm land

POTENTIAL LAND DEGRADATION

Expected challenges

e.g. change in land use if nature based solutions are planned to be implemented (for example Savinja valley, Slovenia), etc or challenges with existing NBS (for example the Lake Kerkini, Greece)

Briefly describe (max 150 words).

Extensification of production on the areas of dry reservoirs
Permanent soil loss on the areas of gate and dam construction
Potential soil pollution through sediments, containing organic substances and heavy metals originating from flooded sites upstream
Erosion of the surface within the detention pond area through inflow and outflow

Hydrotechnical infrastructure (e.g. drainage or irrigation systems, dykes, dams, channels)

Heavy soils (histosols) have installed drainage systems, drainage systems and channels are regularly maintained
Area is equipped with irrigation systems for shallow stony soils
On the areas of dry detention ponds, this would present additional issue or potential loss

Case study name and location:

Author:

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(streams torrential stream), salt (sea water)

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