

## **EU Strategy for the Danube Region Priority Area 5**

- „to manage environmental risks” –

### **POLICY RECOMMENDATION**

**to support the uptake of nature-based practices**



#### **Background**

In line with EU requirements, Member States have renewed their River Basin Management Plans under the Water Framework Directive and their Flood Risk Management Plans under the Floods Directive last time in 2022. The available technologies and planning options are constantly evolving at international and national level. The management of areas currently affected by floods, droughts and inland waterways can only be addressed in a sustainable manner by a renewed focus on a complex water management approach. It is very important to note that the main problem today is no longer just the occasional water surplus, but the persistent water scarcity, which is causing increasing damage due to climate change and lack of rainfall events. To tackle this problem, we need to rethink the use and storage of water from inland waters and floods. One possible solution to the problem of water retention and storage, with a positive impact on the environment, is nature based water retention methods. Although grey solutions are widely used in territorial water management and have a long history of decades, there is also a need and potential for green infrastructure in specific locations that it is not as well developed, designed and managed as grey infrastructure does.

In order to promote the use of green infrastructure, to make them more efficient and to facilitate their dissemination, the Ministry of Foreign Affairs and Trade of Hungary, in the context of the coordination of the EU Strategy of the Danube Region Environmental Risks Priority Area (hereafter: EUSDR PA5) has contributed to the activity undertaken in the framework of the DTP-PAC2-PA5 project (Activity. T2.3 "Cooperation with international organizations and EU institutes" Deliverable Title: D.T2.3.2 Study) a procurement was launched that fits in with the following objectives of the EUSDR PA5:

- Addressing water scarcity and drought challenges in line with the Danube River Basin Management Plan
- Provide ongoing technical support for the implementation of the Danube Flood Risk Management Plan adopted in 2015 in line with the EU Floods Directive to achieve a significant reduction of flood risks by 2021, taking into account the potential impacts of climate change and adaptation and adaptation strategies.

A specific structural tool to achieve the above objectives could be the use of green and natural infrastructure elements in addition to the conventional infrastructure flood protection and water management facilities. The EUSDR PA5 area has previously supported the implementation of the FRAMWAT, LIFE-MICACC and the LIFE LOGOS 4 WATERS, LIFE Sandboil projects currently under implementation in relation to nature-based solutions. In 2022 the “Nature-based solutions for flood risk reduction” was selected for one year as a [Danube Strategy Flagship](#) initiative of EUSDR PA5.

In the framework of the current project, an English-language study has been prepared based on the available literature and recent technical information, aiming at summarising the main basic knowledge related to the management of small watercourses in hilly areas, including the presentation of near-natural solutions for water retention and sediment trapping, with a special focus on transboundary impacts and partnerships. The study also covers the legislative environment and technical parameters related to these solutions especially for low hilly-hilly settlements.

The completed study was presented in an international online workshop, where participants were given the opportunity to give their views and technical suggestions on the results. The main conclusions of the study are briefly presented below, together with the recommendations made at the workshop.

The workshop was organized in online way on 26<sup>th</sup> October 2022 with the involvement of the Water Quality (PA4) and Biodiversity, Landscapes and Air & Soil Quality Priority Area (PA6) involvement. The EUSDR PA5's new study, on "Supporting the advancement of nature-based solutions in the water management of hillside settlements" was presented by VIKÖTI Mérnöki Iroda Ltd. The Hungarian Chamber of Engineers presented the impact of the civil engineering and infrastructure planning of the nature-based solutions in the theme of water management. The Innovative water management methods at river basins by coordination of local governments within the LIFE LOGOS 4 WATERS project and needs of municipalities was presented by the Ministry of Interior of Hungary. It's crucial to get financial support for that type of investment, on behalf of Grants Europe Consulting it was presented how can nature-based solutions be promoted by EU funds. Good project examples were also presented from different countries (17) like:

- Nature based solutions developed at the national and regional level developed within Danube floodplain and RO floods projects (Romania)
- Framework for improving water balance and nutrient mitigation by applying small water retention measures, "[FRAMWAT project](#)" (Slovakia, Slovenia, Poland & Hungary)
- [MERLIN](#)"Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation (Denmark, Spain, Sweden, Netherlands, Poland, Bosnia and Herzegovina, Austria, Hungary, Romania, Germany, Portugal, Finland, Israel, Belgium & Scotland, UK)
- Optimal Strategies to Retain Water and Nutrients "Optain" & Danube4All project

Hungarian national communities ([Hungarian TeAM HUB](#)) on NBS were presented too, and from the Central-Eastern Europe as well, on behalf of GWP.

All materials can be found here.

## Problems and challenges

In Hungary, many hilly settlements are affected by the increasingly frequent extreme climatic events, with flash floods being one of the most significant problems. These fast-flowing flood-waves are becoming more frequent and increasingly unpredictable, and are taking increasingly extreme forms. The untreated, eroded riverbed further enhances the rapid accumulation and high-energy run-off of water and the erosion of surface soil layers, forming a significant amount of sediment. This process can cause serious damage (up to several million forints) to both the interior and exterior of settlements.

In current practice, it is common for the amount of water that falls during heavy rainfall events to flow out of the area in drainage ditches and enter the receiving watercourse within a short period and in a short distance - without being utilized. This method is not forward-looking and can even be harmful if the hydraulic facilities and the receiving watercourse do not have adequate capacity or are not regularly maintained. The other side of the problem is that the rapid emptying of water from a given area in this way contributes to the increase of water shortages in the later - increasingly prolonged - drought periods.

If a municipality or farmer is faced with the damage caused by flash floods and wants to implement effective measures, there is currently not enough knowledge or information available to inform them of the methods they can use to retain water, and nature-based solutions are even less known. Even if the investor has an idea, he often has no contact with planners, contractors or authorities. The next obstacle to implementation is often the fact that, in the current regulatory environment, the various facilities have to go through a rather complicated, expensive and complex environmental and water rights permitting procedure before construction can start.

## **Goals, opportunities**

Run-off is influenced by a number of factors, including morphological, meteorological, geotechnical and land-use characteristics. Therefore, if significant results are to be achieved, a complex analysis of the whole water system is essential to define intervention methods, which must cover both the current and the projected states of catchment areas under the effect of climate change.

In terms of intervention methods, the future needs water retention solutions that are simple, easy to implement, environmentally friendly and at the same time very effective in the defence against flash floods and subsequent water shortages. Nature-based solutions generally meet these criteria.

In practice, one of the most effective nature-based methods for slowing down, regulating and trapping runoff from small mountain streams is the construction of log and brushwood dams. These are excellent solutions for reducing the fall of watercourses, slowing down the flow of water, and for partial or temporary retention of water. Depending on their design, they can even retain transported sediment.

There are many positive recent examples, both domestic and foreign, which can serve as a model for those interested in these solutions to minimise the risk of flash floods. However, the professional, technical, financial, and operational knowledge of these solutions is still limited in Hungary. Therefore, raising awareness and promotion of nature-based solutions should be a priority. Several international and national organisations have recently been established, such as the [Hungarian TeAM HUb](#), which aims to provide a forum for sharing national and international knowledge, experience and good practices on nature-based solutions, and to encourage dialogue and cooperation between government, municipal, professional and civil actors for the widespread practical application of nature-based solutions.

Additionally, to effectively implement runoff control, it would be a priority to properly and comprehensively introduce the concept of water retention into legislation and to determine powers and responsibilities, similar to flood protection.

## **Suggestions, recommendations**

The following list of recommendations has been drawn up on the basis of a study carried out in this project and the results of the technical conference held. These measures should not be considered as a complete Terms of Reference, but rather as a set of suggested actions. If the proposals are approved, a consortium of relevant ministries and professional organisations in Hungary will have to prepare a full project description (or terms of reference). The institutions concerned should identify the actions needed to improve flash flood protection, and its order.

### **1. Complex, sub-basin level designing**

The most effective way to tackle water scarcity is to organise water retention measures it into a system. Therefore, it is not appropriate to consider interventions in a given sub-basin as individual facilities, as they can perform the ideal protection and water retention functions in a complementary way. It would be much more efficient if the technical feasibility of interventions in a river basin were assessed and treated as a single unit. There are also environmental reasons for considering the planned run-off control facilities in a river basin as interrelated activities, and examining their combined effects.

In the light of the above, there would be a need for sub-basin level water conservation plans and planning. This plan could comprehensively examine the options for protection and determine the accurate methods, measures, and the type of facilities to be used within the catchment. The basin-wide planning should also determine the scale of the facilities to be included and how they are to be approved and licensed (see next recommendation).

### **2. Legislative changes**

Effective runoff control requires solutions that differ from current practice, also from a legislative point of view. Therefore, the first step should be to act in the legislative field and to make technical solutions for water retention transparent and easier to implement. Generally speaking, the concepts of run-off and water retention should be introduced into existing water management legislation, and these forms of protection should be regulated at the same level as flood and inland water protection. The approval of sub-basin plans prepared under Recommendation 1 should be subject to a (possibly renewed) procedure.

### **3. Dissemination of case studies on good practices at home and abroad, information**

Creation of a water management project catalogue, which will collect data on innovative developments, products and services that can help to address and solve flash flood problems in a modern and environmentally friendly way. The dissemination of this collection in flash flood affected communities will contribute to the promotion of nature-based solutions and their application.

### **4. Further promotion of information on NBS water retention**

Promoting funding, legal, regulatory, policy frameworks options on nature-based water retention options.

Provision and promotion of planning and technical aids.

Organising events, conferences, workshops, training, information and networking for stakeholders and implementers