

Adapting by water retention on municipal level

Achievements of the LIFE-MICACC project



Project details:

“Municipalities as integrators and coordinators in adaptation to climate change”

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Project partners:

Ministry of Interior, Municipality of Bática, Pannon Pro Innovations Ltd., Municipality of Püspökszilágy, Municipality of Rákócziújfalú, Municipality of Ruzsa, Municipality of Tiszatarján, Association of Climate-Friendly Municipalities, General Directorate of Water Management, WWF World Wide Fund for Nature Hungary Foundation

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Petra Csizmadia, Zsuzsanna Hercig, Bettina Hugyecz, dr. Petra Szatzker

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Ladies and Gentlemen!

Dear Reader!

Greetings to you on behalf of Dr. Sándor Pintér, Deputy Prime Minister and Minister of Interior, and Tibor Pogácsás, State Secretary for Local Governments. You are holding a brochure on the LIFE-MICACC project entitled “Municipalities as integrators and coordinators in adaptation to climate change” coordinated by the Ministry of Interior.



Photo by András Jóri

The Ministry of Interior has already recognized in 2016 the importance of adaptation to climate change (at local level) and water retention, and the key role municipalities play. In 2017 the Ministry of Interior - together with its partners – was awarded a grant from the European Commission under the LIFE Programme’s Climate Action sub-programme. So, as the first national LIFE project to be awarded a LIFE project on adaptation, we were able to start implementation on 1st September 2017.

The project is implemented in a broad partnership with 24 cooperating municipal partners in addition to the nine associated beneficiaries. The overall objective of the project is to improve the climate resilience of the most vulnerable domestic municipalities by implementing, testing and demonstrating innovative, efficient, small-scale and cost-effective natural water retention measures.

This brochure not only provides general information about the project, but also gives an insight into the experience gained and the results of the project, illustrated with pictures and diagrams. As our country is in a position of water loss, the importance of water retained locally is growing, and we need to see it as a value to be preserved. Beyond this brochure, please follow the progress of the LIFE-MICACC project and let's work together to protect our water resources and mitigate the negative impacts of climate change.

Yours faithfully:

Dr. Miklós Dukai
Deputy State Secretary for Local
Governments



Source of image: Getty Images

“Hungary is a water superpower!” – it is often said. However, this is only true to the extent that a lot of water enters the country on our major rivers, but a significant proportion of it leaves at our southern borders.

In Hungary today, around 6 km³ more water flows out of the country's borders each year than comes in. We can imagine this amount of water as if we were draining Lake Balaton three times a year. Hungary and the Carpathian Basin are in a **water-losing position**, and if we do not urgently change our water management habits, there will be unforeseeable environmental, social and economic consequences. But drying out is not the only threat to our country. Climate change is increasing the frequency and unpredictability of extreme weather events: too much water (floods, flash floods, inland floods) and too little water (drought) cause problems in settlements.

**BUT WHAT CAN WE DO TO REDUCE THE NEGATIVE EFFECTS OF CLIMATE CHANGE?
THE ANSWER IS ADAPTATION.**

Improving water retention capacity is a key issue for adaptation to climate change. So the **solution** could be to **retain water** on a small scale, as close to nature as possible, rather than draining it away.

Recognizing this, the **LIFE-MICACC project** entitled “*Municipalities as integrators and coordinators in adaptation to climate change*” was launched on the 1st of September 2017, coordinated by the Ministry of Interior and with the participation of nine associated partners. The project focuses on the key role of municipalities in local adaptation and on natural water retention.

The negative effects of climate change are threatening all municipalities in our country. In addition to warming, we can expect more heat waves, longer periods of drought and more frequent downpours and rainstorms. The five municipalities partnering in the LIFE-MICACC project have recognised the need to act.



The 5 pilot areas - 5 model solutions

In the framework of the LIFE-MICACC project, we implemented **Natural Water Retention Measures (NWRM)** in the intervention areas selected in the five partner municipalities. The selected settlements are among the most vulnerable settlements in Hungary: they are very prone to extreme weather events such as droughts, floods, flash floods, inland floods, or a combination of these. The water retention measures designed and implemented in the project were adapted to the climatic challenges and conditions of the municipalities.

Bátya - Multi-basin, stormwater fed wetland, flood management

Püspökszilágy - Reducing the risk of flash floods in hilly areas by slowing down runoff

Rákócziújfalu - Drought risk management based on water retention, including sewerage

Ruzsa - Water conservation on the Sandbanks (Homokhátság), greywater reuse

Tiszatarján - Complex floodplain adaptation model with ecotourism element

The municipal model projects/model solutions/prototypes thus developed can serve as good examples for other municipalities (taking into account the needs and potential of the given municipality of course).

Natural water retention solutions are little known and are less widespread in our country, despite the fact that their application has many benefits for municipalities.

Features and co-benefits of natural water retention solutions:



Small-scale

Typically, it is not a single large investment, but rather a series of smaller, interdependent developments that can work well as a complex system.



Cost-effective

More small interventions cost less, so the cost of these improvements is lower compared to traditional grey infrastructure solutions (depending on the solution, but typically below 50 million HUF).



Close-to-nature solution

Ecological considerations are taken into account from the planning stage onwards, in order to preserve biodiversity and maintain harmony between human and nature. In addition to concrete, construction with natural - even local - materials (e.g. stone, gravel, wood) is common.



Greener environment

A "greener" solution will allow nature to quickly reclaim the affected area, making the flora and fauna even more diverse. Evaporation of a water reservoir e.g. improves the microclimate, nourishes the vegetation, provides a fresh green environment.



Protection for the settlement

In a number of cases, it contributes to the protection of a settlement. For example, a runoff slowing woody dam system for a hilly municipality can provide strong support for local level protection.



Recreational opportunities

With the addition of some elements (e.g. benches, covered tables and seats, pier) the solutions are suitable for relaxation, active recreation and even sports for local residents and visitors. Such developments also have a community-building effect.



Attractive townscape

In many cases, they can give new meaning and a new useful function to municipal land that was previously disused and neglected. In this way, such an investment can also make a significant contribution to improving the townscape.

Bátya

Location: The settlement is located in the Southern Great Plain region, on the left bank of the Danube river, not far from Kalocsa. It has a population of about 2000 inhabitants. Many of the people living in the village are farmers, mainly growing garlic and paprika. On the outskirts of the village, there is an old clay pit, once used for the extraction of building material for adobe houses. Later, a pond was created on the site, which dried up and eventually became an illegal landfill.



Problem/challenge: Annual rainfall is unevenly distributed. It does not rain as much as it should and not when it is needed. Periods of high and low water levels alternate, with frequent flooding of basements and streets, while the risk of drought is also making life very difficult for local people.

Pilot solution: On the site of an old abandoned clay pit (cubic pit), a multi-basin open water pond of about one hectare has been created, which also functions as a wetland. The lake can absorb and retain excess water, mitigate the effects of heat waves and droughts by recharging groundwater, improve the microclimate through evaporation, and provide recreational opportunities for local people.

„What God has given to Bátya, we are obliged to keep here.” (Csaba Fekete, Mayor of Bátya)

What do we expect from this solution?

The revitalisation of the lake aims to preserve Bátya's valuable water resources for drier times, thereby recharging groundwater and mitigating droughts that are increasing with climate change.



But there are many other benefits: the open water lake evaporates in summer, cooling the air and protecting residents from the heat. It also provides an exciting space for animals and people alike. The lake is designed so that the northern side, with its reedbeds and irregular shoreline, is more for wildlife and nature, while the southern side, with its straight shoreline, is for recreation.

Costs (geodetic survey, design, licensing, construction): cca. 48 million HUF

In March 2020, nearly 700 indigenous tree saplings were planted around the lake in a joint tree planting event attended by everyone from the Municipality to the local vigilante group and the youngest kindergarten children.

Short movie about the pilot: https://youtu.be/kB_B1VsNlQ

Püspökszilágy

Location: The small hilltop settlement in Pest County is a dead-end settlement, not far from Vác, located between the southern slopes of the Western Cserhát Mountains. Its permanent population is about 700 inhabitants.

Problem/challenge: The Szilágyi stream often causes flash floods in the municipality, at least once or twice a year. The sudden heavy rainfall and sedimentation caused serious damage to the built infrastructure and residential properties of the municipality, amounting to tens of millions of HUF. For properties owned by the municipality (and the state), the municipality has had to apply for vis maior aid every year so far.

Pilot solution: Rather than drainage, the focus is on slowing down run-off and conserving and retaining water in the landscape. On the side branch of the Szilágyi stream, seven sediment control wooden dams were constructed from local timber and four boulder bunds were also renovated. These natural barriers slow the flow of water, flatten the flood peak and prevent flooding. In addition, a lateral reservoir has been constructed at the lower catchment, which can absorb excess water and also serve as a wetland.



What do we expect from this solution?

The aim of the complex solution is to reduce the risk of flash floods in Püspökszilágy, while preserving the valuable water resources of the settlement for drier times in the created wetland, and thus mitigating the expected adverse effects of climate change. Not only will this make the settlement more liveable during droughts, but it will also provide a habitat for many species and a recreational park for those who want to relax.

„The complex drainage and water retention system tested well during the flash flood of early June 2020 and I can say that it protected the municipality 100% from flooding.” (Sándor Tordai, Mayor of Püspökszilágy)

Costs (geodetic survey, design, licensing, construction): cca. 47 million HUF

There is a lot of interest from the surrounding municipalities, both from mayors and schools. Thanks to the camps and excursions, hundreds of children have visited the site so far. And some 40 municipal leaders have visited the site so far, in the framework of "mayors' walks".



Short movie about the pilot:
<https://youtu.be/1TnzpVUoDUc>

Rákócziújfalu

Location: A settlement in the Great Plain, near Szolnok, with about 2000 inhabitants.

Probleen/challenge: It is located in the drier region of the country, with a high number of heat-wave days and increasing water demand due to intensive agriculture (rapeseed, sunflower). However, inland flooding is also common. This mainly results from snow melting in spring and makes life difficult for farmers as it stops in the fields.



Pilot solution: The solution developed in this project addresses this dual problem. The excess water caused by flooding and heavy rainfall will be held in place by modifying the existing sewer network and building structures and a dam. Next to the canal, a deeper area has been created to which excess water (stormwater, rainwater) can be diverted from the canal. A wetland will be created in this area to help recharge groundwater during periods of drought.

What do we expect from this solution?

The aim of the intervention is to preserve the valuable water resources of Rákócziújfalu for drier times, as the lake cools the local climate by evaporation,

„Almost 100 entries were received by the municipality to the drawing contest prior to the construction of the pond, in which the pupils dreamt up their own lake design.” (József Varga, Mayor of Rákócziújfalu)



making the settlement more livable in times of increasingly frequent droughts. This will mitigate the likely adverse effects of climate change and provide habitat for many water-dependent species. We also want the lakeside to serve as a recreational park for local residents.

Costs (geodetic survey, design, licensing, construction): cca. 47,1 million HUF

With this complex solution, we are giving back an area of water here in Rákócziújfalu, which means greater security for both residents and local farmers.

Short movie about the pilot:

<https://youtu.be/K7EBtMsGpvQ>



Ruzsa

Location: It is located in the south-eastern part of Hungary, in the Homokhátság between the Danube and the Tisza rivers, which is the driest area of the country. It has about 2400 inhabitants.

Problem/challenge: The Sandhills are becoming drier and drier, with average rainfall decreasing and groundwater levels falling. The sandy soil makes it difficult to retain water, with increased water filtration in the area. Every drop of water has value - and this is even more true here.



„We have created a pond from drops, a real treasure here in the Sandhills. Meanwhile, my personal attitude has changed a lot.” (Gizella Sánta, Mayor of Ruzsa)

Pilot solution: The project will test the recycling and reuse of greywater, including both treated wastewater and process water. An internal pond of about 700 m² has been created, where groundwater recharge based on the retention of decanted water as a by-product of drinking water treatment will be implemented. On the positive side, the environment is also greener and the microclimate is improved, making the area suitable for recreation. A reservoir of about one hectare has been built behind the wastewater treatment plant, which discharges about 150 m³ of treated wastewater per day, in order to store the treated wastewater. On the other hand, the external drainage system has been renovated and wooden barriers have been installed to prevent



water from running off the site during wet periods and spreading to the adjacent pasture. This also helps to replenish soil water reserves and reduce drought risks.

What do we expect from this solution?

In the Homokhátság, every drop of water has value. Nevertheless, the little water that sometimes appears here has run off from Ruzsa through the canal. The aim of the project is to preserve the precious water resources of Ruzsa in the canal and small lakes for drier times, to recharge groundwater and thus mitigate heat waves and the expected adverse effects of climate change.



Costs (geodetic survey, design, licensing, construction): cca. 48,7 million HUF

During the construction of the inland reservoir, a BMX hill was built from excavated earth, much to the delight of local youngsters. They had long wanted to support active recreation for the younger generation, so this was also realised in the project.

Short movie about the pilot: <https://youtu.be/rzagkJVhYK4>

Tiszatarján

Location: The village is located in Borsod-Abaúj-Zemplén county, on the bank of the Tisza river, a quarter of its territory belongs to the floodplain of the river. Its population is about 1400 inhabitants.

Problem/challenge: The floodplain is extremely exposed to unpredictable, intense flooding, persistent and increasingly frequent droughts, and inland water. The lakes formed from the floodplain pits have almost completely dried up in Tiszatarján.



Pilot solution: In order to increase the retained water resources, the existing cubic basin system has been extended with a new basin, and natural gullies have been created on the banks. In addition, the Municipality of Tiszatarján has for years used its floodplain areas for grazing and energy plantations, which also

„The completed investment (with the developed nature trail) contributes to the development of ecotourism. People here are very proud of that.” (Lajosné Bögre, Mayor of Tiszatarján)



helps to control the invasive pedestrian caterpillar. This is a unique floodplain management model, which we are now making accessible and demonstratable by building a nature trail.

What do we expect from this solution?

The aim of the project is to increase local flood safety, prevent invasive species (horseshoe crabs) from infesting the floodplain and increase the amount of water that can be retained

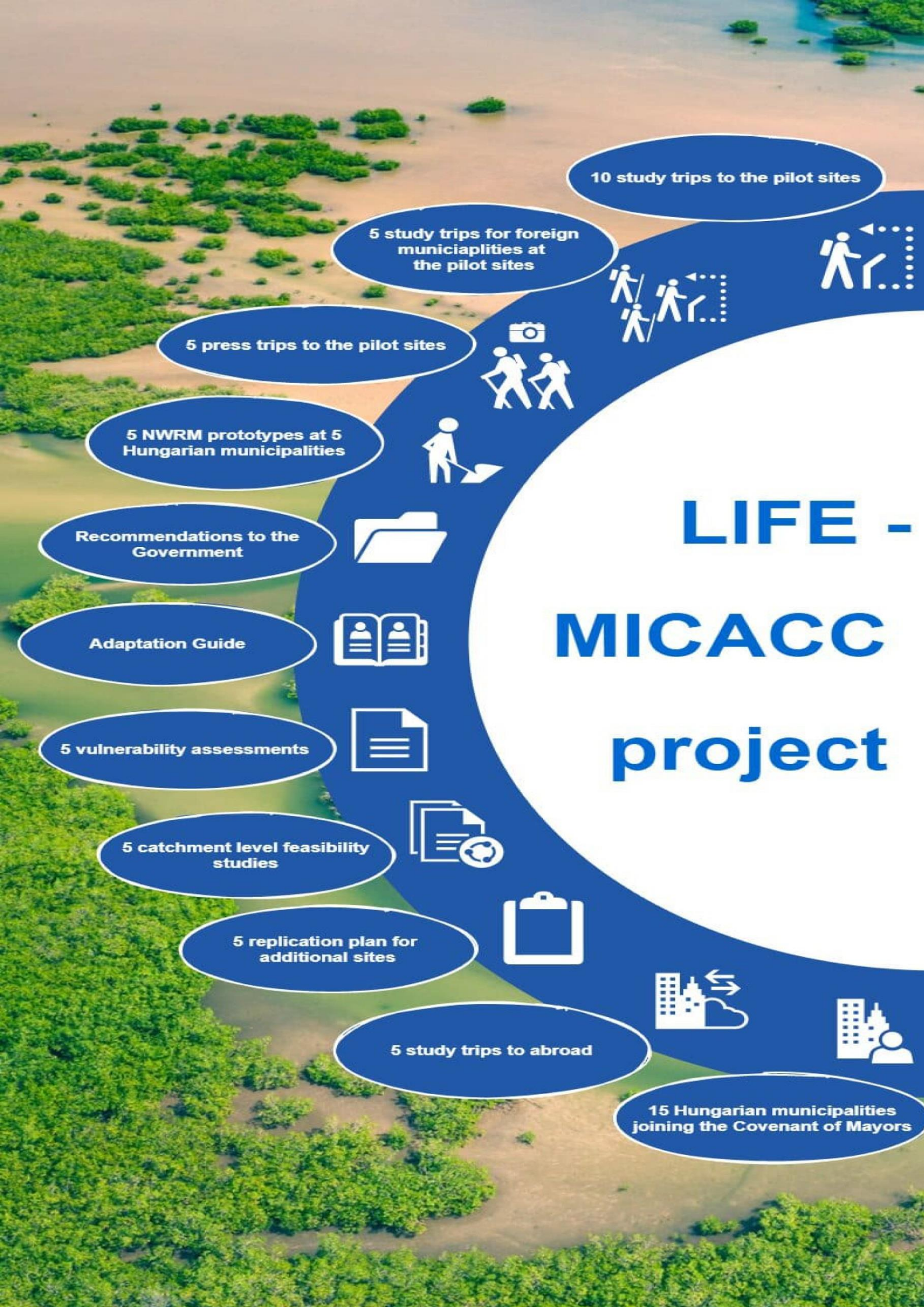
in the landscape. The small pond system will store valuable water resources and inland water from the Tisza flooding, thus mitigating the adverse effects of climate change. The biomass from the plantation can be used to replace the use of natural gas in public buildings, which will also contribute to slowing climate change. In addition, the water buffalo and grey cattle grazing on the restored floodplain will also help to develop the local economy as a visitable ecotourism programme.



Costs (geodetic survey, design, licensing, construction): cca. 46 million HUF

The Tiszatarján pilot site has already been the location for a wedding photo shoot in the summer of 2020.

Short movie about the pilot: <https://youtu.be/eOYn5FOk5rU>



10 study trips to the pilot sites

5 study trips for foreign municipalities at the pilot sites

5 press trips to the pilot sites

5 NWRM prototypes at 5 Hungarian municipalities

Recommendations to the Government

Adaptation Guide

5 vulnerability assessments

5 catchment level feasibility studies

5 replication plan for additional sites

5 study trips to abroad

15 Hungarian municipalities joining the Covenant of Mayors

LIFE - MICACC project



deliverables

Project website



E-learning material



LIFE-MICACC mobile application



1 full and 5 short project movies



Hungarian guide for the global Water Risk Filter



Runoff models for catchment sites



Climate adaptation training material for municipalities



6 x 4 climate adaptation trainings



4 climate conferences



3 networking events

13 roadshow events

Trainings, training materials

Within the framework of the LIFE-MICACC project, three training sessions were held, twice in two days, to introduce the different municipalities' participants to the negative effects of climate change (at the municipal and river basin level) and the basic principles and possible ways of adaptation, through theoretical presentations and different exercises. Participants prepared vulnerability assessments for their own municipality/watershed, and assessed the climatic situation, challenges and opportunities in their municipality.



1st training

Partner municipalities

2nd training

External partner municipalities

3rd training

Municipalities concerned in the catchment area of the partner municipalities

The participants of the trainings had the opportunity to consult with representatives of the following fields: **meteorology, water resources management, environmental management, urban stormwater management, urban planning and health.**

Training content and methodology (training material) is available on the project website (only in Hungarian).

E-learning material



Another important tool for knowledge transfer is the e-learning material prepared in the project, which will be **available free of charge** on the project website for all interested parties after the project is completed (in Hungarian). In November 2020, the user rights were sent to all national municipalities. The e-learning covers the topics of **local adaptation to climate change and water conservation** through 6 modules and interactive exercises. Users can find useful information on the following topics:

- What are the basic concepts and processes of climate change?
- How to adapt to water-related risks?
- How to prepare a vulnerability assessment for a municipality?
- How to adapt to the identified vulnerabilities?

Application to support natural water retention measures

NATURAL WATER RETENTION MEASURES

FREE, KNOWLEDGE-SHARING APPLICATION

LIFE-MICACC MOBIL APPLICATION

- Solutions, best practices
- Useful webpages, news, events
- Professional opportunities, cooperations

MORE INFORMATION

Get it on Google play

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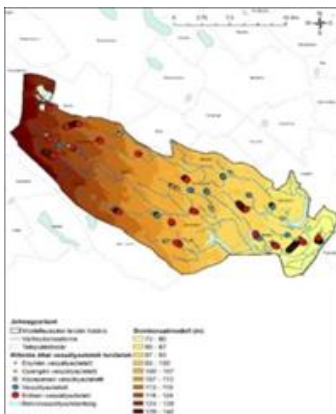
The project has developed an app that aims to **provide community-based information** on natural water retention measures and provide an opportunity for stakeholders **to learn and share good practices**. The mobile app is mainly designed for municipal staff, but it can also be useful for water management, environmental experts and farmers, as well as for the laymen, as it brings together all relevant information on natural water retention in one place in an easy-to-understand way. Through the app, people can find out what solutions exist, what projects (good practices) have been successfully implemented in Hungary and abroad, and get information about related events and news that may be of interest to them.

Runoff model to the five affected catchments

Runoff models have been prepared for the five pilot catchments to help **identify locations that may be highly affected and vulnerable** to the increasing frequency of extreme weather events in the future. The model shows, at different flows, the extent to which a watercourse or canal can be expected to spill, and the areas most likely to be affected by the spill. In a hilly area, the model can also estimate how runoff rate changes in a given area under certain land cover changes (e.g. by increasing the proportion of forest cover).



Sensitive areas of the Bodomréti Canal and the Sövénydülői Canal on the border of the municipality of Rösztke.



The modeling will identify sensitive areas where, in partnership with local stakeholders, natural water retention solutions can be developed that can effectively increase the climate adaptation capacity of settlements and river basins in the long term. The model will also facilitate the development of partnerships between municipalities at river basin level by identifying common interests, threats and possible points of intervention in the river basin.

Sensitive areas detected in the catchment area around Ruzsa at a flow of 2 m³/s.

International experiences and relations

Within the framework of the LIFE-MICACC project, several elements were included to gain international experience, as the practice of natural water retention measures is not well-known and applied in Hungary. So, we organized five study trips abroad and three networking trips, and participation in international conferences also occurred (detailed trip reports can be found on the project website). On these occasions, we gained a number of useful and transferable solutions and experiences that can be applied in the domestic environment, which we would like to present briefly, highlighting the most important speciality of the solutions visited from the project's perspective. The visits highlighted that the issue of climate change adaptation and awareness can be approached in a variety of ways, but that integration and coordination of different activities is the key.

Study trips:



I. Czech Republic – re-shaping the riverbed and retaining water within and outside of municipality borders

- landscape reconstruction of agricultural land
- restored water retention by creating wetland ponds, mosaic plant communities and habitat corridors
- inland stream reconstruction and near-natural flood protection intervention



II. – III. United Kingdom– nature-based small river flood protection and river basin management

- Belford: developing 9-10 000 m3 of storage capacity at river basin level through 35 water conservation interventions, in partnership with local farmers
- Pickering: water retention and slowing down the run-off for flood protection purposes, with representatives of the civil population accompanying the design and implementation of the project



IV. Poland – Adaptation with a comprehensive water retention programme

- a complex national level programme implemented in three phases since 1998
- restoration of small-scale mountain water retention and lowland swamps in the State Forestry Service area
- a total of 12,804 interventions were carried out, resulting in 55.1 million m3 of water retention capacity at national level



V. France – Water management by agreement between the interested parties in the Marais Poitevin Regional National Park

- a "contract de milieu" form of contract for water management at river basin level, involving a wide range of stakeholders (e.g. environmental authorities, water boards, municipalities, NGOs)
- there are 8,200 km of canal system in the national park, with 594 reservoirs for water management
- organised grazing on municipal pastures used for water conservation

Networking activities



I. Denmark – „Stream of Usserød” (Usserød stream) LIFE project

Creating defenses against floods and developing recreational opportunities, community use and ecological enhancement by bringing together municipalities in the stream catchment area.



II. Denmark - „Coast2Coast Climate Challenge” LIFE Integrated project

Their overall objective is to create climate-resilient communities that are able to negate the negative impacts of climate change in a climate-resilient region.



III. Spain – LIFE SHARA project, Madrid, Las Rozas de Madrid

Strengthening the governance of climate change adaptation in Spain and Portugal by increasing resilience to impacts, with a particular focus on communication, attitude-shaping and awareness-raising activities.

Sharing results, knowledge transfer. dissemination



Sharing project results is a priority. We want to raise awareness as widely as possible of one possible effective method of local adaptation: natural water retention measures. From local residents, through the leaders of other municipalities and water professionals, to the media. To this end, we have organised (and will continue to organise until the end of the

project) a series of national events, conferences, local forums, field visits and press trips.

For more information on current project events and activities, please visit <https://vizmegtartomegoldasok.bm.hu/en>



Reproduction and replication of NWRMs

An obligatory element for all LIFE projects is the broad replicability of the activities carried out, facilitating their reproduction. In our case, the project included several ways to encourage and support the application of the implemented NWRMs in other municipalities - in addition to a series of events and roadshows - such as:

Cooperation at river basin level, joint planning for the future

Within the framework of the project, a separate action was launched for cooperation and joint reflection involving interested municipalities in the catchment areas of the five pilot municipalities. The project included a two-day training course on how to prepare a vulnerability assessment. Based on the conclusions, the applicability of the NWRMs implemented in the project have been identified by the municipalities to reduce their vulnerability and increase their adaptive capacity, developing a shared vision at the river basin level.

Selection of the five replication sites, feasibility studies



The aim of the activity is to help five other municipalities with similar climatic difficulties to find and design appropriate natural water retention solutions to increase their adaptive capacity. The main aim is to replicate and implement the NWRM solutions tested in the project. Feasibility studies will be carried out for five additional municipalities selected from the 24 external partner municipalities in the project.

Promoting cross-border replication

The results and experiences of the five pilot projects will also be presented to municipalities in neighbouring countries through field visits and an international online conference. Based on the online questionnaire completed in January 2021 (with around 400 respondents), there is strong interest from neighbouring countries. Local communities are also familiar with the problem from their daily lives and are looking for solutions.

Water Risk Filter for companies and municipalities

Water is associated with many risks that can have a profound impact on the development of a municipality or company. Moreover, these risks are increasing as a result of climate change.

WWF's Water Risk Filter, launched in 2012, is a practical online tool (<https://waterriskfilter.panda.org/>) designed to help local governments, businesses and water users to easily **assess and evaluate where water risks lie**.

In the LIFE-MICACC project, the Water Risk Filter was populated with Hungarian data in addition to the global databases, to help local authorities **find the water risks in the catchment areas of their interest**.

The high-resolution Hungarian databases also show spatial differences, such as the differences between the Transdanubian and the Great Plain regions, which the global map cannot show.

The Water Risk Filter will also help to start a dialogue between municipalities and companies operating in their areas with higher water risks on common environmental challenges and possible adaptation measures on the ground.

An online guide to the Water Risk filter has been produced in Hungarian and is available at <https://vizkockazat.wwf.hu/>.



Adaptation Guide

Based on the experience of the LIFE-MICACC project, the Adaptation Guide is a toolkit for municipalities, which describes:

- the role and options for actions of local authorities in adapting to climate change;
- possible ways of conserving water (near water courses, in forestry, agriculture);
- the additional benefits of natural water retention measures
- the process and steps (from design to permitting and operation) of creating close-to-nature solutions;
- national and international good examples, best practices, case studies;
- effective methods and tools for involving stakeholders, recommendations for communication;
- useful links, further reading on the subject.

Goal: Encourage and inspire local authorities to think about and implement similar solutions in their own municipalities (adapted to local climatic challenges and conditions). The Guide is intended to provide a practical, useful tool and methodology for this purpose.

Target group: Mainly local authorities, municipal leaders, experts.

Making recommendations to the Government

The **primary objective** is to create a supportive legal environment for the application of close-to-nature solutions through regulatory recommendations, and to expand and develop the powers and tools of local authorities in the field of climate change adaptation.

We also aim to contribute to the integration of climate resilience into local strategies. This will support the strengthening of the integrating and coordinating role of municipalities in integrating ecosystem-based climate adaptation measures into natural resource management strategies and spatial planning practices by creating an enabling and supportive environment.

The recommendations are compiled as follows:



The important role of local authorities in adaptation

For the time being, these natural water retention solutions are still new, and there are few domestic good practices. The municipal improvements implemented in the project are **model solutions that can be applied** in other municipalities. By showcasing these and sharing our experiences, our main goal is **to inspire and encourage other municipalities to think about similar solutions locally**.

Why municipalities?

- ◆ Because while climate change is a global challenge, adaptation is most effectively achieved through local level interventions.
- ◆ Because the municipality knows and experiences the problem in its own municipality and is looking for solutions to improve the situation.
- ◆ Because the municipality has the "local knowledge" on the basis of which - in addition to the climatic challenges - potential areas can be included in a given development or the amount of unused local resources in the municipality, for example.
- ◆ Because it knows the population, the local stakeholders, and is able to address them, involve them, emphasise the importance of adaptation, and reinforce it in the public consciousness.
- ◆ Because municipalities are able to integrate an adaptation approach into local decision-making processes, local plans and strategies.

According to our experiences, **local authorities are key players in this area too**. They can and should **coordinate and bring together adaptation to climate change locally**, involving all stakeholders (residents, farmers, water, national park, etc.). It is of great importance for our common future that there are as many good examples of adaptation in our country as possible.

Fortunately, the European Union (and increasingly our country) supports these kind of "blue-green" solutions. The topic is highly topical and will be a priority in the 2021-2027 EU financial support cycle. Planning has already started for the development period, which is expected to include funding for the implementation of natural water retention measures under the Green Infrastructure and Climate Operational Programme (formerly KEHOP).



PROJECT PARTNERSHIP:



MINISTRY OF INTERIOR



KLÍMABARÁT
TELEPÜLÉSEK
SZÖVETSÉGE



ORSZÁGOS VÍZÜGYI
FŐIGAZGATÓSÁG



PPIS
PANNON PRO INNOVATIONS





Contact:

Ministry of Interior
Coordination Office for Municipalities

35 Balázs Béla Street, Budapest, H-1094
Postal address: Pf.: 314, Budapest, H-1093

E-mail: life@bm.gov.hu

Project website: <https://vizmegtartomgoldasok.bm.hu/en> or <https://nwrmbm.hu>



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Budapest, 2021.