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2.4.1. Position paper on NbS/GI policies and state of play in CE

Hungary

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Contents

A. Executive summary

The raising temperatures and increasing (partially seasonal and geographically uneven) water scarcity, which are becoming apparent in Hungary as a result of climate change, call for urgent response. Water retention through nature-based solutions can effectively help to cope with the decreasing regional water availability caused by the consequences of climate change, as well as with the flash floods that occur periodically. The retained water, and even green infrastructure alone itself, have a favorable effect on the local microclimate: they have a cooling and balancing effect.

This policy paper was prepared within the framework of the GreenScape Interreg CE project encouraging the development of green infrastructure (GI) and the application of nature-based solutions (NbS), with the involvement of the Hungarian professional community TeamHUB[1]. The document summarizes experience related to the missing data, knowledge, and capacities, as well as formulates recommendations regarding NBS and GI policies.

In recent years, positive changes have begun in the recognition of nature-based solutions in Hungary, as well as in the development of their professional and legal framework. However, there is still room for improvements, especially regarding the data availability, the knowledge of engineers and awareness of investors and citizens. Financing and wide implication of NbS is problematic, partially due to the immature regulatory (permitting and procurement) framework conditions. These remaining gaps, presented in this paper could be filled by a dedicated organisation or working group set up by the concerned ministries and supported by experiences stakeholders from the academic and private sector. This structured expert group could coordinate the necessary policy developments and monitor both further policy changes and the implemented NbS investments, to check their effectiveness and success.

B. Policy challenges - Knowledge Gaps in NbS/GI

The application of nature-based solutions (NbS) in Hungary is hindered by numerous factors. In 2023, a Hungarian research team published the work titled *"Promoting nature-based solutions in municipalities in Hungary"* (OECD 2023), which summarizes the challenges. The following list includes by topic those issues that remain relevant, complemented by findings from an evaluation document prepared in 2023 at the request of the Prime Minister's Office and by the observations of the TeAM HUb professional community[2]:

Coordination and Governance

- There is no clear topic lead (various elements of NbS are addressed fragmented across several ministries; it is also a borderline issue between planning disciplines). Both vertical and horizontal coordination is missing in this area.
- There is no widespread use of general professional knowledge and terminology (even within the professional field, concepts and interconnections with other disciplines are interpreted differently). A unified glossary would be necessary instead of separate definitions by different regulations.

[1] TeAM HUb - Természet-Alapú Megoldások Magyarországi Hálózata: Hungarian Network of Nature-based Solutions

[2] Based on the discussions held during the TeAm HUb workshop on 13 June 2025.

- Due to utility protective distances and similar regulations, there is often a lack of space, and green infrastructure is frequently not protected or provided for - urban planning often fails to address this adequately.
- Developments designated by the government as "of key importance to the national economy[3]" are not required to comply with local regulations (e.g., green space ratio requirements), and certain actors can be exempted from higher-order regulations, without proper oversight.
- There is no generally required green design review board for projects above a certain size, so GI-damaging developments may occur. The same applies to the so-called investment target areas.

Professional Barriers

- Lack of uniform geoinformatic background and methodologies (e.g., information on the quantity and location of green spaces in settlements is missing or inaccurate; databases necessary for modelling urban runoff are lacking).
- Some of the existing data necessary for GI planning is not openly available; the available data is fragmented.
- A lack of knowledge is present regarding professional preparedness that is necessary for implementing investments - even among experts, representatives of local governments, and authorities alike (Prime Minister's Office 2023).
- Experts who predominantly know and apply grey infrastructure solutions still often design urban stormwater management based on traditional drainage approaches, though progress is noticeable in recent years.
- Authorities' lack of information on NbS hinders their applicability (e.g., during permission procedures, certain nature-based solutions are not categorized or assigned to a responsible body, so they are simply not approved; the public procurement authority may label necessary criteria as anticompetitive and remove them from the documentation).
- Financial calculation deficiencies (there is no widespread, unified value calculation method for ecosystem services and their changes or value increase). Such a method would help improve NbS acceptance and support broader implementation, as deviations from existing standards require substantiated calculations.
- Low knowledge and commitment among developers and residents toward NbS.
- Local governments own a very limited area of land, and generally, the fragmented property ownership structures can restrict NbS feasibility - not only due to lack of space and the difficulty of obtaining ownership consent, but also for financial reasons (e.g., property purchases can only be financed to a limited extent through grants).
- At the local level, there is no up-to-date, area-based registry of green infrastructure, including inland water drainage systems and canals (especially separate, open system elements).
- GI maintainers accustomed to traditional solutions are resistant or slow to adapt new maintenance practices.
- Separate stormwater system elements are not classified as public utilities, thus there is no legally mandated operator, and no fee can be charged for their operation.

Procedural Obstacles

[3] Based on Act LIII of 2006

- Some NbS are subject to complicated, unclear permitting procedures.
- Including a nature-based or more specific technical solution, procedure, or specific material in public procurement/specifications is generally problematic - this is often the reason why conventional grey solutions are ultimately used instead.
- Municipalities can almost exclusively develop green infrastructure using European Union funds (through national operational programmes and direct EU funding). The strict implementation and payment requirements of the projects often lead to professionally poor solutions, e.g., planting during the summer.

C. State of the Art

In this section, the most relevant legislative, technical and financial instruments are presented that are currently most relevant for NbS and green infrastructure developments.

1. Legal framework

In the years 2023-2024, significant and beneficial changes occurred in the legislative environment regarding green infrastructure and green spaces:

- Green infrastructure planning appeared in Act C of 2023 on Hungarian Architecture.

  Following the law, three decrees were amended:

- The National Building Regulations changed: Government Decree 280/2024 (IX. 30.) on the basic regulations of urban planning and building requirements defined many terms related to GI and gave more detailed regulations and stronger protection for green areas than before.
- A new decree was introduced: Government Decree 282/2024 (IX. 30.) on urban green infrastructure, green surface certification, and the green label. It is expected to ensure an adequate quantity and quality of green infrastructure on plots and thus in the settlement. This Government Decree introduced the green surface certificateas well4 with the expected outcome to increase in living, biologically active surfaces and biodiversity, a reduction in aggressive, invasive plant species, thereby promoting climate protection and improving biodiversity. Demonstrating the benefits of ecological green space management also shapes public attitudes.
- Government Decree 419/2021 (VII. 15.) on the content, preparation, and adoption procedure of settlement plans and certain special urban planning legal institutions also secures that GI should be taken into account and developed locally.

The applicability and impacts of these legislative changes can not yet be evaluated, as they are just in force since 01.2025.

2. Professional and methodological support

At the national level, an important achievement was the creation of the www.termeszetem.hu platform (Ministry of Agriculture, 2019), which was implemented within the framework of the

[4] Reference: www.zoldfeluletitanusitvany.hu

project titled "Strategic studies underpinning the long-term preservation and development of natural assets of Community importance, as well as the national-level implementation of the EU Biodiversity Strategy 2020". As part of this project, Hungary's ecosystem base map was developed, whose main function is to present the spatial distribution of ecosystems in Hungary, in the form of a thematic raster dataset with a three-level category system. The methodological foundations for mapping the current elements of the national green infrastructure network and evaluating their condition were also established. In addition, several professional materials were produced on the evaluation and protection of ecosystems.

The green infrastructure design jury has proven itself in practice and supports designers and clients during the project preparation process for nationally distributed ERFA funding, encouraging openness to alternative solutions. TeAM HUb operates an online knowledge base as methodological support: **TeAM HUb – Hungarian Network of Nature-Based Solutions**.

The Municipality of Budapest publishes the publication series titled **"Green Infrastructure Booklets**[5]**"**, currently consisting of eight editions, which offers practical, example-based solutions to the most pressing professional challenges of GI development and maintenance.

In 2024, M. Csőszi and their co-authors prepared a guide, "Handbook for the Planning and Implementation of Green Infrastructure Developments", which offers methodological recommendations to municipalities for the successful execution of GI developments.

At the end of 2024, the Ministry of Agriculture published a publication titled Nature-Based Water Retention Solutions (Ministry of Agriculture, 2024).

Hungary joined the European Green City Movement in June 2010; the Hungarian Green City initiative periodically holds accredited Green City professional training. Some university and specialized engineering programs (e.g., MATE) ensure the supply of domestic experts (e.g., training in ecological green space maintenance).

The Hungarian Chamber of Architects organizes certified green infrastructure planning courses[6] for landscape architects with design authorization. The purpose of the training is to share additional knowledge enabling participants to prepare GI strategies and technical designs of GI projects, as well as to cooperate with related disciplines with a new mindset necessary to address climate change-related challenges. In addition, a task force group has been launched, aiming to renew the methodology of urban stormwater management, with the participation of architects, landscape architects, hydraulic engineers, road designers, etc.

Several domestic LIFE projects relavant to the topic have been developing a set of useful professional material that can be further utilized. Some examples:

- LIFE-MICACC: list of water retention solutions with best practices and e-learning material
- LIFE-CLIMCOOP: target group-specific courses on climate adaptation; a guide to building log dams; a guide for developing joint urban-business climate adaptation strategies; best practice collection; design handbook based on the water stewardship concept
- LIFE_IN_RUNOFF: Urban Rain: designs and technical descriptions for water-retention developments; Sponge City and Green Roof guides[7]

[5] https://archiv.budapest.hu/Lapok/2022/zoldinfrastruktura-fuzetek.aspx
[6] https://www.mek.hu/link-zitt_toabbkepzes_2024_oszi
[7] available at: https://budapest.hu/zold-budapest/zoldfeluletek/tervezoknek

- LIFE LOGOS FOR WATER: awareness-raising playful task series (*Water Mirror*) with teaching aid; design guide for preparing ITVT; small-scale solutions within the municipal grant program; decision support platform: online database collection

Practices and knowledge bases of NbS projects from other funding sources (e.g., UIA, INTERREG) are also useful for the project developers.

3. Financial support

Direct European Union funds (INTERREG, LIFE, EUI) are indispensable tools that support the implementation of high-quality projects based on stakeholder engagement. However, the access to these funds is limited, and domestically distributed funding is rarely available alongside them.

The only domestically distributed funding source currently in the planning phase - but largely financed by the European Union - that specifically targets the funding of nature-based solutions is the KEHOP-Plusz-2.2.1 scheme. Within this framework, a two-round professional project review committee (GI design council) supports the development of suitable projects, which must include the implementation of a nature-based solution aimed at addressing an existing problem. This will also be required to include awareness-raising actions relevant to the topic. No own contribution will be needed to access the funding - the total available budget is currently unknown but may reach up to 100 million EUR. The primary beneficiaries are expected to be local municipalities, though other organizations may be involved as consortium partners. The call is innovative in many aspects, aligning with the specific characteristics of nature-based solutions (NbS).

Additionally, the TOP-Plusz-1.3.2-23 “Sustainable Urban Development” program, with a total budget of 581 billion HUF (app. 1,5 billion EUR), has supported over 20 Hungarian cities in developing and implementing their development strategies based on a new, integrated, and strategic approach. This framework primarily funded public space and road renovations, including green space renewal. The development of these projects was supported by the professional input of the GI design council.

Smaller-scale NbS projects have also been implemented through EU-funded LIFE projects - for example, LIFE-MICACC and LIFE-RUNOFF - in approximately 15–20 municipalities.

Many local governments also benefit from directly accessible European Union funds such as LIFE, INTERREG, Horizon Europe 2, etc.

D. Policy recommendations

Based on the above, the Hungarian experts of the GreenScape project (Energiaklub), involving the expert community of the TeAM Hub – the Hungarian Network for Nature-Based Solutions, formulate the following recommendations.

First and foremost, it is important that every public sector investment involves landscape/horticultural design supervision and employ a technical inspector specialized in landscape architecture (Prime Minister’s Office 2023). When relevant, attention should also be paid to involving experts in nature conservation and water management. These requirements should also be expected in the case of significant private investments.

The following are necessary:

- Strengthening the institutional and regulatory framework

Most important filed of intervention is to improve regulatory and institutional framework of green infrastructure developments.

- the establishment of a responsible body with cross-sectoral connections, along with the necessary operational conditions, to coordinate, lead, and supervise the necessary regulatory changes, awareness-raising, and training activities. For instance, establishing a Ministry of Environment (in every EU country except Sweden, the environment is explicitly included in the name of a ministry) and assigning these responsibilities to it.
- the possibility for ownership rights to be overridden in certain cases of public interest. There is already precedent for this: in the field of construction, for example, easement rights can be registered for the placement of utilities. A similar legal right should be assigned to NbS, and this should be integrated into lower-level legislation as well.
- the elimination of (conceptual) and internal contradictions between legal regulations.
- returning construction authority rights to municipalities, so that enforcement of rules can be more unified and effective.
- enforcement and monitoring of new regulations regarding the preservation of biological activity value (including sanctions).
- provide exemption from water permits at least for simpler NbS.
- ensuring that municipalities have the right of first refusal for land/real estate purchases, and to rationalize the requirement for owner consents in the case of public-purpose developments.

- Improving technical standards and capacity

Technical guidance and knowledge are essential prerequisites of good-quality GI/NbS developments, so to further develop capacities, it would be fundamental to provide

- trainings to expand the knowledge of key stakeholders (civil servants, judicial experts).
- the review and update of technical and sizing principles, taking into account international best practices and domestic experiences - with particular attention to the observed/measured and expected changes in precipitation patterns due to climate change.
- the development and review of already existing standards, the inclusion of NbS in the official cost estimation guides to enable the implementation of new solutions.
- a planning guide for NbS (including cross-sections and profiles), and interdisciplinary (not field-specific) trainings. (Prime Minister's Office 2023)
- supporting materials and guidelines tailored to different levels of planning for the professional application of biodiversity conservation considerations. (Prime Minister's Office, 2023)
- a unified methodology applicable at municipal level for the preparation of local Green Infrastructure Development and Maintenance Action Plans.

- Enhancing data, monitoring, and transparency

To have a supportive planning environment, the following steps are unavoidable:

- the collection and regular updating of nationwide, but municipally usable data that is free and directly accessible to local authorities and other stakeholders.
- the development a national green infrastructure developmental plan[8] that defines necessary protection, restoration, and development goals, actions, and areas - this is expected to be completed by 2026 by the project 'Underpinning strategic planning of ecosystem service-based green infrastructure developments based on renewable data'.
- the monitoring of implemented (domestic) NbS and their impact areas, to measure and verify their effectiveness, and to share this information.

- Reforming financing and procurement mechanisms

Some of the pilot developments in Hungary have meet difficulties in the procurement phase of the projects, while others have problems with strict financing shemes that disable taylored GI developments. To avoid such time-consuming and even preventive, provide

- broaden procurement practices and accepted criteria, so that there are no obstacles to the use of innovative solutions and materials, or to the selection of subcontractors with the appropriate references.
- targeted funding that includes as a condition: the involvement of experts and independent professional quality assurance during both the planning and implementation phases, and expects problem-based, collaborative, and professionally well-prepared developments, including support for necessary land acquisition.

- Empowering municipalities and local actors

Policy developments on the national level should be supplemented at the local level to have a complex supportive framework for reviatlizing the country. Though, it is also important that municipalities:

- prepare a spatial data-based inventory of their green assets and properties related to water management,
- work on the preservation and development of local green infrastructure (GI) in cooperation with stakeholders, based on a well-founded and regularly revised Local GI Development and Maintenance Action Plan (ZIFFA),
- prioritize nature-based solutions in their other local plans,
- via local building regulations and planning, only allow developments that take place on brownfield sites or, in the case of greenfield developments, ensure the ecological condition of other areas is improved to compensate for the loss (even more strictly than national regulation or also for smaller-scale developments),
- implement GI developments on their own land, and on others' properties to encourage them through regulation, and sanction their degradation,
- shape the mindset and motivation of the local citizens and stakeholders to accept, maintain, and develop NbS and GI - for example, by supporting greening actions of local civil society,
- develop their projects with all relevant sectoral experts involved from the concept stage and through cross-sectoral coordination,

[8] in line with the obligations set out in Regulation (EU) 2024/1991 of the European Parliament and of the Council on nature restoration.

- employ in-house specialists responsible for green areas, water and soil management, and climate adaptation - public officials familiar with the fields of landscape architecture, horticulture, stormwater management, and urban planning. For smaller municipalities, this expertise should preferably be ensured jointly at the district or water catchment level.
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E. Summary and conclusion

In recent years, positive changes have begun in the recognition of nature-based solutions in Hungary, as well as in the development of their professional and legal framework. However, this work must be continued to ensure that designers and investors turn to these solutions not only in isolated instances but in a systematic way nationwide.

It is of particular importance to monitor both policy changes (e.g., new legislation, KEHOP Plus 2.2.1 scheme) and the implemented NbS investments, to check their effectiveness and success.

Not only for NbS, but also for building a climate-resilient society and urban environment, it is essential to create and maintain regularly updated, openly accessible spatial data.

The implementation of the proposals presented in Chapter D can only be successful if all stakeholders are aware of the related tasks and work in active cooperation to achieve them, preferably under the care of a professionally competent (and appropriately high-level) coordinating organization.

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