# International Student Competition
Landscape Forum 2025: Budapest North & Danube Bend

## Winning Teams & Finalists



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MAGYAR TÁJÉPÍTÉSZEK SZÖVETSÉGE

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# Towards Wholeness

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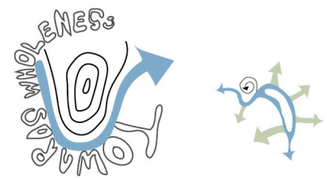
FIRST PRIZE

The Danube Bend, a region of exceptional natural and cultural significance, has long inspired Hungarian poets, artists, and thinkers. Shaped by both history and nature, the bend serves as a symbolic boundary, defining the area's identity. Beyond its visual appeal, it reflects the deep connection between past, present, and future.The proposed plan envisions a "path towards wholeness", linking sacred, natural, and built elements to strengthen the bond between people and the landscape.

This route will support sustainable development while preserving ecological and cultural values. It fosters a balance between urban and rural areas, ensuring responsible growth and community engagement. A key element is the creation of green corridors, which serve both ecological and symbolic functions. These corridors will honor cultural and environmental heritage while providing communal spaces. The right bank will focus on preserving landscape architecture, while the left bank, more vulnerable to climate change, will embrace ecological innovation.

Sustainable water management plays a crucial role, addressing climate change through wetlands and water retention strategies that mitigate floods, support biodiversity, and promote environmental education. The region's diverse ecosystems marshlands, forests, and meadows will be preserved, transforming neglected areas into meaningful green spaces.

The plan also tackles urban sprawl, reimagining fringe areas to protect the region's identity. Integrating green-blue infrastructure will strengthen the connection between nature and settlements, fostering resilience.Ultimately, this vision ensures that the Danube Bend remains a place of beauty, memory, and identity, balancing nature, culture, and human activity for future generations.




## TOWARDS WHOLENESS

The natural landscapes of the Danube Bend are not only visually stunning, but also carry deep symbolic value, having served as inspiration for many Hungarian poets, writers, and visual artists for centuries. Nature has created a sign here: the Danube's bend formed the Danube Bend, which still defines the primary identity of the landscape today.

The Danube Bend is special not only because of its natural beauty, but also as a place of memory for the history of Hungary, where the intertwining of the past, the landscape, and identity is strongly felt.

The **short-term goal** of the plan is to create a "path towards wholeness" that connects the unique sacred, natural, and built elements of the landscape. This route offers an opportunity for more focused to experience a deeper connection with the landscape and the unique identity of the Danube Bend, while also preparing the area for future challenges and development opportunities.

As a **long-term strategy**, "towards wholeness" aims at creating a sustainable setup for the future. This concept strives not only to preserve ecological and cultural values, but also to strengthen an identity that more deeply connects people with the Danube Bend and its unparalleled heritage.

The moderation and controlled regulation of suburbanization is not only a matter of spatial structure, but must also aim at shaping people's emotional connection to both their built and natural environments. For those moving from the city to the countryside, the goal is for them not to bring the urban lifestyle with them into the more rural areas but to adapt to the peculiarities of the place and establish a responsible relationship with the local nature and cultural values in harmony with tradition. This approach could result in a more sustainable and harmonious rural development.

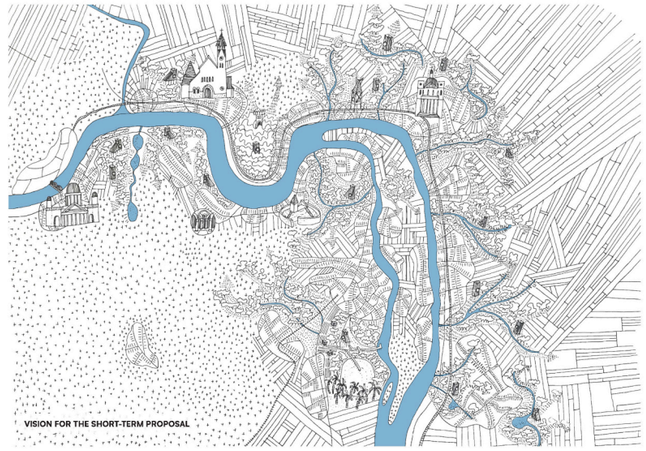
## NATURE SETS NEW BOUNDERIES

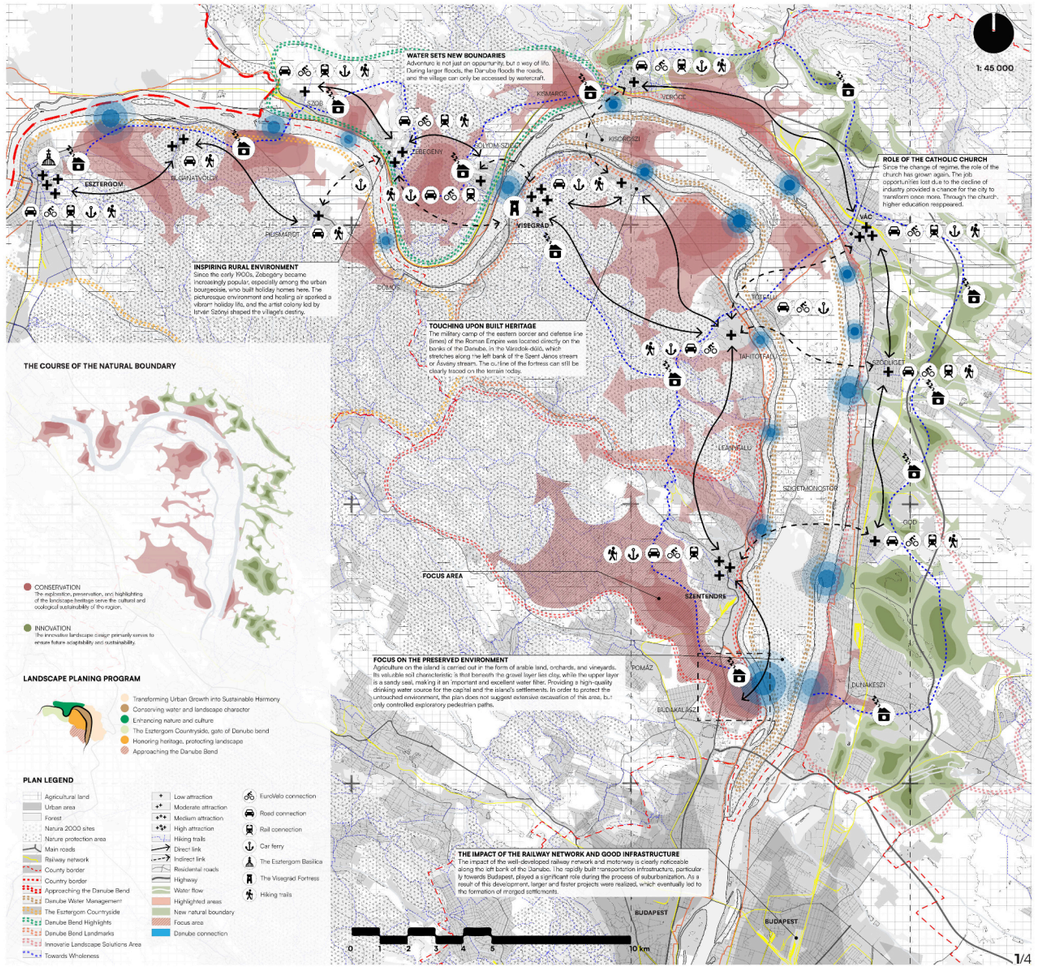
The beauty of nature and green corridors have always played a prominent role in the history and development of the Danube Bend region. Due to the suburbanization processes from the direction of Budapest, the settlements in the area have increasingly merged, resulting in new social and environmental challenges. The aim of the plan is to ensure directed and sustainable development in this context, harnessing the power and characteristics of nature.

As part of **the concept**, green corridors will be created that go beyond ecological functions: they carry symbolic significance at the boundaries of nature, while also honoring the historical layers and environmental challenges of the landscape. These corridors reflect the balance of nature and cultural heritage while creating new opportunities for sustainability and communal use of space.

**The strategic plan** places emphasis on preserving and highlighting the landscape architectural heritage on the right bank of the Danube, while also identifying areas where these cultural imprints can be further enriched and strengthened. In contrast, on the left bank of the Danube, the effects of climate change are expected to be more pronounced, so the plan designates innovative, ecologically focused areas to ensure the future adaptability and sustainability of the landscape. This side becomes a field of landscape architectural innovation, responding to environmental challenges and building on future opportunities.

These designated areas could evolve into a regional park in the future, which will not only become outstanding from an ecological standpoint but will also enrich the region with its cultural, recreational, and community functions. Such developments serve as a long-term vision for the Danube Bend to harmoniously blend natural and human factors, creating a sustainable future for the next generations.




## THE COURSE OF THE NATURAL BOUNDARY

**CONSERVATION**
The exploration, preservation, and highlighting of the landscape heritage serve the cultural and ecological sustainability of the region.

**INNOVATION**
The innovative landscape design primarily serves to ensure future adaptability and sustainability.

## LANDSCAPE PLANING PROGRAM

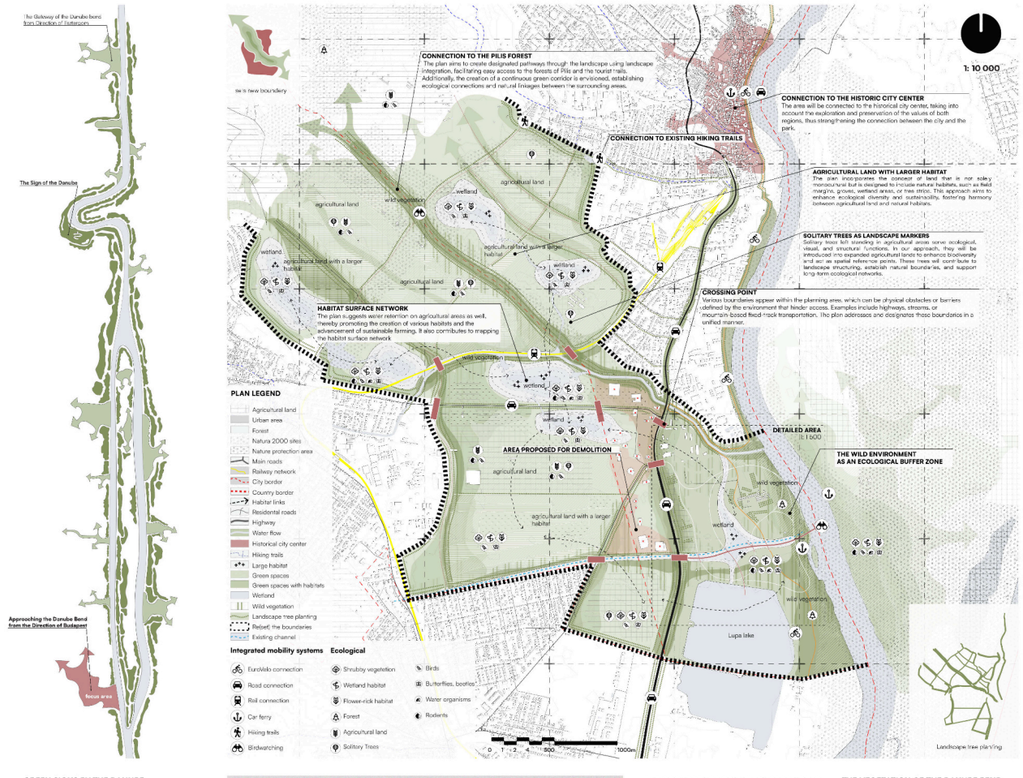
- Transforming Urban Growth into Sustainable Harmony
- Conserving water and landscape character
- Enhancing nature and culture
- The Esztergom Countryside, gate of Danube bend
- Honoring heritage, protecting landscape
- Approaching the Danube Bend

## PLAN LEGEND

- Agricultural land
- Urban area
- Forest
- Natura 2000 sites
- Nature protection area
- Main roads
- Railway network
- County border
- Country border
- Approaching the Danube Bend
- Danube Water Management
- The Esztergom Countryside
- Danube Bend Highlights
- Danube Bend Landmarks
- Innovate Landscape Solutions Area
- Towards Wholeness
- Low attraction
- Moderate attraction
- Medium attraction
- High attraction
- Hiking trails
- Direct link
- Indirect link
- Residential roads
- Highway
- Water flow
- Highlighted areas
- New natural boundary
- Focus area
- Danube connection
- EuroVelo connection
- Road connection
- Rail connection
- Car ferry
- The Esztergom Basilica
- The Visegrad Fortress
- Hiking trails

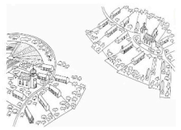




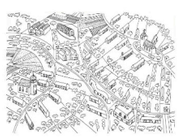



## GREEN SIGNS BY THE DANUBE

Along the entire course of the Danube, various landscape signs can be observed, shaping the character and identity of the landscape. The Danube Bend, shaped by nature, is particularly regarded as a powerful symbol along the river. The designated green corridors provide an opportunity for these initial signs to gradually evolve into true landscape symbols, becoming inseparable parts of the emerging settlements, thereby strengthening the unique landscape and cultural harmony of the region.







## DISORDER AND IDENTITY LOSS IN URBAN FRINGE AREAS

On the edges of urban sectors, infrastructures and networks have facilitated the creation of a fragmented landscape, where elements such as family houses, gardens, and other seemingly most of these peripheral areas, which are part of larger planning projects, suffer from planning deficiencies, both in terms of urban planning and landscape and architectural considerations. These development efforts do not fit the character of the place, leading to a loss of significance for the affected areas, which in turn causes the places to lose their value.

These peripheral areas, which form the entrances to urban agglomerations, present an extremely negative image, even to the settlements themselves. Expansions, often occurring on the hillside surrounding old town centers, tend to spread toward agricultural plains. Further extending them. These sections have become gen..ine reserve lands, easy to develop and arrange.

## 1. PERSPECTIVE - COMMUNITY GARDEN

Community gardens hold significant importance in an area where the tradition of agriculture and plant cultivation has always been a key element. These gardens not only provide fresh food for locals but also help strengthen community ties and local identity. The maintenance and development of community gardens contribute to sustainable farming, offering an opportunity to preserve traditional agricultural knowledge while supporting biodiversity and environmental protection. Additionally, community gardens help raise environmental awareness and provide a space for both the local community and the local landscape.

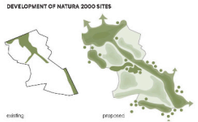


## THE OCCURRENCE OF NATURA 2000 AREAS

The Natura 2000 sites of the Pilis and Visegrád mountains ranges are of significant importance as protected areas in Hungary, rich in natural values. These areas are home to numerous protected plant and animal species, and the landscape includes a variety of special habitats, such as forests, rocky meadows, and stream valleys.

The plan places a strong emphasis on the protection, exploration, and interpretation of the Natura 2000 sites. Recreational activities will be defined in a way that does not diminish, but rather supports the sustainable development of nature values, ensuring opportunities for their growth and preservation in the future.

### DEVELOPMENT OF NATURA 2000 SITES



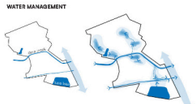

### BIRDS DENSITY/DIVERSITY - MAPPING




## SUSTAINABLE WATER MANAGEMENT IN THE FOCUS AREA

Sustainable water management is an integral part of the proposed plan for the focus area. It is crucial to address the relationship with water and all its ecological factors through appropriately designed phases. Given that the impacts of climate change are affecting and will continue to affect this region, the plan ensures the long-term sustainability of the area by considering these aspects of water management. These new habitats will provide opportunities for strengthening local biodiversity while also giving the area a new identity.

### WATER MANAGEMENT




The aim of the area is to serve not only as a space for recreational activities but also as an educational function, raising awareness about natural values and sustainable land use. In agriculture, ea.. drainage ditches help with water management, while the Dera stream, the Lupa area, and the high groundwater level contribute to water retention and the preservation of wetland habitats.

## THE VEGETATION OF THE DANUBE BEND

The vegetation of the Danube Bend encompasses a variety of habitats, including reed beds and marsh plants in wetland areas, as well as drought-tolerant species living along the sandy and gravelly shores of the Danube. The area's forests are dominated by oak woods, lime and elm groves, and beech forests, while alder and birch forests are found in the marshy and wet areas. Additionally, meadows and pastures play an important role in the landscape. These diverse plant communities provide rich biodiversity for the Danube Bend. The plan has been developed with consideration for the different habitats, placing special emphasis on preserving the area's rich and natural biodiversity, with one of its key elements being the protection of esteem..ial plant species linked to local habitats.




## EXISTING SURFACE CHARACTERISTIC

Considering the current green space conditions, it is justified to strengthen and protect the existing green corridor to sustainably support the region's biodiversity in the long term. The currently open areas can become an important player, serving as a symbolic boundary between settlements, while transforming into an eco-conscious, recreational green space complex. This will offer the opportunity for the area to not only promote relaxation and recreation, but also foster environmental awareness and sustainable land use, thereby strengthening the region's cultural and natural heritage. The focus area is a designated imprint within the landscape that further enriches and strengthens the region's natural and cultural traditions, functioning as a regional park and playing a central role in future landscape architecture developments.



## DOCK AS A BOUNDARY



The central element of **the concept** is the creation of a symbolic and physical boundary that prevents the merging of settlements while strengthening the unique character of the area. This boundary is already present in the middle of Lupa Lake as an administrative boundary, which will be reinforced through landscape architecture interventions in the proposed plan.

The spatial position and design of the object emphasize the division of the area, while also serving as a unifying element in a visual sense. The location of the pier marks the boundary, preventing the formation of a uniform urbanized spatial structure both in spatial and conceptual terms, while preserving the dynamic balance of the landscape.



### LANDSCAPE TYPOLOGY

Christian Hvenich Nielsen's concept for the Varosliget serves as inspiration for the layout of the boundary. This approach emphasizes the symbolic significance of spatial design, where each component contributes not only to the physical arrangement of the landscape but also to its cultural and historical context.

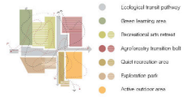
### INFRASTUCTURE AND ACCESSIBILITY

The design focuses not only on visual harmony but also on spatial and functional coherence, where every detail is intentionally interconnected, including infrastructure and accessibility. Similar principles apply in the planned landscape, ensuring that the elements serve not just aesthetic, but also practical purposes.

**Road infrastructure** and **accessibility** are emphasized, making the various elements easily reachable and functioning in unison to ensure smooth flow and comfortable movement. The integration of the park system and landscape features supports both recreational and educational objectives, with each element contributing to the functionality and aesthetic value of the space.




FUNCTIONAL SCHEMA




The functions presented in the design are closely linked to the benefits of green-blue infrastructure. The community garden and orchard enhance sustainability and biodiversity while serving community and educational purposes. Recreational and artistic spaces emphasize cultural values, while active sports areas and picnic zones cater to relaxation and social experiences. The central wetland holds significant ecological and water management value, connecting the functional units of the area.

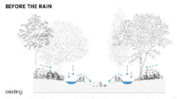
### FROM SEGREGATED PLANNING TO INCLUSIVE NEXT NATURE

The main goal of the concept is to strengthen the connection between nature and the city while ensuring the long-term preservation of existing nature habitats. The green-blue corridors follow the topographical and hydrological conditions, connecting the Dera stream with the natural biotope, creating a highly efficient landscape system with minimal intervention. These corridors not only introduce the lush character of the surrounding landscape but also contribute to the protection of the biotope by establishing a natural water system. In the plain, the corridors pass alongside the orchard and the nursery, allowing for the emergence of new spatial and ecological qualities from the meeting of these two worlds. Key principles: wetland habitats connections, social integration.

### WATER SYSTEM

Water-regulated habitats balance each other, provide resilience, and maintain a healthy dynamic in the landscape ecosystem.

BEFORE THE RAIN




Due to climate change, rainfall has become more intense, while dry periods have lengthened, causing flash floods in urban areas. The goal is to retain and utilize as much rainwater as possible, thereby mitigating the effects of flooding and water shortages.

One solution is for urban green spaces to function as "sponges": they quickly absorb and temporarily store rainwater, then gradually release it back into the soil during dry periods.

As part of the strategy, wetland habitats created in key locations not only reduce the risk of flash floods but also visually enrich the environment. These natural interventions provide effective water management, contributing to the sustainable management of smaller, water-challenged areas.

AFTER THE RAIN






2. PERSPECTIVE - WETLAND

The purpose of the wetland is to showcase the potential for interaction between humans and nature, where humans do not exploit, but coexist with the natural environment. From a landscape architecture perspective, the focus is on integrating natural landscape elements in a way that maintains their ecological function while providing space for humans to observe and relax. The observation tower and resting areas do not dominate the landscape but subtly connect the presence of humans as part of nature. This green wedge not only represents a transition between the artificial and natural environment but also serves as a reminder that a sustainable future depends on achieving a balance between humans and nature.








## HUNGARY IN CLIMATE CHANGE

Based on the diagram, it can be observed that the spatial distribution of annual precipitation has changed over the past decades, with decreasing rainfall increasingly affecting the southern and eastern regions of Hungary. The fluctuations between more intense rainfall and drier periods present an increasing risk for water management and landscape architecture. In addition to the decrease in precipitation, particular attention should be paid to the increasing frequency of flash floods, which could overload local watercreek and drainage systems, especially in urban environments.

These sudden downpours also put existing infrastructure to the test, as in many cases, drainage systems are not equipped to handle the rapid influx of water, leading to flooding. Therefore, landscape architecture must not only respond to the amount of precipitation but also address the rapid runoff of rainfall to minimize damage and ensure environmental sustainability.

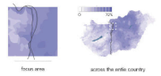
For water management, it is also essential to implement new, innovative water collection and storage systems to prevent flash floods. The integration of green infrastructure, such as rain gardens and green spaces optimized for water use, can help maintain local water resources and effectively manage sudden precipitation events.

In future landscape architecture and water management solutions, sustainable urban development and the protection of natural systems are essential. In response to climate change, it is important to tighten building regulations, especially in rural fringe areas, to prevent excessive urbanization while preserving natural corridors. It is advisable to connect land purchases with agricultural land, encouraging its cultivation through appropriate regulations, thereby supporting the protection of local ecosystems and the establishment of green infrastructure.

The role of green infrastructure in water retention and drainage is crucial. Integrating storage systems, rain gardens, and green spaces optimized for water management can help handle sudden precipitation and maintain water resources, contributing to the sustainability of settlements. Integrated landscape architecture solutions are therefore beneficial not only for water management but also for community and environmental well-being.

To achieve long-term success, it is necessary to establish a harmonious balance between urban and rural areas, through which sustainable, adaptive design solutions can help cities and their surroundings increase their resilience to climate change. Addressing climate change challenges requires a close integration of regulatory and planning practices to ensure environmental and social sustainability.

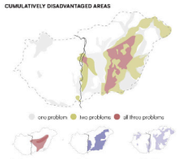
CHANGES IN ANNUAL PRECIPITATION TOTALS FROM 1961 TO 2020 (%)




Source: www.met.hu/hu/eghajlat/magyarorszag_eghajlata/

## AREAS IN HUNGARY THREATENED BY WATER DAMAGE AND DROUGHT

CUMULATIVELY DISADVANTAGED AREAS




Source: Hatvani, 2016; OVF National Directorate General for Water Management

The presence of water management issues, such as drought, inland flooding, and flooding, is closely related to the dynamics of the landscape, which can be addressed through wetlands and renaturalization projects. The area, functioning as a green wedge, can reduce the risks of drought-prone and waterlogged areas by restoring ecological processes, such as enhancing water storage capacity and building water retention systems. The use of natural water regulation systems (e.g., swamps and meadows) can help with flood prevention while improving the ecological stability of the landscape. Such interventions thus directly contribute to alleviating the water management challenges of the region.

## VULNERABILITY OF SETTLEMENTS BY 2100 (DROUGHT, FLASH FLOODS)

EXPECTED VULNERABILITY OF SETTLEMENTS TO DROUGHT BY 2100




EXPECTED VULNERABILITY OF SETTLEMENTS TO FLASH FLOODS BY 2100



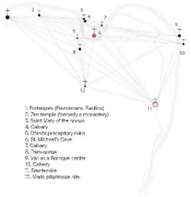

level of vulnerability: low medio high

Source: Hatvani, 2016; Ministry of Innovation and Technology

## ECOSYSTEM SERVICES

In landscape architecture, ecosystem services refer to ecological processes that contribute to human well-being, whether in terms of material benefits or broader quality of life. "Ecosystem service patches" refer to areas where the maintenance and enhancement of ecosystems can increase the availability of these services, such as carbon sinks, supporting, provisioning, and regulating services. These services include water retention, soil protection, biodiversity enhancement, and air quality improvement, which not only help stabilize the natural environment but also have a direct impact on human well-being.

Forests are crucial to the functioning of the Earth. They efficiently process vast amounts of carbon dioxide while releasing oxygen. They influence rainfall, filter fresh water, and prevent flooding and soil erosion. They provide wild foods, fuelwood, and medicines for the people who live in and around them. Forests are storehouses of potential future crop varieties and genetic materials with untapped healing properties.





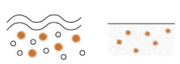


The collaboration of these patches supports landscape sustainability by influencing the microclimate and water balance, while forest degradation reduces ecosystem services and contributes to greenhouse gas emissions. The project aims to restore natural systems, enhance services, and promote sustainable land use, boosting the region's stability.

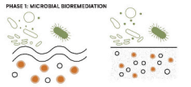
## BIOREMEDIATION PROCESS

The goal of the bioremediation process applied for the demolition of industrial buildings and the management of industrial waste on the project site is the ecological restoration of the soil and water. The use of wetlands provides an opportunity for microbial activity and natural water purification systems to facilitate soil regeneration in contaminated areas.

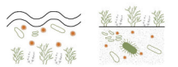
PHASE 0: CONTAMINANT IDENTIFICATION



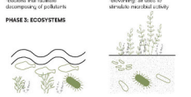

PHASE 1: MICROBIAL BIOREMEDIATION




PHASE 2: BIOREMEDIATION



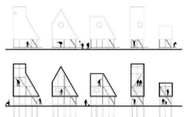

PHASE 3: ECOSYSTEMS



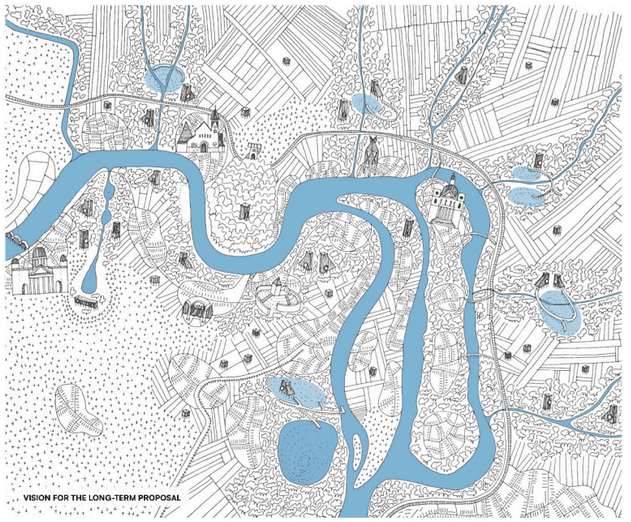

## THE CHARACTER OF THE BUILDINGS

The buildings along the "Towards Wholeness" trail are not merely functional spaces but act as boundary markers in the landscape, defining the balance between human presence and nature. Much like buoys in the sea, these structures indicate the extent of human access to the landscape, subtly guiding visitors without imposing rigid physical barriers. The foundations of each building are preserved in different colors that harmonize with the natural and cultural characteristics of the local landscape, visually reinforcing the spatial structure and the limits of accessible areas.





As a system of integrated symbols, these buildings help visitors understand the region by marking the transition between human-influenced areas and untouched nature. Each designed structure serves a distinct function—acting as viewpoints, rest areas, or informational stations—and functions as an orientation point that signals the boundaries of human accessibility in the landscape. The directed sightlines and seamless integration with the natural surroundings ensure that human presence does not disrupt natural processes but instead aligns harmoniously with them. The use of earth anchoring with rail screws and shingle cladding further strengthens this integration, ensuring that every element resonates with the landscape's natural rhythm, sustainably delineating the space for human activity while preserving the untouched zones of nature.







### IDENTITY

The first phase involves recognizing key signs in the landscape that reveal its unique character and natural features. This understanding forms the basis for defining the landscape's identity, combining historical, cultural, and ecological aspects. By uncovering the area's spirit and physical traits, we can develop a sustainable approach to its future design.

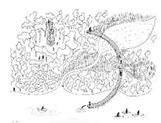
### SIGN

The second phase presents the plan's imprint, where the identified signs manifest within the landscape. These signs are rooted in deeper, underlying structures that promote ecological balance. The design integrates natural elements with human interventions, ensuring the long-term sustainability and biodiversity of the area.

### RE(SET)

The final phase redefines the boundaries of the landscape to establish a network of vision. This involves creating green and blue corridors to protect the environment, address ecological challenges, and promote resilience. The goal is to integrate sustainability into the landscape's design, preparing it to handle future environmental challenges like flash floods.





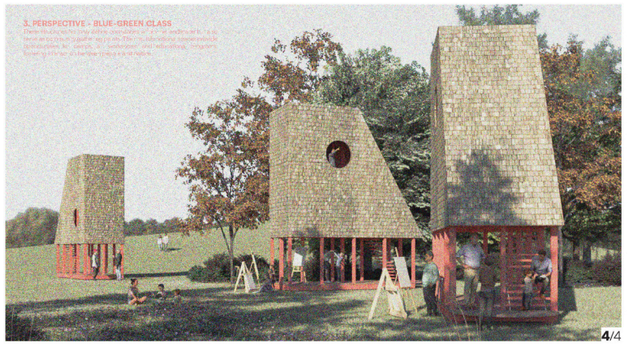




4. PERSPECTIVE - VIEW FROM THE DANUBE



3. PERSPECTIVE - BLUE-GREEN CLASS



# The Sensation of Recognition

# SECOND PRIZE

**Timea Mózes, Julianna Iuhász, Boglárka Ivácson, Zsófia László, Dániel Kerekes**

Sapientia Hungarian University of Transylvania, Romania

The Danube, one of Europe's most significant rivers, plays a vital ecological, economic, and social role. Over the centuries, the Danube Bend region has experienced crucial infrastructural and land-use changes, driven by urbanization, the expansion of transportation networks, and tourism growth. In Vác, the coexistence of industrial commercial, and residential functions presents complex planning challenges, particularly in maintaining a balance between the natural and built environments.

Our design concept aims to renaturalize the Liget area, enhance green infrastructure, and increase recreational potential through targeted interventions. A key aspect of the ecological network's development is revitalizing the Gombás Stream, which serves as an ecological corridor connecting agricultural lands with the Danube, fostering biodiversity and supporting ecosystem services.

The interventions will be based on the principle of minimal landscape alteration, ensuring the long-term preservation of the area's natural character and landscape values. The new educational trail will strengthen both educational and recreational functions, providing opportunities to observe natural processes and support environmental education. By developing blue-green infrastructure, the connection between urban and natural spaces will be reinforced, contributing to the optimization of the urban microclimate, reducing pollutant levels, and expanding habitat networks.

Ultimately, the proposed interventions will foster the city's sustainable development, enhancing the regeneration of natural systems, improving residents' quality of life, and preserving the landscape's identity. These solutions will not only promote ecological sustainability but also create new recreational and community opportunities, encouraging harmonious coexistence between humans and nature in the urban environment.

# Danube_068

## The sensation of recognition

Multi-step concept

Marking of settlements and the Danube.

Identification of attractional points.

Indication of the transportation network.

Implementation of the new hiking trail.

Spatial arrangement

The role of wildlife

The Danube as a giant ecological corridor

What does the area provide for the individual?

Landscape Connections

Local flora and fauna section A–A'

# Danube_068

## The sensation of recognition

Vác

1:10000

Land Use and Conflicts

Spatial Connections

Gombás stream as an ecological corridor

The landscape-shaping power of water.

Urban corridors

Punctual interventions

Local flora and fauna section B–B'

Danube_068

# The sensation of recognition

The proposed point interventions in the design area create a network that connects different functional zones, making them collectively usable for the city. Local solutions are suggested, ensuring the best possible impact on the specific problems and environment.

A key element of these interventions is vegetation, which has a positive influence on the environment by increasing natural habitats, thereby enhancing biodiversity, reducing urban pollution, and moderating the urban climate. In addition, it provides an aesthetic experience for people, creating an environment where both individuals and communities can deeply connect with nature. The landscape offers a sense of wonder, with the specific points encouraging visitors to stop and reflect.

GREEN STRUCTURE CONNECTION

GREEN

LIFE QUALITY

GREEN

SOCIALIZATION

GREEN

The selection of materials is based on their suitability for flood-prone areas. It is important to consider the lifespan of the materials to ensure sustainability.

As a result of the development or paving of the area, there will be less infiltration surface, and on paved surfaces, water runoff is faster. As a result, more water enters the drainage system and then returns to the river, contributing to the duration of flooding.

Used materials



Resin bound gravel

Thanks to the permeability, this surface provides a solution and ensures private transportation for cyclists.

Dirt road

It naturally provides a comfortably loosely dry access.

Metal alloy

Provide access to the water area, and suitable paths include interpretive signage and places to pause and enjoy the view.



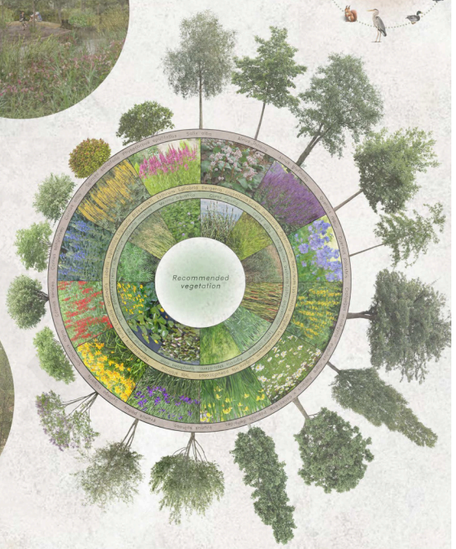
5 sense education

The natural area provides sensory development opportunities for children throughout diverse landscapes, with colors, scents, and sounds. Exploring textures and interacting with natural elements support the development of sensory perception and environmental awareness.



Protected animals

The recommended vegetation provides a natural habitat for protected animals, offering them shelter and food sources. This diverse plant selection supports and helps maintain ecosystem balance, and aids in the survival of endangered species.

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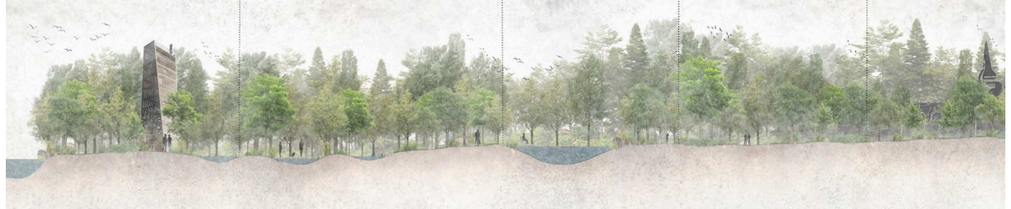
Section of the planned area C–C'




Danube_068

# The sensation of recognition

The benefits of nature experience spaces




Through point interventions, integrated blue-green networks can be established at the settlement level, connecting various functional areas and offering localized solutions, thereby promoting the sustainable development of urban spaces. The creation of blue-green infrastructure facilitates a harmonious connection between natural and built environments, supporting the sustainable growth of the entire settlement. Such networks not only integrate ecological systems and community spaces but also ensure the long-term sustainability of recreational green areas and water bodies.

The goal is to develop self-sustaining recreational green spaces that function as integral parts of the settlement and remain manageable and relevant over time. It is essential to consider the dynamics of the natural environment, the ecological processes of the areas, and the long-term strategies required for their maintenance. Green spaces and water bodies, by integrating with natural waterfront landscapes, can adapt to environmental and societal changes while preserving biodiversity, improving water management, and optimizing the microclimate of urban areas.

This green infrastructure contributes to improving the quality of life, strengthening community identity, and ensuring the long-term sustainability of the settlement. At the same time, it creates opportunities for people to connect with nature, recognize remarkable or even hidden little spots.

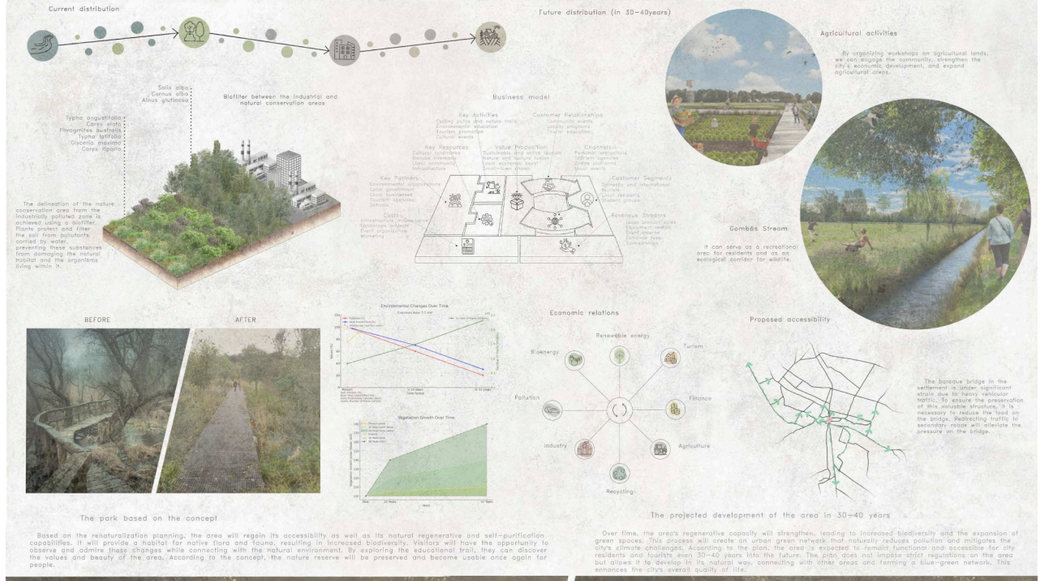



Land-use change




Current distribution

Future distribution (in 30-40years)




Agricultural activities

By organizing workshops on agricultural lands, we can engage the community, strengthen the city's economic development, and expand agricultural areas.



Gombás Stream

It can serve as a recreational area for residents and as an ecological corridor for wildlife.



BEFORE

AFTER









Economic relations




Proposed accessibility



The baroque bridge in the settlement is under significant strain due to heavy vehicular traffic. To preserve the architecture of this notable structure, it is necessary to reduce the load on the bridge. Redirecting traffic to secondary roads will alleviate the pressure on the bridge.

The park based on the concept

Based on the renaturalization planning, the area will regain its accessibility as well as its natural regenerative and self-purification capabilities. It will provide a habitat for native flora and fauna, resulting in increased biodiversity. Visitors will have the opportunity to observe and admire these changes while connecting with the natural environment. By exploring the educational trail, they can discover the values and beauty of the area. According to the concept, the nature reserve will be preserved and become usable once again for people.

The projected development of the area in 30-40 years

Over time, the area's regenerative capacity will strengthen, leading to increased biodiversity and the expansion of green spaces. This process will create an urban green network that naturally reduces pollution and mitigates the city's climate challenges. According to the plan, the area is expected to remain functional and accessible for city residents and tourists even 30-40 years into the future. The plan does not impose strict regulations on the area but allows it to develop in its natural way, connecting with other areas and forming a blue-green network. This enhances the city's overall quality of life.



# Bridging Landscapes

**Ruba Khaled Al-Hamzi, Malavika Mohan Das**

Weihenstephan-Triesdorf University if Applied Sciences
& Nürtingen-Geislingen University, Germany

THIRD PRIZE

Our perception and understanding of Landscapes are deeply connected to the tangible and intangible strings of values we see in them. A relationship with nature, unfortunately, mindlessly compromised over the short-term goals of urbanism.

“Bridging Landscapes “proposes a solution for suburban expansion fuelled by mobility changes among the peri-urban settlements of Szentednre, Vác and Ezstergom. An integrated, continuous urban productive landscape that shares diverse cultural and economic prospects to build a network of self-sufficient environments for communities and ecosystems irrespective of borders.

The results of the Landscape Character Assessment identify key intervention points and prioritise the most vulnerable habitats to future development pressures in the South of Szentendre. The design principles focus on restoring ecological and social network through patches, lines, and nodes while aligning with the town's proposed development decisions. The concept highlights actionable nature-based solutions with replicable characteristics that address similar challenges in northern Budapest and can be reintroduced to different settlements.

In our focus area, the site-selective interventions aim to contain urban sprawl while preserving ecological balance and quality of life in edge towns like those south of Szentendre. Building layers of deepened community involvement among peri-urban settlements contributes to the success of these resilient and adaptive landscape strategies. The “Green Buffer Alliance” is one such intergenerational initiative among Szentendre, Budakalász, and Pomáz communities that kicks start a regional exploratory trail pouring wisdom on ecosystem services and sensitive landscape maintenance.

These shared amenities, including adaptive-reused, are interconnected to unique tourist values in the region supporting each other.

015

# BRIDGING LANDSCAPES

## River Vision

### Vision and Mission

This vision seeks to reconnect fragmented landscapes, bridge the divide between rivers and hills, and create a thriving, productive landscape that nurtures the community and the environment.

To implement a regional landscape vision that addresses urban sprawl and landscape fragmentation in the agglomeration of Northern Budapest, in the settlements of Szentendre, Vác, and Esztergom. The idea of 'Bridging Landscapes,' will create an ecologically sensitive and productive network that integrates blue-green infrastructure, fosters community connections, and promotes sustainable development practices. The strategy will be applied to the southern edge part of Szentendre as the chosen focus site, demonstrating how this vision can be realised on a smaller scale.

A seamless connection between different mosaic sections of landscape across the varying topography is needed to reach the vision and minimize the segregation which the region has faced for years.

### Concept Development







### Productivity System

The cross sections of the transects clearly expresses the transition of the landscape from an urban setting towards the intense forests on the hills. The diversity of the natural attributes alongside the socio-economic attributes can then compliment one annother in a multidimensional perspective (as shown in the orange and blue dashed lines, bridging the diverse landscape).

The result is a cohesive Productive Landscape system that balances tangible ecological and agricultural productivity with intangible social and touristic benefits, fostering sustainable and resilient regional development. These connections between the patches decrease the fragmentation on a sensual and visible level.

A productive urban landscape is open urban space planted and managed in such a way as to be environmentally and economically productive, for example, providing food from urban agriculture, pollution absorption, the cooling effect of trees or increased biodiversity from wildlife corridors, the combination of tangible and intangible productivity will generate, create, preserve and produce.




### Productivity Solution Examples













015

# BRIDGING LANDSCAPES

## Concept

Urban resilience, by embracing diversity across social, economic, physical and ecological aspects.

The design strategies in the 3 areas focus on the following principles to improve the overall biodiversity:
- Preserve
- Restore
- Connect and Creation

From the Danube River to the foothills of the Pilis mountain range, establishing a green corridor between the boundaries of Szentendre, Budakalász, and Pomáz presents a strategic opportunity to enhance ecosystem services in the long run.



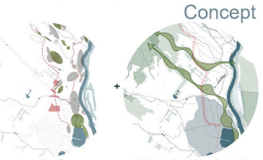




The **strategic placement of green recreation** development zones has the potential to bridge the landscape from Lupa Lake through the wetland connecting to the hiking trails towards the hills.

This allows to solve 'fragmentation' in the landscape by identifying existing corridors landscape and **inserting productive urban landscapes** based on the **stakeholders** affected by this.

By replenishing water resources affected by arid seating and creating a **protective green buffer.** This initative safeguards the region's valuable landscapes without restricting future development prospects with the upcoming ReTe' Road.



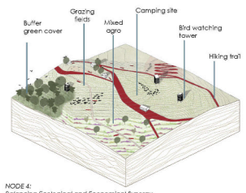

### South of Szentendre :
### AN INTEGRATED URBAN PRODUCTIVE CORRIDOR

Function-based design interventions for each patch based on its specific needs or characteristics, allowing for variety and complexity in the landscape.

The four intervention nodes include:
- Flood-prone zones, where infrastructure or ecological, water management adaptations are required.
- Current and future urban developments demand sustainable, permeable and connective urban planning.
- Monoculture agricultural zones are underutilizing the land's potential and impacting the flourishing of biodiversity.
- Natura 2000 and protected zones in need of sensitive planning.

The result is a cohesive Productive Landscape system that balances tangible ecological and agricultural productivity with intangible social and touristic benefits, fostering sustainable and resilient regional development.

The project enhances tourism through key interventions in 4 nodes while reducing visible and sensory fragmentation.



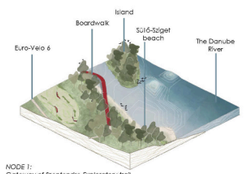

*NODE 4:*
*Balancing Ecological and Economical Synergy*



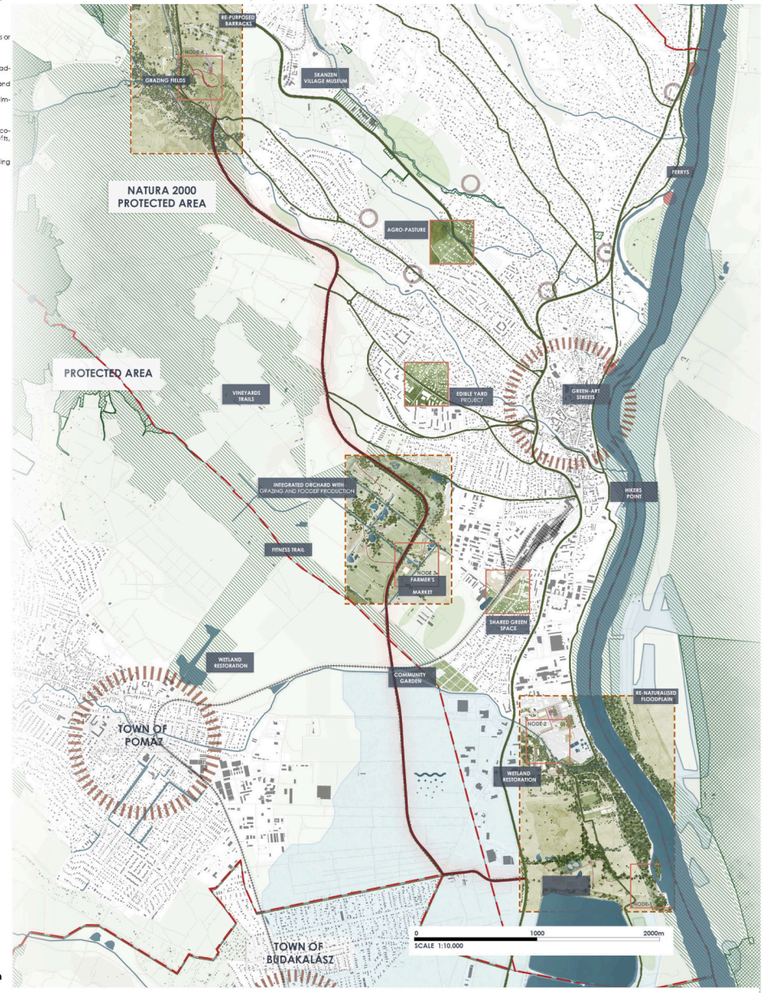

*NODE 3:*
*Integrating Social Values and Ecology*



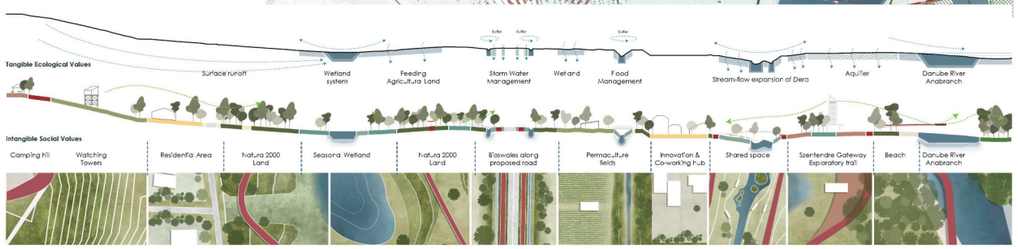

*NODE 2:*
*Merging Knowledge and Exploration*




*NODE 1:*
*Gateway of Szentendre Exploratory trail*




### Transect Section
### Segments from The Danube River to Pilis Mountain



# BRIDGING LANDSCAPES
## Design










### Adaptive Reused Barracks & The Dera Stream

The former military Barracks are proposed to be revived to be an innovation and Co-working hub that shares the facilities with the adjacent Science and Technology Park and the local communities. Lying between these two facilities, the inaccessibility of the Dera stream restricts social interaction along this natural connector. Inspired by the much-enjoyed user-friendly features of the Bükkös Stream, the new design utilises the slopes of the Dera Stream to be a social stimulator. The stream base is widened by introducing mounds excavated from the site, which slows down the flow and nurtures a smaller ecosystem. Built-in seaters are introduced along the contours while a pedestrian bridge connects both the educational institutions. This also acts as a viewing deck capturing the beauty of Dera and stands as a landmark that is visually connected with the Main Road 11 users.

### Exploratory Trail & Lupa Lake

Moving forward down south, a green buffer is introduced between the institution and the Quad Tracks along the Main road. As a recreation hub, the second node creates a resting space for the hikers and bikers of Euro-Velo 6. In the history of the fertile orchard ground, fruit trees have been planted as part of the landscape. The buffer serves as a green corridor with bio-swales on both sides, leading to Lupa Lake. It also creates a beautiful pedestrian walkway to the plant nursery for the locals.

The tree alley ends up in a large grass meadow, with an open view of Lupa- Lake with a scenic backdrop of Pilis mountain. The gentle terrain of the area is revived to be a water retention ground, increasing the groundwater recharge. The seasonal creek running from Budakalászto the Danube feeds these smaller water bodies.
This area acts as a territory access point for Lupa Lake connecting to the Szálló-Sziget beach. The watch tower introduced serves as a landmark for cyclists and hikers while during peak summer season, the meadow opens up as festival ground.



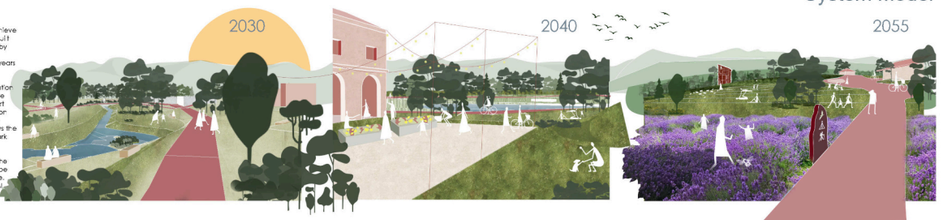
# BRIDGING LANDSCAPES
## System Model

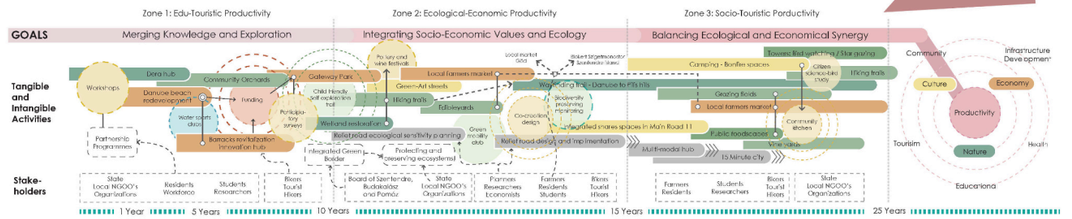
### Co-creation & Design

To explore the dynamics of the presented landscape values and achieve a long-term results, a system model built on **participatory design approaches** by incorporating the communities and documenting the changes over the years is needed.

A model that urges inclusive co-creation and design over several phases where different solutions over up and support one another, increasing the integration level of the users, like introducing the **" Green Buffer Alliance "** which allows the three neighboring communities to work on the same issue. .

The system has three main goals for the three chosen zones in Szentendre to be achieved over certain periods of time. First, it focuses on simple yet impactful interventions, then moves on to the long-term goals.

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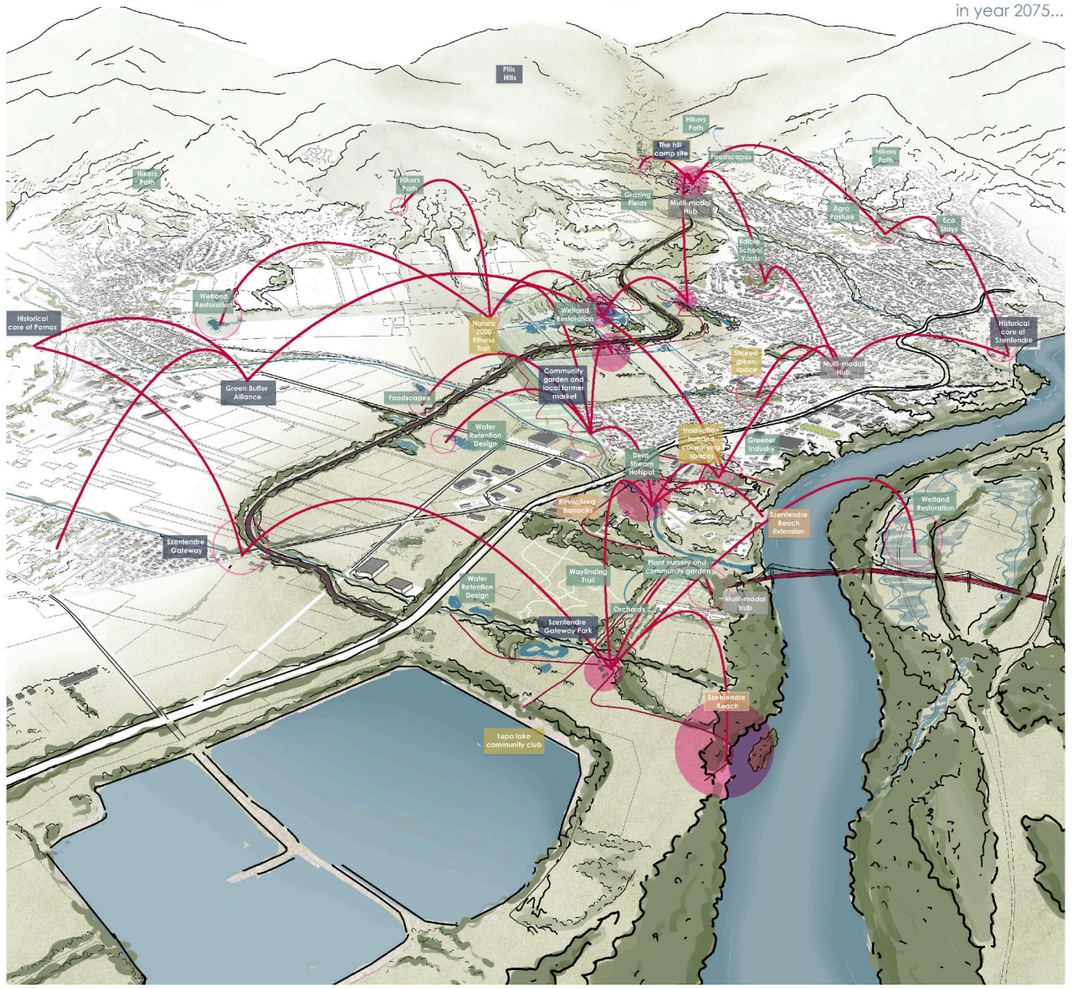


# Journey for Tomorrow

**Eda Calisan, Lisa Moernaut, Lou de Roeck, Julia Zakrocka**

Sapienza University in Rome, Italy

**HONORABLE MENTION**

At the heart of our vision is sustainable tourism, a powerful tool for inclusive development and economic viability. By amplifying the positive contributions of tourism, we balance the needs of visitors and local residents while supporting grassroot initiatives and empowering residents.

Vác serves as our pilot city due to its unique natural, cultural, and historical assets. We envision a central mobility hub linking Vác to surrounding cities and a green mobility network within the city, reducing its carbon footprint while enhancing walkability. Urbanization, forestry clearance, and artificial riverbanks will be halted, while protected areas and green corridors will be expanded to boost biodiversity and prevent flooding.

Neglected infrastructure and vacant, underutilized spaces including brownfields will be transformed into vibrant community hubs. Flood-prone areas will buffer excess water, and energy demand will be lowered through modal shift and building retrofits. Flooding issues will be mitigated by restoring wetlands, while an abandoned hiking deck will be revitalized, ensuring both visitor access and species protection. Existing sports infrastructure will be expanded into a dynamic sports park.

Currently vacant buildings will serve new purposes – among others, an old hall will be transformed into a local food market, and brownfields will be repurposed into community gardens.

Our model uses tools such as the social business canvas. New or renovated public spaces will promote cultural, recreational, and educational experiences for both locals and tourists. Ultimately, we envision a thriving region where nature, culture and communities flourish together, creating a sustainable future.

# 072 JOURNEY FOR TOMORROW

## TOURISM AS A TOOL FOR COMMUNITY-BASED SUSTAINABLE DEVELOPEMENT

Our vision is to create a resilient and thriving landscape, grounded in the enhancement of its unique natural and cultural heritage. The area's extensive protected landscapes, rich biodiversity, and deep historical roots are not only treasures to be safeguarded but also serve as opportunities to unlock sustainable potential and to address modern challenges. Our approach focuses on restoring and protecting the region's natural areas, ensuring the health of its ecosystems and enhancing its green-blue infrastructure. By mitigating environmental pressures like suburban sprawl and the inheritance of deindustrialization, we aim to conserve the ecological integrity of the Danube while creating spaces that benefit both locals and visitors.

Sustainable tourism forms the cornerstone of our vision, serving as a tool to ensure economic resilience, and to stimulate an inclusive democratic landscape through urban developments that improve the overall quality of life. The interconnectedness of environmental, cultural and economic elements creates a balanced landscape, that promotes a thriving community. Connecting communities through shared new public spaces, empowering local initiatives, and increasing the health and liveability through a green mobility network will create a place for the needs of all: tourists and locals, where culture blooms. The Danube Bend will stand as a beacon of sustainable development: an interconnected landscape that honors its past while embracing a thriving, sustainable future.

### LOCATION

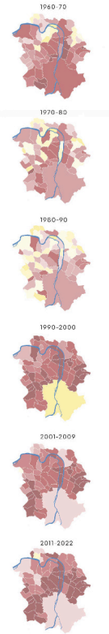



### SUSTAINABLE TOURISM

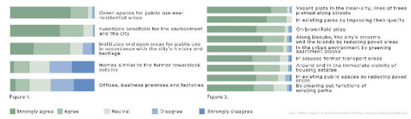



Our vision ensures benefits for both tourist and locals.

### INNER MIGRATION TRENDS



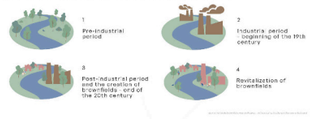

### WHAT WOULD YOU DO WITH THE BROWNFIELD SITES?




### WHERE DO YOU WANT THE GREEN SPACES TO BE?



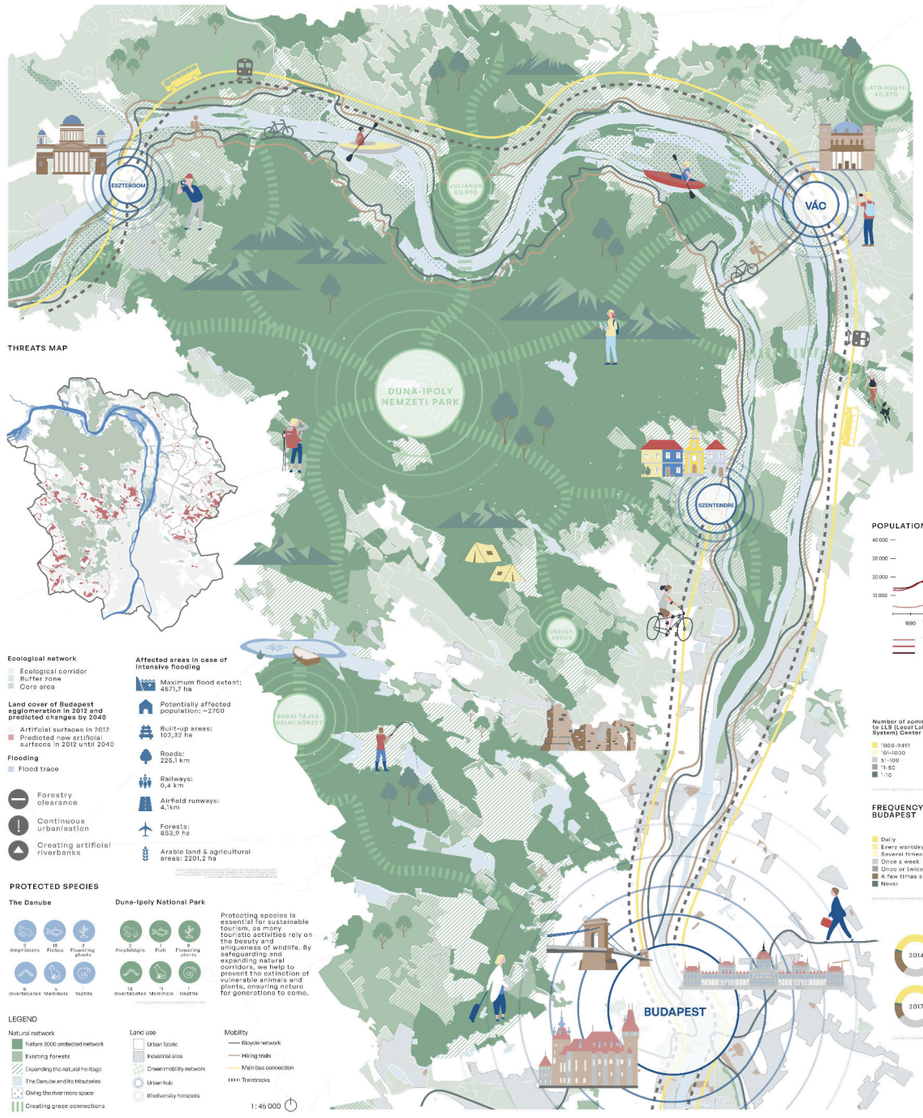

### CREATION OF BROWNFIELDS: THE INDUSTRIAL INHERITANCE




For a democratic landscape community engagement through participatory tools like poll is a key element.

Figure 1: The preference for public green spaces over housing, offices, and factories reflects a community-driven desire for accessible open areas. Such spaces not only foster social well-being by creating inclusive and interactive environments, but also enhance biodiversity and ecological resilience.

Figure 2: The preference to locating new green spaces in inner-city areas highlights a strong community interest in revitalizing underutilized spaces and integrating nature into urban settings. These shifts support sustainable land use by promoting the reuse of brownfields and reducing the environmental impacts associated with urban sprawl.




### THREATS MAP



**Ecological network**
- Ecological corridor
- Buffer zone
- Core area

**Land cover of Budapest agglomeration in 2012 and predicted changes by 2040**
- Artificial surfaces in 2012
- Predicted new artificial surfaces in 2012 until 2040

**Flooding**
- Flood trace

- Forestry clearance
- Continuous urbanisation
- Creating artificial riverbanks

**Affected areas in case of intensive flooding**
- Maximum flood extent: 457,7 ha
- Potentially affected population: ~2700
- Built-up areas: 107,32 ha
- Roads: 228,1 km
- Railways: 0,4 km
- Airfield runways: 4,1km
- Forests: 853,9 ha
- Arable land & agricultural areas: 2201,2 ha

### PROTECTED SPECIES

**The Danube**




**Duna-Ipoly National Park**




Protecting species is essential for sustainable tourism, as many touristic activities rely on the beauty and uniqueness of wildlife. By safeguarding natural habitats and ecological corridors, we help to prevent the extinction of vulnerable animals and plants, ensuring nature for generations to come.

**LEGEND**

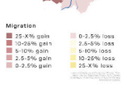
Natural network
- Natura 2000 protected network
- Existing forests
- Expanding the natural heritage
- The Danube and its tributaries
- Giving the river more space
- Creating green connections

Land use
- Urban fabric
- Industrial area
- Green mobility network
- Urban hub
- Biodiversity hotspots

Mobility
- Bicycle network
- Hiking trails
- Main bus connection
- Trainstracks

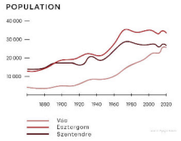
1: 45 000

### MIGRATION




Since 1990 we can observe an intense process of suburbanization. The rapid change of land use and population growth have a strong environmental, economic and social impact on the region. To ensure a thriving future of the Danube corridor is relying on the opportunities, while combating negative effects of urban sprawl. Building new developments in a sustainable manner will remain crucial in the future, especially as the global population continues to grow.

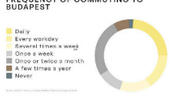
### POPULATION



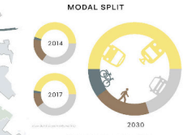

### COMMUTE ANALYSIS




### FREQUENCY OF COMMUTING TO BUDAPEST




### MODAL SPLIT

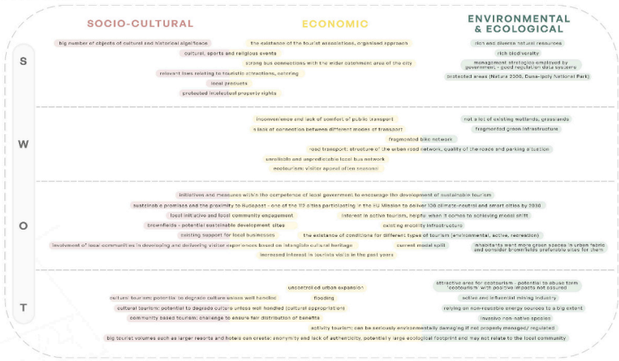



The current commuting statistics stress the need for efficient connections between city centers. Strengthening those connections while adopting an ambitious modal shift towards more sustainable transport options and help create a more healthy, liveable transect.

# 072 JOURNEY FOR TOMORROW

## TOURISM AS A TOOL FOR COMMUNITY-BASED SUSTAINABLE DEVELOPEMENT

For Vác we envision a concept that values and integrates the local socio-cultural identity, ensures long-term economic viability and optimizes the use of environmental agents. This model for sustainable tourism amplifies positive contributions and fostors an environment where there is a balance between honouring the needs of visitors and host communities, while safeguarding and enhancing biodiversity and the green blue infrastructure network.
With a focus on environmental stewardship, potential sustainable urban development areas, an extensive green mobility network and the conservation of cultural and natural heritage a framework with sustainable strategies are put into place. The result is a harmonious, mutually beneficial and resilient landscape, that recognizes and celebrates the unique identity and rich resources of the area. Empowering local residents and supporting grassroot initiatives, collaborative governance lies at the hoart of this vision, ensuring active community participation. By addressing the challenges of modern tourism, urban expansion and environmental pressures, our approach creates a livable, thriving city designated for all.




### SUSTAINABLE TOURISM






Through the lenses of environmental enhancement, socio-cultural balance, and economic resilience we envision Vác as an exemplary sustainable tourism model where environmental, economic, and cultural elements are deeply interconnected, striving for a thriving future.

**Distributing economic benefits among all stakeholders**

When local communities, businesses, governments, and the tourists themselves all benefit, it fosters greater support for sustainable practices, promotes fairness, and helps reduce inequality.

**Ensuring sustained and inclusive economic growth**

It is vital for maintaining infrastructure, supporting local communities and balancing economic growth with environmental and social responsibility.

**Stimulating local economies**

Supporting local supply chains helps to create jobs, and small businesses and ensures that benefits provided by tourism are shared within the community.

**Reducing energy demand**

Energy consumption can be minimized through energy efficient infrastructure, which can be reached by retrofitting buildings with insulation and modern systems. Integrating renewable energy, like locally produced renewable energy also play a vital role in this, as well as the use of green transportation modes.

**LEGEND**

Natural network
- Natura 2000 protected network
- Existing forests
- Existing urban parks
- Expanding the natural heritage
- The Danube and its tributaries
- Giving the river more space
- Integrating greenery into the landscape

Mobility
- Bicycle network
- Hiking trails
- Main bus connections
- Trainstracks
- Mobility hub
- Train stations
- The Danube as the backbone for connections within the city

Land use
- Brownfields
- Urban fabric
- Industrial area
- Green mobility network

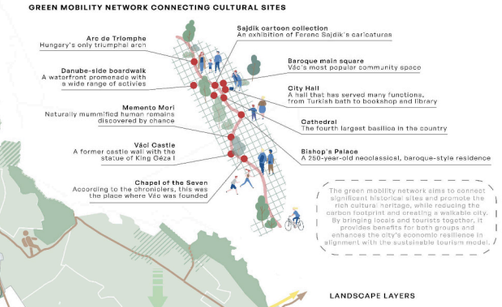
Touristic attractions
- Top 10 most visited monuments in Vác
- Other touristic sights

Public services
- Police station
- Cultural center
- Public toilets
- Hospital

Public services are vital for health and well-being. The improved connectivity of these services aim for a livable city.

1: 15 000

### GREEN MOBILITY NETWORK CONNECTING CULTURAL SITES



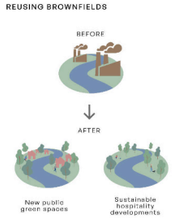




### LANDSCAPE LAYERS




### REUSING BROWNFIELDS



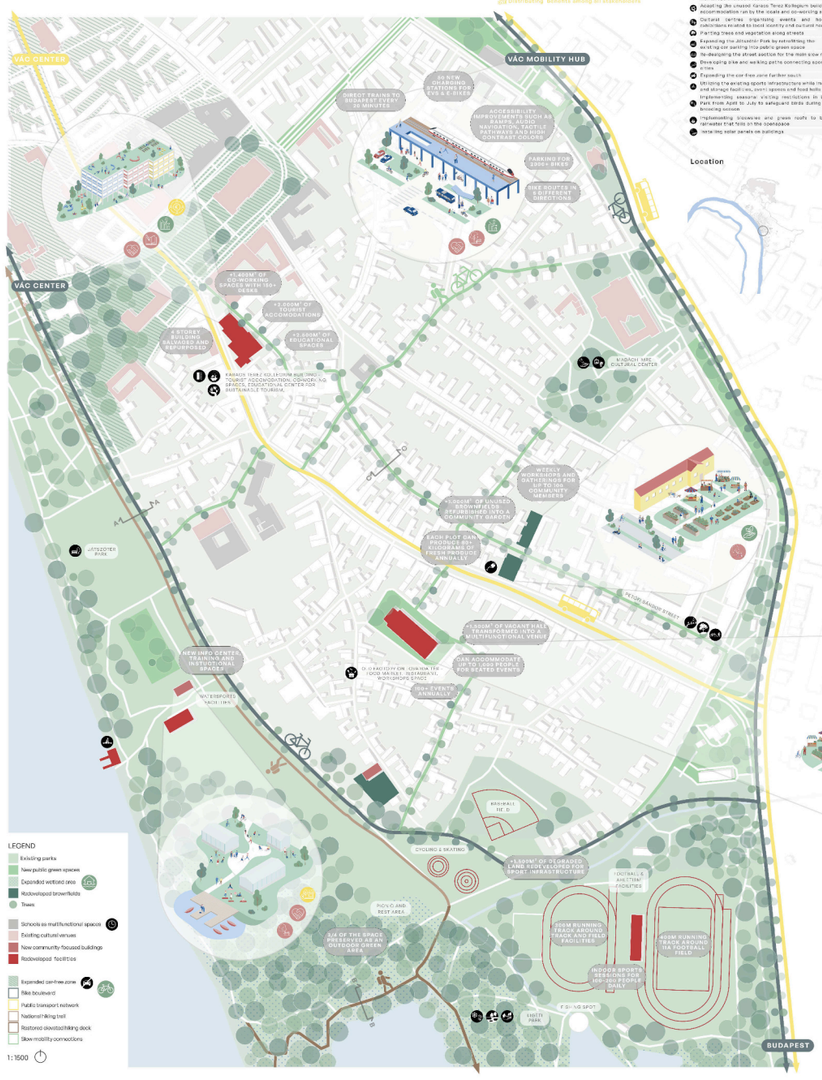
# 072 JOURNEY FOR TOMORROW

## TOURISM AS A TOOL FOR COMMUNITY-BASED SUSTAINABLE DEVELOPEMENT

Our focus area is defined by its diverse natural landscapes, cultural richness, and significant potential for sustainable tourism. We aim for environmental enhancement, a socio-cultural balance and economic resilience while utilising existing infrastructure and proposing targeted solutions to address key challenges in the area, among which are: insufficient mobility networks, degraded public and sports facilities, and deserted buildings and sites. Through differentiated itineraries, programs, initiatives, and activities we strive to attract various forms of sustainable tourism, while simultaneously actively engaging and empowering local communities, preserving their values. We achieve this by creating places to meet and connect, share knowledge and sell products. By integrating leisure, culture, sports, and education, we create a positive synergy that positions Vác as a model for sustainable development, suitable for up-scale replication.

ENVIRONMENTAL ENHANCEMENT
SOCIO-CULTURAL BALANCE
ECONOMIC RESILIENCE

- Conserving and expanding the natural heritage and biodiversity
- Achieving a green mobility network
- Reducing energy demand
- Preventing flooding
- Enhancing the quality and increase quantity of public spaces
- Conserving and increasing accessibility to local heritage
- Providing education about sustainable tourism
- Ensuring benefits for both local communities and tourists
- Stimulating local economies
- Ensuring sustained and inclusive economic growth
- Distributing benefits among all stakeholders

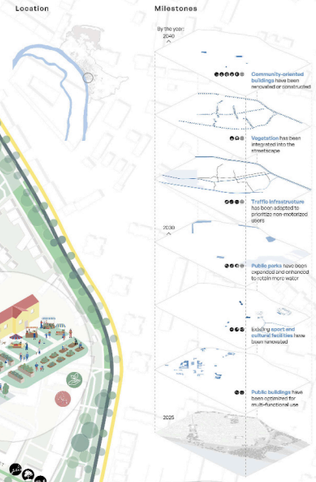



SOLUTIONS

| 2025 | 2030 | 2040 |
|---|---|---|

- Phasing manmade pavements in this over-free areas and on the redevelopped sites to maximize water infiltration
- Enhancing the Vác Floodplain Nature Trail by restoring the raised deck for visitors to safely visit the Ligeti park and protect the species
- Constructing wetlands in the Ligeti park to buffer more water by tackle existing flooding
- Developing a community garden and a pocket park on the brownfields located along Petőfi Sándor street
- Improving thermal insulation for example by installing double glazed windows in the Karacs Terez Kollegium survey
- Reusing the structure of the old factory on Lovarda tér for a food hall with space for a market, restaurants and adaptable space designated for example workshops or cooking classes
- Using school buildings after hours for sport, clubs, workshops and adult education
- Adapting the unused Karacs Terez Kollegium building into a sustainable tourism education centre with tourism accommodation run by the locals and co-working spaces
- Cultural centres organizing events and hosting collections related to local rural and cultural heritage
- Planting trees and vegetation along streets
- Expanding the Alkotóház Park by retrofitting the existing car parking into public green space
- Re-designing the street section for the main slow mobility axis
- Developing bike and walking paths connecting sport facilities, cultural sites, historic centre of Vác and neighbouring cities
- Expanding the car free zone further south
- Utilizing the existing sports infrastructure while improving it with new features such as information center, rental and storage facilities, event spaces and food hubs
- Implementing seasonal visiting restrictions in Ligeti
- Park from April to July to safeguard birds during their breeding season
- Implementing blackwater and green roofs to buffer rainwater that falls on the townscape
- Installing solar panels on buildings

Location



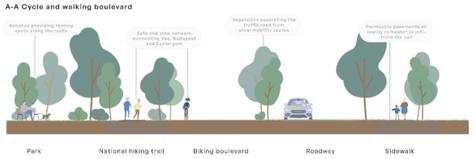
Milestones



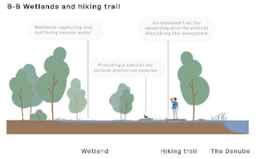

Multi-use of spaces



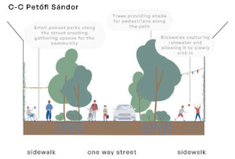

A-A Cycle and walking boulevard




B-B Wetlands and hiking trail




C-C Petőfi Sándor




# 072 JOURNEY FOR TOMORROW

## TOURISM AS A TOOL FOR COMMUNITY-BASED SUSTAINABLE DEVELOPEMENT

Our social business model integrates innovative value generation by reimagining the productive periurban landscape. It leverages sustainable tourism, cultural enhancement and ecological restoration to foster a resilient, community-driven economy. Rooted in landscape democracy, the model emphasizes participatory governance, co-creation and equitable management. Engaging local stakeholders ensures long-term benefits. By aligning with system-based tools like the business model canvas and prioritizing democratic decision-making, our approach exemplifies a transformative framework for sustainable development, balancing short-term adaptability with long-term impact.




### COSTS & REVENUES

**COSTS**

**INVESTMENT COSTS:** green mobility and building retrofitting - revitalising sports and natural park infrastructure

**OPERATIVE COSTS:** conservation initiatives and ecological monitoring - education programmes - expenses for maintaining services and infrastructure - marketing and branding

**REVENUES**

accommodation revenue - tour packages - rental services - ticket sales - sponsorships - local food market - pop-up event - community workshops - souvenirs and artisan products - government subsidies - EU funding - revenue from locals - eco-tax

### KEY PARTNERS

**Tourists**
Supporters of the circular economy and demand creators for eco-friendly and cultural activities
Eco Tourists · Active Tourists · Cultural & Heritage Tourists · Food Tourists

**Localites**
Ambassadors, workers and participants of community-based initiatives providing local products
Local Residents · Grassroot Sustainability Groups · Artisan & Craft Groups

**Local Government & Authorities**
Experts in policy, regulations, funding and compliance with sustainability policies
Municipality · Environmental Protection Agencies

**Tourism Industry**
Providers of accommodations, events, eco-friendly transportations and promoters of knowledge about the area
Cultural Centers & Museums · Hospitality Industry

**Educational Organizations**
Universities and research institutions providing of services for entrepreneurial workshops
Local Schools · Tourism Training Centers

**NGOs**
Experts in sustainability, climate action, green infrastructures and habitat restoration
Enviro-Invential & Conservation Organizations

### KEY PRODUCTS

**Green Infrastructure and Mobility**
Flood Prevention Infrastructure · Public Green Spaces · Green Mobility Networks

**Urban Development**
Retrofitted Urban Spaces · Improved Building Efficiency · Ecolict Infrastructures

**Sustainable Tourism Offerings**
Cultural & Educational Events · Active & Ecotourism · Curated Itineraries

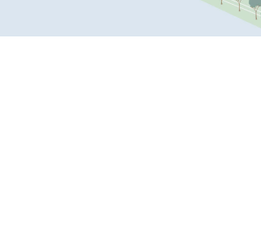
**Community & Educational Services**
Community Engagement · Sustainable Tourism Education Center · Workshops & Adult Education

**Nature Conservation & Recreation**
Protected Nature Trails · Enhanced Sports Infrastructure · Seasonal Access Management

### KEY RESOURCES

- **Natural and environmental assets** — Rich biodiversity, green and blue infrastructure, renewable energy resources
- **Cultural and historical heritage** — Cultural sites and events, traditional knowledge and practices
- **Human capital**
- **Existing infrastructure and facilities**
- **Financial and economic resources** — Government support and policies, grants and investments - potential EU grants for climate-neutral
- **Technological and monitoring tools**
- **Collaborative networks** — Partnerships and international expertise
- **Ethical finances** — Crowdfunding, community funding model, mutual aid networks

### KEY PROCESSES




Our social business model: Inevitably presents certain risks and threats that may affect the project. We not only identify these dangers but to proactively address them in a timely manner. By acknowledging challenges early on and taking appropriate action, we minimize negative impacts and ensure that our project can thrive in a way that is beneficial to the community and protective of the environment.

COPING STRATEGIES FOR:

Gentrification: Providing affordable housing, ensuring local community ownership, establishing income-sensitive pricing models

Overtourism: Establishing visitor caps and limits, spreading traffic across multiple areas, designating zones exclusively for community use, regularly monitoring and assessing environmental impacts

Economic inequality: Establishing revenue-sharing frameworks, fostering transparent communication and using participatory governance models

Cultural erosion: Empowering local artisans and cultural groups, promoting educational campaigns for tourists

### CHANNELS

- **Traditional media** — Radio, the local newspaper and television
- **Formal and informal events** — Exhibitions, cultural festivals, shop local days, community clean-up days
- **Word of mouth** — Peer-to-peer conversations, personal recommendations, reviews
- **Campaigns** — Campaigns aiming at specific age groups and interests
- **Community advocacy** — Local engagement forums and groups, after-school programs, accountability platforms
- **Partnerships & collabs with local activists and organisations** — Seminars, webinars, workshops, monitoring programmes
- **Digital platforms such as websites and social media** — Podcasts on streaming services, social media challenges, travel blogs and vlogs

### PERSONAS



**Sofie, 28**
TOURIST
Sofie is a tourist who seeks destinations where she can immerse herself in the local culture and identity. Being sporty and adventurous, she prefers eco-friendly journeys and responsible travel.

**Helga, 37**
LOCAL ENTERPRENEUR
Helga is an engaged sustainability expert who conducts workshops and seminars to empower local communities and tourists. She shares her expertise to inspire sustainable vacations, eco-friendly initiatives and keep the community informed and involved.

**Imre, 59**
NGO MEMBER
Imre, a local resident, enjoys spending his free time in Vác. He is passionate about local products. The new shared economy spaces where locals and tourists can meet and socialize, and the new sustainable vacation activities would be a great opportunity for him to bond with his community in Vác.

**Andris, 32**
DONOR
Andris learned about ethical tourism through a podcast, which motivated him to explore Hungary and participate in sustainable projects. He now actively supports several initiatives and travels to local communities in Vác.

### INPUT

surveys and feedback forms · focus groups · organising discussions with target customer segments · community workshops · facilitating forums for residents to voice their concerns, share ideas and co-create solutions · social media polls and engagement · ethical finances

### VALUE PROPOSITION

Positioning Vác as a benchmark for sustainable tourism, our model invests in local communities, public spaces and grassroot initiatives. Our proposition not only provides a resilient landscape through environmental enhancement and conservation of the natural heritage and biodiversity, but also stimulates local economies while ensuring a thriving future for all stakeholders. Our approach ensures a socio-cultural balance by fostering appreciation for the area's unique heritage and the empowerment of local residents and communities, while providing enriching and authentic experiences for visitors. We put emphasis on education, attaching high importance to organising workshops and providing educational resources. Our aim is to make tourism a resource for the local communities and a driver for positive change.

### CUSTOMERS & BENEFICIARIES




### SOCIO-CULTURAL KPIs

- **Heritage Conservation** — Number of cultural events and exhibitions hosted annually, Increased accessibility to heritage sites and cultural spaces
- **Community Engagement** — Number of community members participating in workshops, Satisfaction ratings from residents regarding quality of life improvements
- **Education & Awareness** — Number of participants in sustainability education programs, Growth in awareness metrics from visitor surveys regarding sustainable tourism
- **Public Space Enhancement** — Area of new or improved green spaces

### ECONOMIC KPIs

- **Local Economic Impact** — Percentage of tourism income, Number of jobs created, Revenue generated by local businesses
- **Tourism Growth** — Increase in the number of tourists visiting Vác, Growth in revenue generated by tourism-related activities
- **Fair Distribution of Benefits** — Percentage of economic benefits shared among community stakeholders, Number of grassroots enterprises supported
- **Satisfaction Metrics** — Average visitor satisfaction scores for experiences, accessibility, and sustainability, Net Promoter Score (NPS)

### ENVIRONMENTAL KPIs

- **Biodiversity Preservation** — Number of species protected or reintroduced, Reduction in invasive non-native species, Percentage increase in the area of wetlands, grasslands, or other habitats restored
- **Green Mobility** — Percentage increase in usage of bike paths and walking trails, Reduction in vehicle emissions within designated car-free zones, Reduction in travel time and increase in comfort across public transport modes
- **Energy & Resource Efficiency** — Reduction in energy demand across key facilities, Percentage of area where bioswales and solar panel installations are implemented

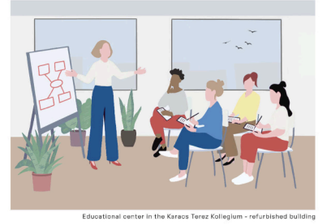





Restored trail in the Ligeti Park



Community garden in the place of a former brownfield



Educational center in the Karacs Terez Kollegium - refurbished building

# Re-Genera

**Assia Zidi, Dima Al Akoum, Irem Naz Ozgan, Ronaysu Taylan**

Sapienza University in Rome, Italy

**HONORABLE MENTION**

Drawing inspiration from the challenges of excessive waste and the environmental impact of conventional agriculture, we view the urban landscape as a canvas for regeneration. Conventional farming relies on chemical inputs and resource-intensive practices, depleting ecosystems. RE-Genera reimagines the flow of water, energy, and waste into an interconnected system, embedding sustainability and resilience at every level.

We propose transforming urban spaces into self-sustaining landscape economy systems, where renewable energy and waste recycling integrate seamlessly. By repurposing underused areas for green infrastructure, community gardens, and wetland farming, we create zones that support local resilience and mitigate the negative impacts of traditional agriculture.

Envisioned approach specifically focuses on Vác and the Gombás Stream, a waterway originating from the Danube Bend, carrying potential for water management and energy generation. By harnessing this stream, we implement smart water strategies and renewable energy solutions within our regenerative urban ecosystem.

Building on sustainability initiatives, we introduce agri-voltaics, waste-to-energy systems, and innovative resource management to foster a sustainable, regenerative local food system. Our vision bridges urban space and nature, creating areas for community engagement and ecological restoration, ensuring landscapes serve both people and the environment.

RE-Genera offers a pathway to address pressures from large-scale agriculture, resource scarcity, and uncontrolled waste while supporting urban ecosystems that regenerate resources, protect biodiversity, and improve community well-being. This approach ensures long-term environmental, economic, and social resilience, fostering a deeper connection between people and nature.

# 121 RE-GENERA

Inspired by the growing challenges of **excessive waste accumulation** and the environmental impact of **conventional agriculture**, the urban landscape emerges as a canvas for a **new regenerative narrative**. Urban and peri-urban spaces in the Danube Bend transect are positioned to actively support **local food production, sustainable practices, and renewable energy generation.**

RE-GENERA focuses on a vision of a **landscape economy**, emphasizing the transformation of the **interconnected transect** spanning Esztergom, Budapest, Vác, and Szentendre. Prioritizing **resource independence and circular economy systems** are intended to establish a framework that promotes **land-use efficiency, waste reduction, and the reuse of underutilized areas.**

This framework integrates **renewable energy solutions and regenerative land practices** to reimagine the region's **ecological and economic systems.** It aims to establish **a self-sufficient transect** by optimizing **resource management and fostering sustainable development.**

**Sustainable Development Goals (SDGs)**

- + Sustainable Cities and Communities (SDG 11)
- + Responsible Consumption and Production (SDG 12)
- + Decent Work and Economic Growth (SDG 8)
- + Affordable and Clean Energy (SDG 7)
- + Life on Land (SDG 15)

United Nations. n.d.). The 17 goals. United Nations Department of Economic and Social Affairs. Retrieved January 10, 2025, from https://sdgs.un.org/goals

HELSINKI CORRIDOR

magyarország

horvát magyarország

országhatár

ESZTERGOM

Esztergom Transshipment Station

VÁC

SZENTENDRE

BUDAPEST

Port of Budapest

Pusztazámor

Szigetszentmiklós Transshipment Station

Gyál

ESZTERGOM

VÁC

SZENTENDRE

LAND USE TRANSFORMATION

Pre 19th — limited urban footprint

1962 — early stages of urbanization

2012 — outward expansion from the city center and along the Danube River

2024 — heavily urbanization

2050 — long-term viability

Agricultural Areas · Arkadia Realty Group · Protected Open Spaces

Protected forests · Settlements and Built-Up Areas · Danube River

ONCOMING CHALLENGES

**low water levels**

annual average water

Consequently, land of adjacent ecotopes **lower water levels**. Accordingly, the EU & HDPEP Research "foresees that the local levels can result in **ecological damage, worsening in water quality, economic and agricultural securities** by the year of 2027 by a rate up to 5-10%.

Hydrinfo (n.d.). Hungarian Hydrological Information System. Retrieved December 03, 2024, from http://www.hydrinfo.hu

**landscape segmentation**

industrial · developed green & residential · natural land

Over time, the Danube River's natural areas, agricultural lands, and residential zones have become **increasingly fragmented** due to **industrial expansion, urban sprawl, and unregulated development.** As a result, the extensive natural ecosystem has been altered, leading to **environmental degradation and reduced ecological resilience.**

**service overload and waste accumulation risk**

+ transshipment stations
+ landfills

Budapest faces environmental risks from **old landfill sites**, covering a significant area of 38 million tons and hosting millions of cubic meters of waste. **Poor management and lack of proper insulation put groundwater at risk**, especially through **wastewater infiltration.** With increasing urbanization trends, essential services are becoming strained, and rising waste levels could lead to **environmental degradation** and a **reduced quality of life.**

Bai, C., & Fekete, J. (2021). Is illegal waste collection free-riding? Evidence from Hungary. Waste Management & Research, 39(10), 1267–1278. https://doi.org/10.1177/0734242X21995815

**ECOLOGICAL NETWORK**

Kiss, M. (2004). Danube ecological corridor. Retrieved December 11, 2024, from http://danubis.iep.hu/ecological-corridor.html

CORE · CORRIDOR · BUFFER ZONE

built-up area · industrial area · farmlands · farm · forest · grassland · nature reserve · brown-field · heathland · motorway · main roads · railway · roads · water

**SOIL TYPE**

Stefanovits, P. (1985). Soil mapping in Hungary. Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, Budapest.

1 brown earths/ ramamn brown forest soils
2 brown earths formed on volcanic tuffs
3 "Kovarvány" brown forest soils
4 peaty meadow soils
5 alluvial soils

**ECONOMIC SECTOR CONTRIBUTIONS**

services · agriculture · real estate · logistics · tourism · education · arts & craftswork · industry & production · business & finance · small businesses · public administration · construction

degree of expected changes of land use structure

negligible changes · moderate changes · medium level changes · significant changes

Hungarian Central Statistical Office. (2021). Economic indicators of Hungary.

# 121 RE-GENERA

VÁC, HUNGARY

The focus of RE-GENERA's initiative requires a transect that encompasses **fertile agricultural lands, well-undeveloped areas** with the **urban & peri-urban** zones, preferably in a close and a resilient community, provides a strong foundation for sustainable, community-driven development and supports **regenerative practices and a circular economy.**

The framework enables **landscape restoration, resource management, waste reduction, and local production systems,** aligning with sustainability and landscape economy goals. The implementation of agricultural techniques offers a valuable opportunity for ensuring alignment with the overlooked system.

Despite a relatively high concentration of farmlands, **agriculture in Vác does not appear as a major economic driver.** The framework provides a foundation for such initiative **integrating the lands into a circular economy and landscape restoration framework.** As an outcome, mentioned factors position Vác as the pioneer transect for **RE-GENERA.**

**strategic outcome**

Kopácsolná Tervező Iroda Kft. (2004). Economic Development Agency.

**ENVISIONED STRATEGIES & SOLUTIONS**

strategy · solution

Riparian Zones · Constructed wetlands · Water-treatment facility · Recycling facility · Energy production from renewable global resources

INDUSTRIAL ZONE

Walkable loop · Nature trail · Boosting River Transport · Recreational zone · Urban green blue infrastructure & NBS

CENTRAL URBAN ZONE

Circular walkway & Evolving paths · Crop rotation fields · Eco-hub · Urban farming

AGRICULTURAL ZONE

Community gardens · Agri-valliance · Urban farming · Agri-trails

URBAN FARMING ZONE

Riverfront walkway · Biodiversity hotspot · Retention & detention ponds · Rain gardens · Trail network

WATERFRONT ZONE

**operative goals**

circular economy and sustainable resource management

landuse based sustainability, productivity and restored ecosystems

passive bio-centered urban & peri-urban mobility

**objectives**

- Improve organic waste recycling through composting systems and local facilities.
- Build partnerships with local producers to foster sustainable, community-based food networks.
- Utilize local natural resources to support energy production from renewables.
- Promote integrated circular production systems by incorporating various resources as water and energy
- Implement diversified crop rotations (DCR) to enhance soil health, increase crop productivity, maximize resource use, and support local economies.
- Develop sustainable floodplain farming practices by the river & water management practices.
- Harness river flow for renewable energy generation.
- Use excess water flow during flood events for farming and water features.
- Develop riverfront spaces for community engagement, combining production & recreational areas.
- Improve transportation networks in access to production sites, minimizing travel distances.
- Create eco-friendly bike routes that connect centers, airports, and towns.
- Facilitate easier access to local markets by enhancing transportation connections.

**strategies**

- local composting centers, circular waste collection service, and implement community education programs to raise awareness.
- cooperative platforms for local farmers and producers, work-ing closer to share resources, distribute food locally, and engage in joint marketing efforts.
- integrate agricultural systems on farms and within urban areas -use power plants using local waste sources to generate renewable energy.
- develop community gardens and urban cooperated organic waste to increase soil quality, improve local food productivity, and community involvement.
- transform flood-prone areas into productive zones by implementing biotechnology farming practices, ensuring water resilience and crop production.
- install small-scale hydropower plants to provide clean energy, reduce reliance on external power sources, and integrate with the surrounding.
- propose irrigation ponds in the production areas to implement a water management system that redirects excess water flow, enabling off-river water use.
- assess existing networks, find direct access needs, add bus stops, optimize public transit, implement smart traffic systems, and promote multi-modal transport.
- map eco-friendly, bike routes, connect key sites, incorporate greenery, install bike facilities, and promote bike sharing and community events to encourage active lifestyles.

**system operation** — communal living — a resource system through community

production · consumption · recycling & waste management · finance & resource management · monitoring & development · community engagement

integrating this system into the ecosystem ensures crop-farm self-renewal by creating a healthy cyclical mechanism through recycling materials, resulting a healthy and stable soils, improved local biodiversity, enhanced air and water quality, and higher levels of carbon sequestration.

**01**

a pro-connect transit corridor – connection and transport zone
dense industrial zone – high waste capacity
underlined lands – location of farms and logistics
not-used protected areas
riverbanks – opportunities for recreation and productive use
flood-tolerant species in the region's soil areas – to be taken into consideration for urban farming zoning

**02**

high density of neglected areas around the river
recreational model zone – built-up areas to integrate with the river
focus on low water levels and protection measures along riverbanks could positively impact the river's transport potential through collaboration with the region's transport functions.

**03**

hotspot for circulation flow – high usage
density of neglect areas within the center – negotiable adaptive reuse potentials
the center – being a hub for service distribution creates pressure
density – as a core enabling positive mobility area distribution
if positive mobility is achieved, it affects the accessibility of protection areas to centers, bringing individuals closer to production-use areas

**04**

low potential waste density by factory concentration – recycling and usage functions
underlined former agricultural lands, separated between farming areas and residential zones, confuse farms soil areas – creating production spaces
the flood risk of Szentendre Stream (Pomáz, Visegrád, Szentendre) brings increased risk of river overflow in Vác and the presence of flood management initiatives – potential by creating floodplain farming opportunities

**05**

the river corset area located at the intersection of Natura 2000 and national protected areas – environmental adaptation and accessibility can be achieved
non-use areas, including rivers, natural lanes, and irrigation ponds, remaining within the farming fragment – these zones can connect inhabitants and the region with recreational and urban farming zones
irrigation resources used by intensive agricultural lands – provide easy access to resources for urban farming points

**regional distribution – local invasive species**

Solidago spp. · Ailanthus altissima · Robinia pseudoacacia

Mihályfalvy, Z. (2018). Invasion of alien species in Hungarian Semi-Dryland Habitats. Acta Botanica Hungarica, 60(1-2), 1–15.

**regional soil types**

Alluvial soil, common in Vác along the Danube River, is highly fertile due to nutrient-rich deposits from river waters. Its mix of silt, clay, and sand creates a fine-structured, well-drained, yet water-retaining soil. This soil supports sustainable farming and boosts local food production.

meadow · humous sandy · brown earths · alluvial soils

Fi, K. (2004). Soil map of Hungary 1:100,000. Agrokémia és Talajtan, 53(1-2), 5–24. Magyar, M. Fazekas, I. Kovács, G. (1992). Magyarország talajainak térképe 1:100 000 [Soil map of Hungary at 1:100,000 scale].

built-up area · farmlands · farm · forest · grassland · nature reserve · brown-field · heathland · motorway · main roads · railway · roads · water · water transport route · potential waste hotspots · arable lands · springs · hillforts · ex-large protected zones · protected areas on national level

N

scale 1:15000

300 m · 0 · 300 m · 600 m · 900 m · 1200 m · 1500 m

BEFORE · DISRUPTED CONNECTION · AFTER · INDUSTRIAL AREA

BEFORE · CONTRACTED GREENSPACE · AFTER · URBAN AREA

BEFORE · LOSS OF LAND VALUE · AFTER · URBAN FARMING AREA

# 121 RE-GENERA

## site-specific solutions

### water management and local production

- I — Irrigation lake + Urban Agriculture: Irrigation lake; Urban agriculture; Fish farming
- II — Fish farming, Sustainable aquaculture for all-year resource availability.
- III — Hydropower plant: Renewable energy production; Water purification
- IV — Business development center; Community center; Local production market
- V — Anaerobic digestion facility: Biogas production; Organic waste treatment

### gombus stream-based floodplain and wetland management

- Floodplain farming: Sustainable agriculture on flood-prone areas.
- Wetland formation: Biodiversity enhancement and water quality improvement.
- Gombus: The system of increased riparian biological principles through active river systems
- Agroforestry: Application of land for both agricultural production and solar energy generation.
- Ecotech Housing: An ecotech housing, research development, implementing innovative practices
- Water purification: Advanced plasma technology for clean water.
- Hydropower plant: Small-scale renewable energy production.
- Smart water level monitoring: Flow control and water efficiency.

### business and community development

- Development centers: Supporting local business growth and community ties.
- Community centers: A local space offering services to promote community engagement.

### waste and resource management

- Waste transformation: Encompasses households, a compost, organic waste at home, recyclables, compost, plants & community, growers, and resulting complex waste at specialized facilities.
- Biogas digester: Separation and purification of different segments of organic waste.
- Anaerobic Digestion: Energy technique processed that organic waste through digesters that can be used for generating energy.

### accessibility and transportation

- Public transportation: Efficient public transportation and market access.
- Bike routes: Enhance positive proximity by improving transportation links for easier access to local markets.

keyplan

WIC HISTORY · GOMBUS-PATAK

### hydropower plant

POWER HOUSE

ENERGY PRODUCTION · WATER · DAMS · TURBINE

A hydropower system uses the flow of water to generate electricity. Water from a reservoir is directed through a penstock (a pressurized pipeline) toward a turbine, where the force of the water spins the turbine's blades, converting the water's kinetic energy into mechanical energy.

### Integrated Resource Management

solar energy production: uses agrivoltaics and innovative technologies to support sustainable energy.

recycling systems: convert waste into valuable resources, reducing environmental impact.

industrial processes: integrate cattle and produce materials, improving energy and resource efficiency.

energy efficient homes: eco communities promote clean energy, waste reduction and sustainable living.

### energy circulation for a self sufficient city

### key operations

### envisioning a local foodscape

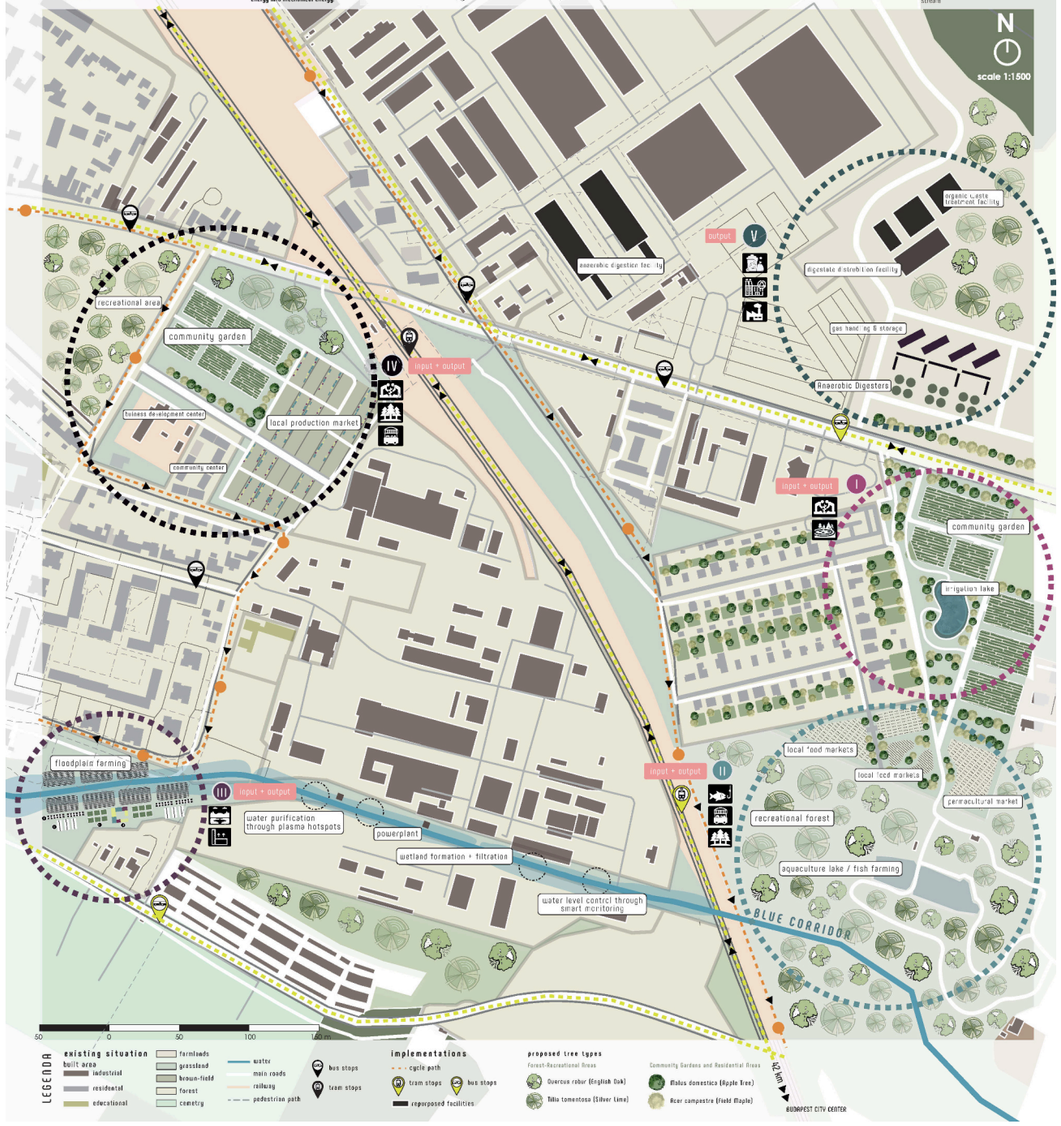
local production · community gardens · distribution of the goods · local food markets · common use · short supply chain · consumers and businesses · boundaries · public spaces · markets · schools · food cooperatives · food banks

### waste transformation

production · consumption · WASTE · collection · public participation · filtration and sorting · reuse redistribution · "zero waste" · transformation + recycling

I Irrigation lake: community gardens · distribution pipe · pathways · irrigation supply line · lift station

II floodplain farming: indoor wetland farming · eco hut · recirculations water system · biofiltration & reinoculation · wetland agriculture · renewable energy · stream




# 121 RE-GENERA

## projected vision plan

2025
- Launch community workshops on sustainability and establish collaborative groups.
- Begin building hydroelectric systems, recycling facilities, and community gardens.
- Start composting and organic waste filtration pilot projects.
- Invest in infrastructure and create local jobs in farming and energy.

2030
- Implement co-op models for shared resources and provide sustainability training.
- Expand hydroelectric power and urban gardens, improving resource distribution.
- Reduce landfill waste by 40% and improve soil quality.
- Achieve partial independence from imported food and energy.

2050+
- Build a self-reliant community with shared responsibility and leadership transfer.
- Create adaptive, regenerative urban systems powered by local resources.
- Achieve full waste reuse and restore local ecosystems.
- Ensure economic resilience through local supply chains and support sustainable solutions.

social · urban development · environmental · economic

## social - business model

key processes

ORGANIC WASTE COLLECTION AND SEGREGATION

key activities

local foodscape through organic farming

key products

- circular economy practices
- community gardens and farming
- local marketplace organization
- recreational area development
- energy and water management
- data collection and monitoring

key partners

key resources

customer segments

IMPLEMENTATION · USE FOR PRODUCTION · DISTRIBUTION · MONITORING & IMPROVEMENT · key performance indicators

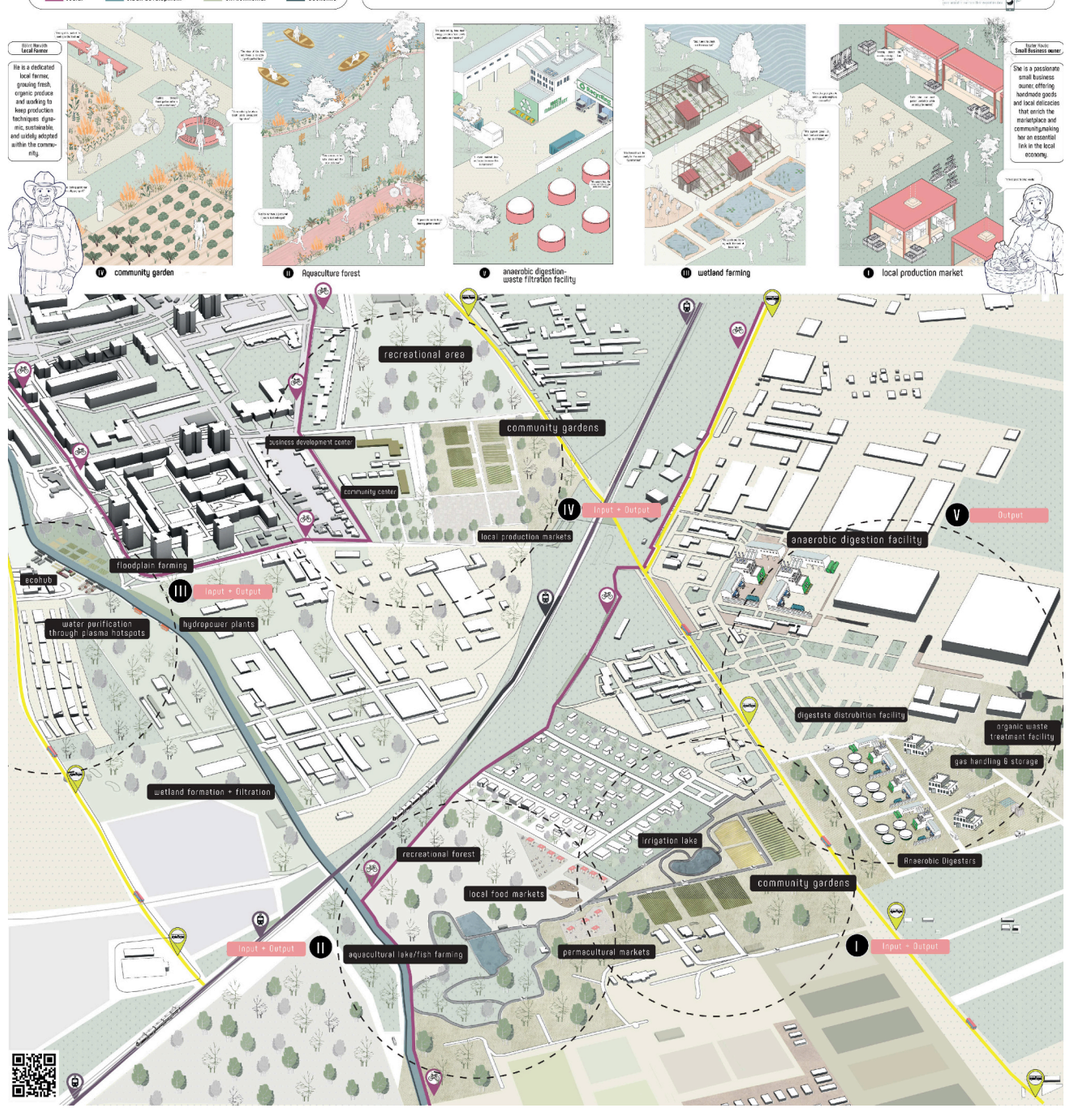
revenue streams

social & environmental impact

beneficiaries

cost structure

channels



# AquaTerra

**Atamer Boz, Selin Güner, Eylül Uzun**

Sapienza University in Rome, Italy

Third Round

The project in Szentendre aims to create a sustainable and ecologically balanced space that addresses both environmental and social concerns, while also fostering economic growth through innovative, green practices. As urban development continues to encroach on natural areas, the region faces significant environmental challenges, such as the loss of biodiversity and inadequate waste management systems. This project intends to combat these issues through the creation of dedicated spaces for composting, biodiversity conservation, and sustainable agricultural practices, alongside promoting environmental awareness and community engagement.

One of the key problems the project addresses is the loss of natural habitats due to urbanization. This not only threatens local wildlife but also diminishes the region's ecological value. To counter this, the design includes pollinator corridors, tree planting initiatives, and protected spaces for endemic species. These features are aimed at fostering biodiversity, enhancing the local ecosystem, and ensuring that Szentendre remains a place where nature can thrive alongside human development. The use of solar energy systems and water management solutions also plays a crucial role in minimizing the environmental impact of the project, creating a harmonious relationship between urban living and nature.

Another pressing issue is the lack of effective waste management, especially regarding organic waste. In response, the project proposes the establishment of a composting center where organic waste can be processed and reused, thus contributing to sustainable agriculture. The composting area will not only serve as a practical solution for waste management but also function as an educational hub. Visitors will be able to engage with the process of composting, learning about its benefits and applications in sustainable living. This will be complemented by educational programs and workshops that promote eco-friendly practices, waste reduction, and the importance of natural resource conservation.

The project also addresses a social issue: the need for greater community involvement and education in sustainability. By creating a visitor center and an amphitheater, the project offers spaces for educational events, performances, and community discussions. These spaces will serve as platforms for local residents and visitors to learn about sustainability, engage with experts, and participate in hands-on activities that promote environmental stewardship. The inclusion of permaculture gardens and tree nurseries will also provide opportunities for the community to get involved in organic farming and environmental conservation. Through these initiatives, the project aims to build a more informed and active community, fostering a collective responsibility for the environment.

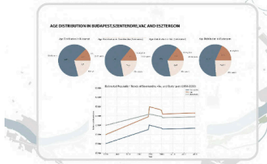
Economically, the project seeks to strengthen the local economy by providing sustainable job opportunities and promoting green businesses. The sale of organic products, such as produce from permaculture gardens and compost from the composting center, will generate income while supporting local agriculture. The tree nursery will offer seedlings for sale, contributing to reforestation efforts and providing residents with affordable, native plants. Additionally, eco-tourism will play a significant role in the project's economic viability. Visitors will be able to explore the arboretum, participate in educational workshops, and enjoy the natural beauty of the area, generating income through entrance fees and tour bookings.

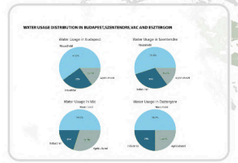
To ensure the financial sustainability of the project, a variety of revenue streams will be developed. These include educational programs, product sales, eco-tourism activities, and sponsorships from environmental organizations and businesses. Government grants and private sector funding will provide initial financial support, while ongoing operations will rely on the income generated from the aforementioned activities. The project’s success will depend on its ability to balance environmental goals with economic feasibility, ensuring that it can sustain itself in the long term.This initiative will not only transform Szentendre into a model of sustainable living but also serve as a valuable resource for the local community and visitors alike. By integrating environmental conservation with economic development and community engagement, the project will create a lasting positive impact. It will demonstrate how urban areas can harmonize with nature, offering a blueprint for future developments that prioritize sustainability, biodiversity, and social well-being.

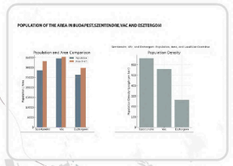
# AquaTerra
# 028

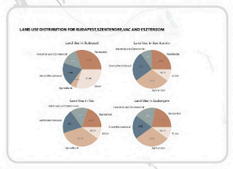
*"**Esztergom, Vác, and Szentendre**"* face challenges along the Danube River, where environmental concerns threaten these cities' sustainability. Our project aims to transform these issues into opportunities through environmentally friendly, circular economy solutions. We envision lively, connected riverfronts with new structures that reduce carbon footprints while creating spaces for recreation. Agricultural areas and educational centers would support wetland conservation, biodiversity awareness, and the preservation of highly sensitive waters, linked by a green corridor and bicycle lanes to provide residents with eco-friendly commuting options. By analyzing blue-green networks, industrial impact, and cultural heritage, our project addresses interconnected issues to boost each city's quality of life and sustainability. Conserving green spaces and establishing green corridors along the Danube would protect native biodiversity and enhance ecological resilience.To counter this, we encourage the use of public transport, fostering accessible communities across Esztergom, Vác, and Szentendre.

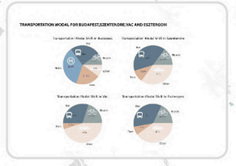


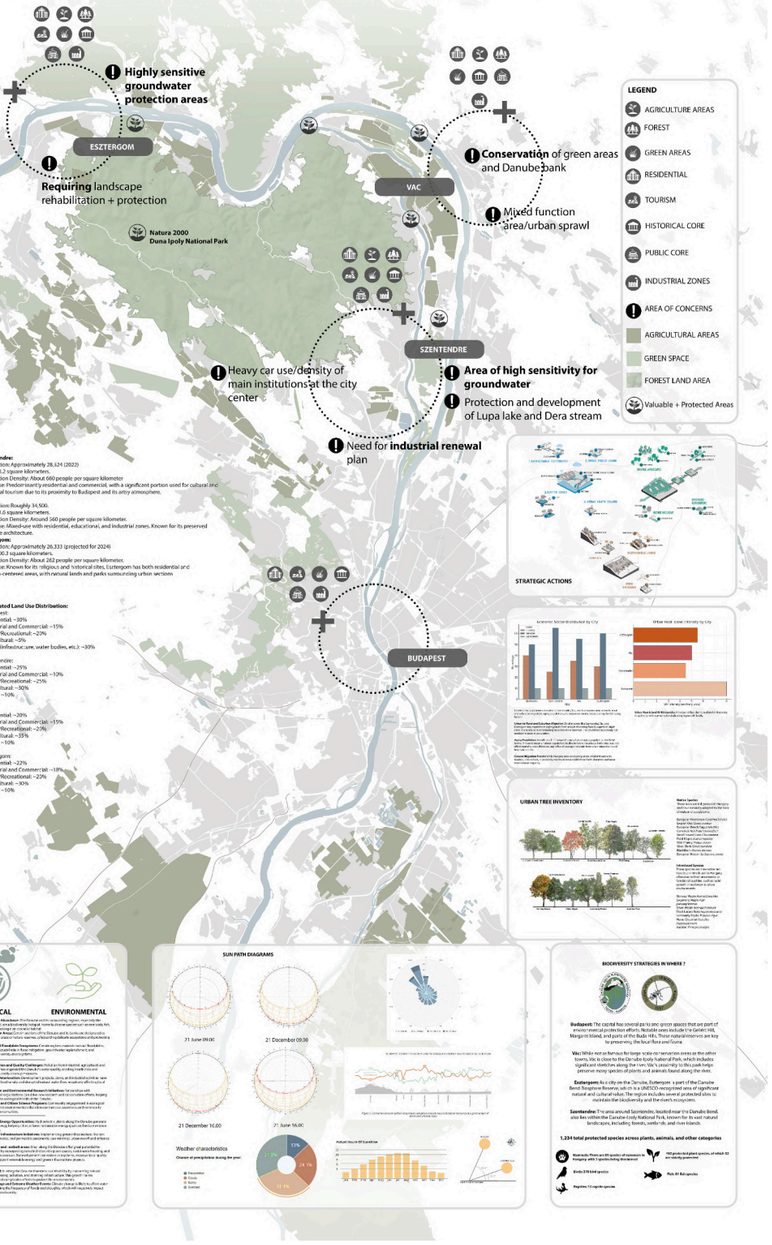




**Szentendre:**
Population: Approximately 28,524 (2022)
Area: 41.2 square kilometers.
Population Density: About 660 people per square kilometer
Land Use: Predominantly residential and commercial, with a significant portion used for cultural and historical tourism due to its proximity to Budapest and its artsy atmosphere.
**Vác:**
Population: Roughly 34,500.
Area: 67.6 square kilometers.
Population Density: Around 560 people per square kilometer.
Land Use: Mixed-use with residential, educational, and industrial zones. Known for its preserved Baroque architecture.
**Esztergom:**
Population: Approximately 26,333 (projected for 2024)
Area: 100.2 square kilometers.
Population Density: About 262 people per square kilometer.
Land Use: Known for its religious and historical sites, Esztergom has both residential and tourism-centered areas, with natural lands and parks surrounding urban sections

**Estimated Land Use Distribution:**
Budapest:
Residential: ~30%
Industrial and Commercial: ~15%
Green/Recreational: ~20%
Agricultural: ~5%
Other (infrastructure, water bodies, etc.): ~30%

Szentendre:
Residential: ~25%
Industrial and Commercial: ~10%
Green/Recreational: ~25%
Agricultural: ~30%
Other: ~10%

Vác:
Residential: ~20%
Industrial and Commercial: ~15%
Green/Recreational: ~25%
Agricultural: ~35%
Other: ~10%

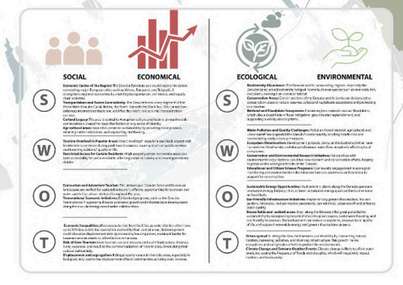
Esztergom:
Residential: ~22%
Industrial and Commercial: ~18%
Green/Recreational: ~22%
Agricultural: ~30%
Other: ~10%
















# AquaTerra
# 028



URBAN ECOLOGICAL BLUE-GREEN NETWORK







Natura 2000 Duna Ipoly National Park



INDUSTRIAL AREAS



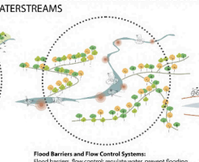

INTEGRATING AGRICULTURAL LANDS WITH URBAN USE

**Composting system:** recycle waste, enrich soil, boost urban farming, fresh local food, lower carbon footprint.

ESTABLISHING CONSERVATION AREAS AROUND THE RIVER AND WATERSTREAMS



**Buffer Zones:** protect lake, restrict activities, preserve habitats.
**Ecological Parks and Rain Gardens:** native plants, purify water, support ecosystem, balance environment.



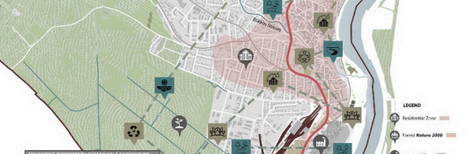
**Flood Barriers and Flow Control Systems:** Flood barriers, flow control: regulate water, prevent flooding, balance levels.

**Floating Platforms:** Floating biofilters, combat pollution, manage floods, purify water, boost resilience.

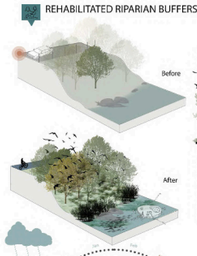


**Sustainable Recreation and Mobility:** trails, observation points, bike paths, support hydrology, eco-transport, community engagement.

**Volunteer Cleanup Campaigns:** public participation, river care

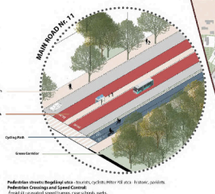


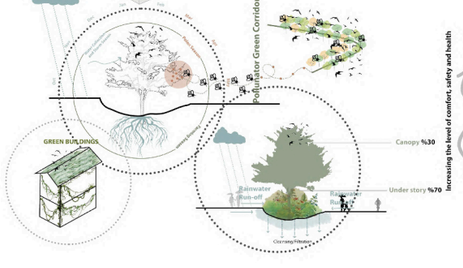

REHABILITATED RIPARIAN BUFFERS




**Current (2024) and Projected (2035) Data**

| Category | 2024 Data | 2035 Projections |
|---|---|---|
| Air Quality (AQI) | 25-50 (good-moderate) | 15-30 (cleaner, good) |
| PM2.5 Concentration | 12-18 µg/m³ | 7-12 µg/m³ (~30% reduction) |
| Urban Heat Island Effect | +1.5°C-2°C | +0.5°C-1°C (reduced) |
| Forested/Green Areas | ~40% coverage | Over 50% |
| Biodiversity (Bird Species) | ~100 species | 130-150 species |
| Fish Species (Danube River) | 35+ species | 25-30 species |
| Pollution-Related Diseases | ~5-10% affected | Reduced to 3-5% |
| Private Vehicle Usage | 70% fossil-fuel vehicles | 30-50% reduction |
| Bicycle Usage | ~5% of commutes | Up to 20% |
| Carbon Emissions | 2,000 tons CO2/year | 30-70% reduction |
| Lake Pollution Levels | Moderate-high | 70-90% reduction |
| Fish Populations | Declining | 20-40% increase |
| Tourism Revenue | ~5% of economy | 20-40% increase |



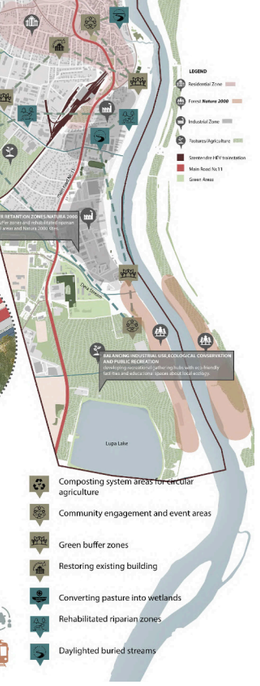

MODAL SHIFT




**Pedestrian streets Regárdi utca** - tourists, cyclists, motor till 2023 - transport, residents
**Pedestrian Crossings and Speed Control:**
Speed of 30 enforced around schools, near schools, parks.
**Cycling Infrastructure:**
Bidirectional cycle - pedestrian, cycling paths, nature always creek
**Cirkon Neutral Zones:**
Zero-emission zones for pedestrians, cyclists, electric vehicles only.
**Tourism and Interaction Areas:**
Danubia Ltd - interactive spaces, play zones, mobile cafes.
**HÉV Station & Bus Terminal** - in connection with metro, walking, can ride street.
**Bus Terminal Szentendre - Visegrádi Street & Dumtsa Jenő Street:** upgraded, safe areas.
**Smart Systems: Rákóczi út** - "Green Wave" traffic lights, cycling speed optimized.
**Tourism Connectivity: Szentendre Ends** - Lower Ferry Service, Cultural Area Bans - bike routes and tourism.
**HÉV Station:** Discount campaigns for public transport.
**Danube Ferry:** Eco-friendly ferries, Subsidies for Weekly, Szentendre, Visegrád Budapest
**Tourism Connectivity: Szentendre Ends:** Lower Ferry Service, Cultural Area Bans - bike routes and tourism.
**Digital Integration:** Real-time maps, route mobility planning apps.
**Eco-Friendly Campaigns:** Public transport, Daily awareness, on railway, Eco-Ferry ridesa.
**Car sharing:** Station cost 40, Bus licensed, soft EV options.
**Integration:** Unified app, coordinating + public transport schedules, discounts for eco-friendly travel.

2024 Mobility Behaviour in Szentendre
2035 Mobility Behaviour in Szentendre




- Composting system areas for circular agriculture
- Community engagement and event areas
- Green buffer zones
- Restoring existing building
- Converting pasture into wetlands
- Rehabilitated riparian zones
- Daylighted buried streams

# AquaTerra 028



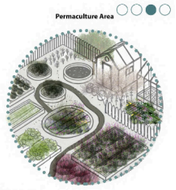


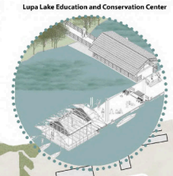






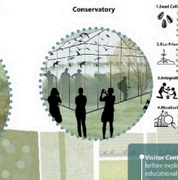














- **Visitor Center:** The main hub for visitors to gather information before exploring the arboretum. It provides maps, brochures, educational materials, and event schedules to help guests plan their visit.
- **Compost Area:** An area dedicated to composting organic waste, transforming it into nutrient-rich soil. This aligns with the sustainability efforts, and visitors can learn about composting processes and their environmental benefits.
- **Bicycle Rental Area:** A station where visitors can rent bicycles to explore the arboretum. This encourages eco-friendly transportation while allowing visitors to experience nature in an active way.
- **Bungalow Accommodation Area:** Eco-friendly bungalows built with respect for the environment, offering a peaceful retreat for visitors to stay overnight. It provides a unique opportunity to experience nature up close.
- **Education Center:** A facility offering workshops, seminars, and interactive educational programs focused on sustainability, conservation, and environmental awareness for both children and adults.
- **Conservatory:** A glass structure housing tropical and other climate-specific plant species, creating a controlled environment for research and the preservation of plants. It serves as an educational space for visitors to learn about diverse plant life.
- **Experimental Garden:** A space dedicated to testing new farming methods and sustainable agricultural practices. Visitors can observe cutting-edge techniques and see how various plant species are cultivated in an eco-friendly manner.
- **Amphitheater:** An open-air venue designed for performances, cultural events, and community gatherings. It serves as a space for outdoor concerts, plays, nature walks, and other social activities.
- **Observation Area:** A designated area for environmental observation and stargazing. It allows visitors to connect with nature by watching the sky, planets, and local wildlife, fostering a deeper appreciation of the natural world.
- **Sensory Garden:** A thoughtfully designed garden that engages all of the senses. With various textures, fragrances, and colors, this space provides a calming, immersive experience that stimulates visitors' senses and offers relaxation.
- **Honey Products Area:** A section of the arboretum dedicated to the production and sale of honey and honey-related products, created from the arboretum's beekeeping activities. Visitors can learn about the process of beekeeping and purchase local, natural honey.
- **Wildflower Area:** An area focused on the preservation and cultivation of native wildflowers. This space supports local flora, encouraging biodiversity and helping maintain the natural beauty of the landscape.
- **Vegetation and Fruit Area:** Dedicated to growing various vegetables, fruits, and other edible plants. This area supports local food production and teaches visitors about sustainable agriculture, offering fresh produce for sale.
- **Permaculture Area:** A space showcasing sustainable farming techniques and permaculture designs. It demonstrates how to create self-sustaining ecosystem using natural resources efficiently, providing hands-on learning for visitors interested in permaculture.
- **Tree Nursery:** An area where saplings and young trees are grown, nurtured, and sold. The space focuses on the cultivation of native and endemic species, supporting both conservation efforts and local reforestation.
- **Open Market:** A market space where visitors can purchase organic, locally grown products. It features fresh produce, handmade goods, and eco-friendly items, supporting sustainable commerce and providing visitors with an authentic, local shopping experience.
- **Lupa Lake Education and Conservation Center:** A dedicated center for educating visitors on the ecology of the Lupa Lake area. It also serves as a base for conservation projects aimed at preserving the lake's natural environment and promoting sustainable tourism practices.
- **Pollinator Corridor:** A specially designed corridor for pollinators such as bees and butterflies. It promotes biodiversity by providing habitats and support for essential pollinators, ensuring a healthy ecosystem.

# AquaTerra 028

## Project Leaders

**Community Engagement Coordinator**
*Katalin Nagy*
A local mamma-city teacher with a focus on environmental education and social engagement, building relationships with the local community to ensure their active participation.

**Project Manager/Director**
*Dr. Laura Szentiványi*
A project manager with a background in urban planning and sustainable development, ensuring the project runs smoothly and aligns with long-term goals.

**Sustainability Expert**
*Prof. Gábor Kovács*
An expert in sustainable agriculture and environmental science, advising on eco-friendly practices and sustainability strategies for the arboretum.

**Research and Education Leader**
*Dr. Márton Horváth*
A researcher in ecological conservation and environmental education, responsible for overseeing research projects and developing educational content to inspire the public.

## AquaTerra Arboretum *"Empowering the Earth, Inspiring the Future."*

*Szentendre Arboretum invites you to build a future in harmony with nature. We contribute to ecological balance through sustainable farming, permaculture, organic methods, energy efficiency, water management, and beekeeping. By protecting natural pollinators, we support biodiversity. With educational programs, ecotourism opportunities, and innovative research, we work to preserve nature while raising awareness in the community. We are dedicated to a greener world, shaping not just today, but tomorrow's nature. Join us in this journey— the future of nature is in your hands!*

### Key Partners
Goverment
Landowners
Universities
WWF Hungary
EU Green Funds
Artists' Community
Agricultural and ecological product companies
Sustainable tourism companies
Environmental and sustainability NGOs

### Key Processes
Composting and Waste Management
Sustainable Agriculture and Permaculture Practices
Beekeeping and Pollinator Corridor Management
Visitor Experience and Education
Research and Experimental Gardens
Tree Nursery and Tree Planting
Water Management
Partnerships and Fund Management

### Key Resources
Natural Resources
Financial Resources
Human Resources
Physical Infrastructure
Technology Resources
Intellectual Property
Brand and Partnerships

### Value Proposition
*Providing a unique, eco-friendly destination that combines education, sustainability, and nature conservation. The arboretum offers visitors hands-on experiences in sustainable farming, biodiversity, and ecological research, while also promoting environmental awareness and local culture. It serves as a hub for learning, relaxation, and innovation, supporting both environmental sustainability and community development. Through its integration of eco-tourism, permaculture, and research, the arboretum contributes to a greener, more sustainable future for the region and beyond.*

### Key Products
Sustainable Agricultural Products
Educational Programs and Workshops
Ecotourism Services
Research and Innovation Outputs
Eco-friendly Products and Merchandise
Tree Nursery Products
Art and Cultural Events

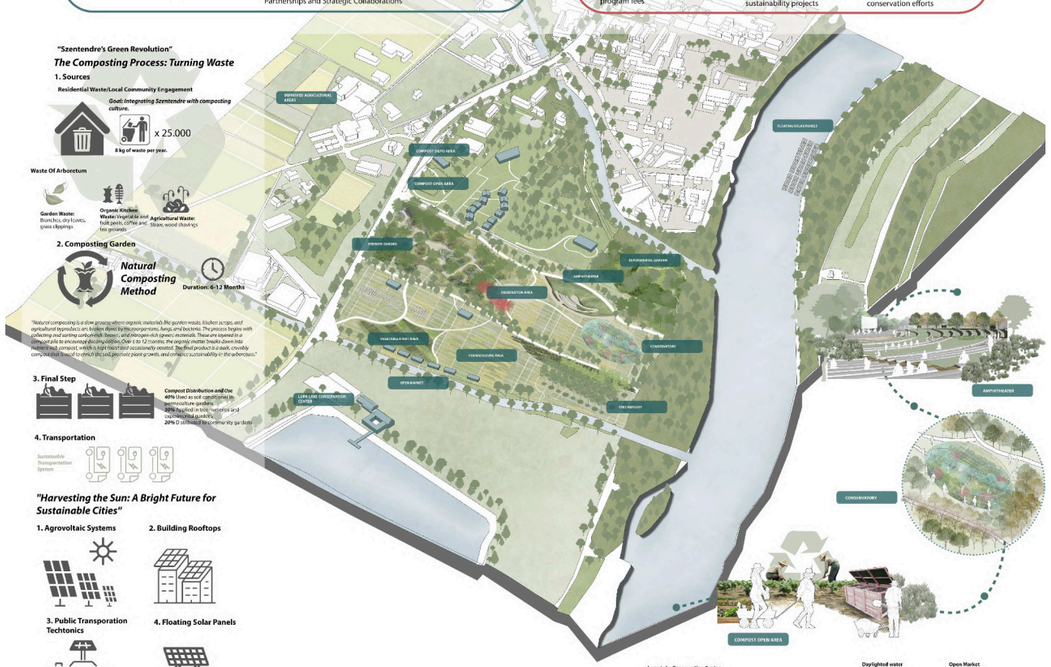
### Channels
Visitor Center and On-site Experience
Website and Online Platform
Social Media and Digital Marketing
Partnerships with Educational Institutions
Local Markets and Organic Product Stores
Community Events and Festivals
Workshops and Educational Programs
Sustainability and Green Conferences

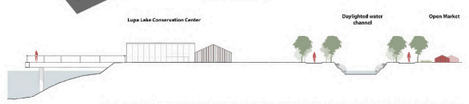
### Customers
Students
Local residents
Environmental NGOs
Researchers
Families
Organic product buyers
Eco-tourists
Corporate groups

### Beneficiaries
Local communities
Educational Institutions
Wildlife and ecosystems
Tourism industry
Researchers and environmentalists
Local businesses
Visitors
Environmental advocates
Policy makers
Future generations

### Cost Drivers
Natural Resource Management
Human Capital and Talent Investments
Green Infrastructure and Development
Technological Innovation and System Investments
Community Engagement and Education
Sustainability and Environmental Initiatives
Branding and Image Building
Partnerships and Strategic Collaborations

### Revenue Drivers
Entrance fees for visitors
Accommodation and eco-lodging bookings
Workshops, tours, and educational program fees
Sales of organic products and merchandise
Tree nursery and plant sales
Partnerships and sponsorships
Government or NGO grants for sustainability projects
Event hosting (festivals, art installations, corporate events)
Research funding and collaborations
Donations and crowdfunding for conservation efforts




The Lupa Lake Conservation Center, newly daylighted waterstream, and adjacent bike path create a seamless connection between ecology, mobility, and community life. Nearby, an open market offers locally grown produce, supporting sustainable commerce and strengthening the link between agriculture, recreation, and urban resilience.




The rehabilitated riparian zones along the Danube and the newly daylighted waterways serve as vibrant ecological corridors, enhancing biodiversity and improving water management. These natural elements are seamlessly integrated with a network of new bike roads, offering sustainable mobility options and connecting the community to green recreational spaces. Together, they create a harmonious interplay between nature and urban living, fostering resilience and well-being.




The bungalow accommodation for visitors and sensory garden create a harmonious retreat, fostering a deep connection with nature. The garden enhances biodiversity through native and pollinator-friendly plant integration, promoting resilient food systems and community engagement while seamlessly blending with the urban fabric.

# Friends with Benefits

**Thomas Andriessen, Carmen Baptist, Thijs Kamp, Joep de Kruijk, Anique Maartense, Thea Bertilsson Salomon, Mirthe van Braak**

Hogeschool Van Hall Larenstein, The Netherlands

Around the Danube region, Budapest is influencing the landscape. With suburbanization, there comes fragmentation of the landscape, with large-scale agriculture. Meanwhile, with climate change, the Danube will flood more which will cause damage both affecting nature and people. The local identity is affected by the growth of Budapest's agglomeration because people bring their own identity. By making the green corridor there will be a bigger difference between the city and Szentendre that will strengthen local identity. Within this corridor, there will be a Knowledge Estate which will help residents, farmers, investors, and researchers to learn how to make beneficial use of the landscape which will also defragment the landscape. They will work together by producing bio-based materials, participating in design competitions, harvesting products for the local market, and much more.

This will create an economic loop with stronger community cohesion. The new way of farming will be more sustainable because of the agroforestry with increased biodiversity and the corridor provides a connection for wildlife to the Danube. The growth of the landscape is represented by the way the tower grows over time. Starting with the base is the concrete which shows the current unsustainable ways of living, transitioning to a growing tower made from locally sourced bio-based materials.

Our vision is focused on turning the main problems into friends. Making within 40 years a sustainable landscape which humans and nature can benefit from.

Third Round

# 175 Friends with benefits

*"Become friends with the problem and benefit from it!"*

Project location

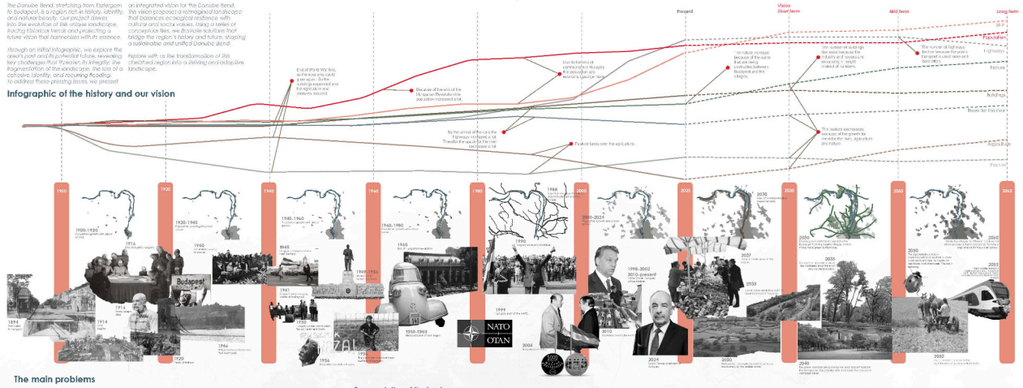
## Introduction

The Danube Bend, stretching from Esztergom to Budapest, is a region rich in history, identity, and natural beauty. However, it faces challenges like the rural flight of the unique landscapes, fracing historical trends and projecting a future vision that harmonizes with its essence.

Through an initial infographic, we explore the area's past and its potential future, reviewing key challenges that threaten its integrity: the fragmentation of the landscape, the loss of a cohesive identity, and receiving flooding. To address these pressing issues, we present an integrated vision for the Danube Bend. This vision proposes a reimagined landscape that seamlessly integrates ecological, cultural and social values, living a series of consecutive tiles, we illustrate solutions that bridge the region's history and future, shaping a sustainable and unified Danube Bend.

Explore with us the transformation of this cherished region into a thriving and adaptable landscape.

## Infographic of the history and our vision




## The main problems

### The loss of local identity



**The cause**

The growing population in and around Budapest has caused pressure from the city city to the proper towns such as Szentendre and Vác. Their identity is threatened by the growing city in the landscape, which results in merging the towns together, but can be the mostly settlements, who bring other cultures and traditions to the towns. Therefore the original identity of these towns is getting forgotten.

**Consequences**

- Socity and cultural challenges
- Dilution of local identity
- Tension with long time residents
- Displacement of long time residents
- Unbalanced social dynamics

intensity of local identity

Higher — Lower

### Fragmentation of the landscape



**The cause**

By letting the cities stay fragmented instead of like city fragmenting the landscape will provide essential connections for wildlife while maintaining ecosystem. Leaving room to like nature will give people a better accessibility to the nature which can improve the quality of life.

**Consequences:**

- Breaking animal migration routes
- Habitat/land degradation and pollution
- Loss of biodiversity
- Increased air, pollution, water and sediment pollution and pollutes habitats

Forest

Agriculture (mainly)

### Damage by flooding



**The cause**

The river is getting less space over and over, and the growth of the cities causing the increased amount of paved banks therefore higher water levels can't be absorbed easily, but higher water levels will occur more in the future. The increased connectivity in the wet areas which is related to the amount of roads in the area has also had an impact on the flooding dynamics. Therefore the saturated soaks within adds to the water volume in the river.

**Consequences:**

- Frequent and severe damage of the landscape, infrastructure and urban area's.
- Disruption of daily life routines.
- Defect dwellers.
- Reduced revenue for local businesses.
- Reparations with high costs.

Highest flooding risk

Flooding risk

Urban area

## Legend

### Friends with local identity

The current local identity is under threat of becoming saturated, by making zero Tile heritage and culture can, in fact, stronger. However re-enhancing existing elements on those based on the local history. People will become broader and it will create ownership.

- Creative and artistic identity
- Family orientated living
- Tourism based on history
- Increased livery frequency
- History route for tourism
- Increase accessibility for hikers
- Improve inclusivity of Lupa 10
- Knowledge Private
- Higher frequency of the metro and train
- New metrotrack and station
- Green corridors
- Agroforestry
- Hedgerows

### Friends with defragmentation

By letting the cities stay fragmented instead of like city fragmenting the landscape will provide essential connections for wildlife while maintaining local identity. Giving room to like nature will give people a better accessibility to the nature which can improve the quality of life.

- Density
- Higher quantity and quality public spaces
- Predetermine reed strip/low edges
- Policy for the industry
- Big plant
- Buffezone

### Friends with water

According to flooding in town towers (form and layer 3), levels size flooding ecosystem. Need to infrastructure, nature and infrastructure into a beneficial outcome. People will learn to adapt to the new landscape and there will be more room for the river to expand with current and flourishment.

- Improve water infiltration
- Slowdown rain runoff
- Big dikes
- Hedgerows on small sites
- Wetlands

### Existing structures

- Built area
- Railroads and roads
- Forest
- Agriculture

## Principle tiles

### Agroforestry



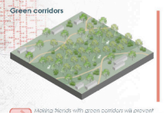
Agroforestry provides a wide range of options for farmers, by making friends with agroforestry there will be a more sustainable production. The concept is producing multiple products in that have a positive effect on each other and the environment. The benefits of this is fewer pesticides and fertilizers, and there is less evaporation.

### Hedgerows



Implementing hedgerows will make friends with nature and farmland. The benefits will increase biodiversity, which has positive effects on agriculture and natural areas. These are more connected with other areas. The locally produced products can be sold in the local area.

### Green corridors



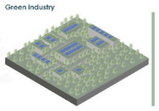
Making friends with green corridors will prevent towns from merging and being overtaken by the city, preserving their local identities. The benefits of the corridors will create a more recreational value, support biodiversity and reduce landscape fragmentation.

### Mobility hubs



Being friends with the mobility hubs will create more accessible transportation. By adding new transportation and increasing the quantity, the benefits make it easier for commuters to go to work in a more sustainable way and for visitors to get easier access to the area.

### Green industry



Vac hark: barrier from industry to nature will diminish by making friends with nature, by replacing the grey concrete buildings with more green. This will be with the implementation of green roofs and mossy trees. The roofs will also have solar panels for the generating of local energy. The benefits will be a more nature inclusive industry.

### Wetlands



Being friends with wetlands will accommodate the river with flooding areas, maintains the town's spread more during the flooding. The benefits are new recreation areas, more nature value and more tourism revenues.

### Densification



Friends with densification means more basic facilities like schools and shops, less vacancy of houses, more investments and new jobs, building in higher density also allows to maintain valuable landscapes for farmers and new residents to enjoy. The framefit of it will be more connected urban sprawl.

### Revitalize public spaces



Being friends with public spaces in the town centre means building meeting spots, local markets and playgrounds. The benefits will enhance the local and cultural identity by improving community interaction.

Szentendre

Closely accorded to Budapest, it has a direct public transit connection. The city is rather focused on tourism and has a special place for the creative sector the painting.

Vác

The city is mostly connected to Budapest by train. Half of the people living here commute to Budapest on a daily base. In general no real connection to the river can be found. Many people living here have breathing problems.

Budapest

1: 100.000

0 1 2 3 4 5 km

# 175 Friends with benefits

## The problem

### The loss of local identity



Due to the growing city of Budapest, increasing mobility, and large scale agriculture, Szentendre is losing its local history and cultural identity which was the focal point of cafes, markets and historic city centre. The pressure is mostly coming from the south, the suburbs of Budapest towards the suburbs of Szentendre.

### Fragmentation of the landscape



Due to the forestable growth, nature is becoming scarcer, leading to fragmentation. The biggest problem is the suburbs of Budapest merging into the suburbs of Szentendre. An important positive connection is encompassed in the two cities merge.

### Damage by flooding



Due to the forestable growth, nature is becoming scarcer, leading to fragmentation. The biggest problem is the suburbs of Budapest merging into the suburbs of Szentendre. An important positive connection is encompassed in the two cities merge.

## The potential



For the three problems – loss of local identity, nature fragmentation, and flooding – there are spread places that have potential for possible solutions. This map shows the areas that have the most potential for the sustainability of Szentendre.

1. In the old Kmon there is potential for strengthening the old culture by restoring cultural heritage what is loved by locals and visitors alike. Densification is also an important measure for the towns to bring the people closer to each other. This will strengthen the community and cause that can improve the identity.
2. The train station is located near the villages and industry area. An improvement can be made with having a higher quantity in the train systems, accessibility, and more options for sustainable transport. In this way people can transport more easily and visit more places.
3. In the current farmland there is potential for a shift in land use. There are possibilities in converting it to more sustainable way of production. Implementing hedgerows and agroforestry we create more greens connections. This diversity will also help create more balance in the soil nutrients.
4. This area is currently unpaid land located close to recreation areas. Also the green structures are coming together over here and inland. The river the Danube as well. It can be like the barrier during flooding as well as a nature area where people could enjoy and relax.
5. These areas are characterised by close value active area but could be developed more into more important nature, exploitation of some areas of that they have polluted soils as agriculture an for great option, but nature would fit well, these locations will form the main green structure of the area.
6. This lower lying area is characterised by wet conditions due to the fact that we left water is collected over there. Regular farming is not possible, but a more adapted way of farming would suit.
7. Here are characterised by similar conditions because they are closer to the river and with flooding. These areas will be under regular farming isn't optimal over here. It has potential to become a nature area, but also wetlands with production areas for products, that can manage water times.





**Wilding with forestry and biodiversity**



**Target species**



**New metrotrack and station**



**Greener streets**



## Legend

### Friends with local identity

- City centre
- Support and promote local markets
- Reed farming
- Willow farming
- Public beaches
- Hedgerows
- Watchtower
- Clearing work for local horses
- New metrotrack and station
- Agroforestry
- Greener streets
- Knowledge estate
- Wooden boardwalk
- Hutgarden
- Nature playground
- Kayak and wakeboard rental
- Recreational Access on dykes
- Hiking route
- Clearing view lines

### Friends with defragmentation

- Density
- Predetermined edge and buffezone
- Tilling with forestry and biodiversity
- Housing expansion
- Green and qualitive public spaces

### Friends with water

- Big dikes
- Hedgerows with small sites
- Flood control system
- Wetlands
- Zone 1: Easy to move
- Zone 2: Water resistant crops
- Zone 3: Vulnerable crops (and urban area)

### Existing structures

- Built area
- Railroad
- Forest
- Agriculture
- Nature protected area
- Water

1: 10.000

0 100 200 400 m

## Strategy layers

### Friends with local identity



to enhance the local identity of Szentendre, various solutions have been proposed. This map shows measures taken to improve local food production. For example, there is space for agroforestry, which means that small scale farming of different kinds of crops is carried out by the local community and maintained by the local riding school. Also, hedgerows are planted to create a demarcation between various plots of land, making agriculture more small-scale and improving biodiversity. The city is also becoming more accessible to tourists. A station will be built near the new agricultural areas, allowing tourists to experience this local culture. Residents can also enjoy recreational activities in the same area at the new beach.

### Friends with defragmentation



to reduce fragmentation and improve the connection between nature areas, localised green fingers are created between these areas. This allows for various animal species to move more freely through the region and beyond their habitat. Additionally, the edges of localised areas are greened to enhance biodiversity in these zones. In addition, the city is densified in order to avoid urban sprawl. Development within the city is prioritised. This is done in a structured and green manner, ensuring it is sustainable and future-proof.

### Friends with water



to prevent flood damage, various measures have been taken. First, wetlands are created in the lowest-lying areas. Additionally, dikes are constructed in the most vulnerable locations. Some of these dikes are reinforced with hedgerows placed on smaller sites. This ensures it receives that only a small part of the land is flooded, which helps to prevent significant damage.

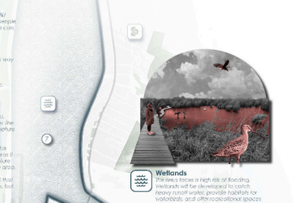
## Location of the detailling area



## Friends with water

### Sequential flooding principle

Currently, the water breach around Szentendre is increasing. A phased flood zone with hedgerows on small dikes is one of the solutions for this problem. On the river side, there is a high dike that protects the land from fluctuating water levels. If the river rises higher than the dike, the land behind it will flood. This is not a problem, as livestock is kept there and can be easily evacuated. If the water rises further, land goes over the small dike. It will not cause major damages, as crops that can withstand water damages are grown there. Further inland smaller hedgerows and additional dikes will be constructed. In open landscapes, away from urban areas. The amount of dikes will be upsized to cut the terrain. The floodwater will also be used in the wetlands.



**Wetlands**

This area is have a high risk of flooding, wetlands will be developed to catch heavy runoff water, provide habitats for waterbirds, and offer educational spaces for nature enthusiasts.



**Public beaches**

Most water activities near Szentendre are forgotten towards tourists. New public beaches will be introduced to make it more inclusive location.



**Wooden boardwalk**

It enables people to walk through nature while allowing cows and birds to roam freely. Existing historical structures between people and animals. Additionally, the boardwalk will also allow the area to function as a floodplain or partial wetlands.



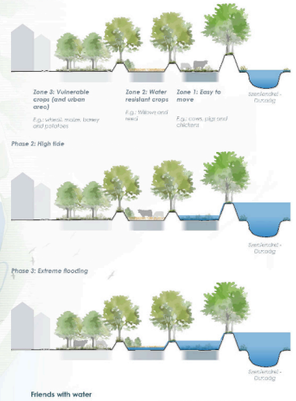
**City centre**

Because the city centre is rich artistic heritage, the existence local culture, more community spaces are created, and accessibility for tourists is improved.



**Promote and support local markets**

Unsustainability is causing an relatively big impact supermarkets and companies. Agroforestry can contribute that trees with local farming, providing local livestock and supporting local markets and locations. A nearby farm eating school will help maintain the land.



**Zone 3: Vulnerable crops (and urban area)**

e.g.: wheat, maize, barley and potatoes

**Zone 2: Water resistant crops**

e.g.: Willows and reed

**Zone 1: Easy to move**

e.g.: cows, pigs and chickens

Szentendre - Danube

**Phase 1: Low tide**

**Phase 2: High tide**

**Phase 2: Extreme flooding**

# Friends with benefits

Location detailling area

Szentendre

Dera

Friends in wetlands



Friends in grassland



Friends in hedgerows



Friends in forest



Friends in agroforestry



## Tunnel



to extend the green corridor in this area, we propose implementing a tunnel beneath the railroad railway. The tunnel is designed to facilitate the movement of smaller land animals and insects, ensuring their safe passage. Such as butterflies and the

European beetle. We will ensure that the surrounding habitat is lush and diverse, providing shelter and resources for various species. For example, we will prevent sound pollution by planting trees nearby, which act as natural sound barriers.

## Green and qualitive public space




the streets in the urban parts of Szentendre will have a much more sustainable and climateadaptive design to improve the aesthetic features of the streets while also giving the function to store water and provide shadows for a lower temperature. The runoff from the mountain

will be able to infiltrate into the bioswale or the grass. Animals will be able to move better thru the streets overall making the streets more inclusive.



## Legend

- Agrocentre
- Market
- Metro station
- Tower
- Corridor (for travels)
- Walking path
- Woodland
- Willow trees
- Wood forest
- Fruit trees
- Hedgerow
- Wetlands
- Cattail and reed
- Agroforestry
- Riding and walking road
- Tunnel road
- Grassland
- Slope
- Knowledge estate

1: 3,600

0 72 144m

### Corridor

Implementing the green corridor is an extension of the Natura 2000 area. the different habitats, including grassland, wetlands, and woodland, will provide new environments for the target species. The corridor connects with the river so animals can move from the river to the forest areas. It also provides habitats for inhabitants and travels to meet each other and enjoy nature. Walking and riding paths will guide them in the allowed areas.

### Hedgerows

The hedgerows are implemented by the riverside and flooding areas to protect the land from rising water levels. The hedgerows also have ecological value, as they will be planted on the highlands as well. The is because trees and other vegetation are part of the measure, which provides for biodiversity. the hedgerows attract pollinators and other target species, which is beneficial for farmers between the hedgerows.

### Agroforestry /Orchards

Agroforestry will be implemented to increase a more sustainable way of farming. The benefits include healthier soil and higher yields for the farmers, and it also provides a vital home for wildlife. Tourism will be positively affected by the possibility of harvesting your products in the orchards. Apple trees add a high value to the area diversity in szentendre, so the orchards consist of apple trees and other fruits.

### Knowledge estate

This multipurpose located area will accommodate different elements, to begin with, the Agro Center is the most important element they are the foundation of the project and will test, guide, and implement agroforestry, hedgerows, and the wetlands. Also, the watch tower is located on this parcel which is built up from biobased materials as an example, the newly positioned metro station in Szentendre (central) in the knowledge estate to provide better accessibility. All the elements together create an environment where inhabitants, farmers experts, and tourists can meet, learn, and enjoy the atmosphere.

### Wetlands

Current open land with few functions will be transformed into a living landscape where farmers can grow products that can handle the wetter circumstances which will stimulate biodiversity as well as accommodate more animals and different plant species that can live solely on the green islands. The areas that are reserved for wetlands we be used to produce biobased building materials and can offer educational purposes as well. How to grow specific plants but also showing how to use the different materials.

## The welcoming entrance to the new Agrocenter



The Knowledge Estate will be mostly accessable by foot or bike. Granted by a sign explaining what's happening on the estate, further informing visitors of its purpose, wishing they the experiments at the research of the local farmers and other stakeholders, they find different types of farming new to the area. In the distance people will be able to see the bioenc made from the

very wood that's harvested from the back willow farms. The wild landscape, coming from the green corridor, provides a natural look from where multiple kinds of species like birds, insects and others can thrive.

175 Friends with benefits



To foster a sense of community, the people of Szentendre will have the opportunity to participate in the tower's design. A competition will invite locals of all ages to contribute designs for some individual panels, with entries divided into three age groups to include multiple generations and make a fair competition. This participatory approach will instill a sense of ownership and pride among residents, while the artistic element aligns with Szentendre's rich history and cultural identity in the arts.

2065



### Watch tower

**Stakeholders**
- Visitors
- Schools
- Locals
- Organization

**Implementation**
- The first layer will be placed in half a year
- The second layer will be made in the next 8 years through biobased materials produced with 2 harvests
- The other layers will be added every five years with 1 harvest

**Investments by**
- Visitors like tourists
- Indirect reaney from farmers
- The organization
- Investors

**Functions**
- Observation
- Example of the biobased buildings
- Brings communities together
- Art display

Build by biobased area



### Metro station

**Stakeholders**
- Current users
- Visitors
- Employees

**Implementation**
- Relocated
- More use because of the knowledge estate and the fruit picking

**Investments by**
- Municipality

**Profit**
- More use of the metro

**Functions**
- More sustainable transport
- Showing the different kinds of biobased buildings
- Easier access to the knowledge estate

Build by biobased area



### Hedgerows

**Stakeholders**
- Farmers
- The organization
- Animals and plant species

**Implementation**
- Researching all the test plots
- Introducing it to the farmers
- Gradually implementing on all the plots

**Investments by**
- EU subsidies
- The organization
- Farmers

**Profit**
- Higher yields

**Functions**
- More biodiversity
- Habitat for animals
- Beneficial for farmers
- CO2 uptake
- Sequanta flooding



### Wetlands

**Stakeholders**
- Farmers
- The organization
- Animals
- Project developers that use biobased building materials.

**Implementation**
- Researching at the test plots
- Introducing it to the farmers
- Slowly implementing all the plots that are reserved for wetlands

**Investments by**
- EU subsidies
- Harvests
- The organization
- Investors

**Profit**
- Selling biobased materials

**Functions**
- More biodiversity
- Habitat for animals
- Producing biobased building materials
- CO2 uptake
- Flood protection



Researching

Researching

Build by biobased area



### Agro centre

**Stakeholders**
- Researchers
- Farmers
- Experts
- Locals

**Implementation**
- The building is established at the beginning of the project.
- Test plots are started with the researched species.

**Investments by**
- EU subsidies
- Research budget
- Global investors

**Profit**
- Tourism

**Functions**
- Researching different kinds of agroforestry and biobased building materials
- teaching local farmers
- Educate students
- Volunteering jobs
- Exhibition

### Knowledge estate

The organization's investors are making it possible to create the knowledge estate. The knowledge estate is the plot where all the experiments will be done, and the Agro Center, along with the station and the tower, are established.

### Organisation

The organisation exists of non-governmental organisations such as HAEE, Wildlife and NAVE in cooperation with municipalities, farmers, locals, experts and researchers. These people all come together in the knowledge estate to research in the Agro Centre, to educate or receive education and do activities with each other. What is learned and researched in the Agro Centre will be implemented and farmland with the guidance of the organisation.

2025

### Market

Products can be sold on the local markets in the townsentres and next to the plots trough out the whole year.

All of my apples are made without pesticides. You can choose from a wide variety of types. I also have pears if you like. 3 for the price of 2.

Do you have apples that were made without pesticides?



### Fruit picking

**Stakeholders**
- Farmers
- The organization
- Locals
- Tourists
- Grazing animals

**Implementation**
- Part of the Agro Center and agroforestry
- Starting of the first harvest

**Investments by**
- EU subsidies
- The organization
- Farmers

**Profit**
- Local income

**Functions**
- Economic orchards
- Identity by selling local products
- Agritourism

Extra income



It's really nice coming here, taking part of the local food by picking my own apples

Yeah, I usually stop by the shop and buy some apple cider.

### Agroforestry

**Stakeholders**
- Farmers
- The Organization

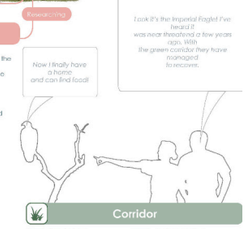
**Implementation**
- Researching at the test plots
- Introducing it to the farmers
- Slowly implementing all the plots that are reserved for agriculture

**Investments by**
- EU subsidies
- The organisation
- Farmers

**Profit**
- Diverse yields

**Functions**
- Biodiversity
- Beneficial for farmers
- CO2 uptake
- N2 reduction
- Improving the soil
- Value-added products

Researching



Now I finally have a home and can find food!

I look it's the Imperial Eagle! I've heard it was near threatened a few years ago. With the green corridor they have managed to recovere.

### Corridor

**Stakeholders**
- Animals
- Plants
- Beneficiants
- Maintainers
- Municipality
- The organisation

**Implementation**
- Constructed from the beginning when the organisation is completed
- It takes about ( 50 years to grow a full forest

**Investments by:**
- EU subsidies

**Profit**
- Small harvests during maintenance for biobased building materials

**Functions**
- More biodiversity
- Habitat for animals and plant species
- Green connection
- Detragmentation of landscape and towns
- Recreation at certain places
- Transport routes through biking lanes

# Danube Vitality

# Third Round

**Sara Abdallah, Fidan Kazimli, Sakina Naghiyeva**

Sapienza University in Rome, Italy

Our project started with a big-picture exploration of the Danube River, understanding its ecological environmental and social dynamics. We started by analysing the entire Danube transect, understanding how water systems shape landscapes, communities, and ecosystems. This helped us identify key challenges, particularly urban sprawl pressure , fragmented and undeveloped landscapes, floods and climate change risks.

Then, we zoomed into Vác, a district along the Danube, where we explored its local risks, social structures, and economic potential. We discovered that while the river is a vital resource, certain areas face flooding, underutilized spaces, and limited community engagement in green infrastructure. This led us to seek solutions that balance risk management, urban greening, and social well-being.

Further in Poster 3, we designed our urban orchard project, turning an unused urban land into a multifunctional green space. This orchard not only provide organic fruits but also fosters social inclusion, providing jobs, educational programs, and community spaces. Additionally, it supports the local economy creating a vibrant resilient model.

Finally, we developed "Bloom Vac", a business and social model that ensures the project's long-term sustainability. This model integrates economic, environmental, and social benefits, ensuring that the urban orchard thrives as a community driven space.We are proposing that, through these four phases, we transform a broad Danube-wide challenge into a local, impactful solution, demonstrating how nature-based strategies can create resilient, inclusive, and economically beneficial landscapes.

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# Danube Vitality: A Landscape for Resilience and Community

## "Reviving Nature, Empowering Communities"

This name and motto reflect **our vision along the Danube River**, focusing on **building resilience**, **fostering social inclusion**, and **strengthening the local economy**. By integrating ecological and social potentials, we envision **transforming this transect into a productive, nature-based system** that **mitigates** ecological and environmental **risks**, **empowers communities**, and **supports sustainable growth**.

### DEMOGRAPHIC AGE PROFILE

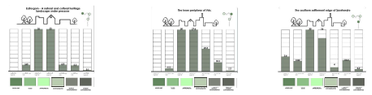
| | Males | Females | Old age dependency rate | Population density |
|---|---|---|---|---|
| | age | age | % | person/km² |
| | 40-41 | 45-46 | 31-32 | 208-328 |
| | 39-40 | 43-44 | 29-30 | 529-900 |
| | 39-40 | 43-44 | 31-32 | 529-900 |

### ECONOMIC SECTORS AND PUBLIC HEALTH

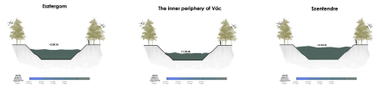



Most of the economic sectors, including **industry**, **agriculture**, **and transportation**, affect human health by impacting the environment and climate. Industrial emissions and agricultural runoff can pollute air, water, and soil, leading to health issues, while fossil fuel reliance contributes to climate change, increasing risks like extreme weather and heatwaves.

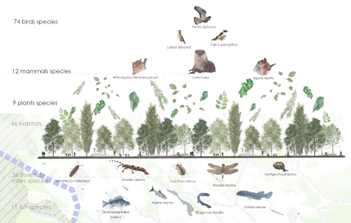
### POLLUTION ANALYSIS OF THE TRANSECT



### WATER LEVEL AND QUALITY OF DANUBE RIVER




### BIODIVERSITY ALONG THE DANUBE




### LEGENDA:

- -Protected areas
- -Mixed forest
- -Flooded areas
- -Industrial and commercial units
- -Discontinuous urban fabric
- -Polluted air zone
- -Bike lane
- -Train line
- -National Blue Trail

### SWOT ANALYSIS

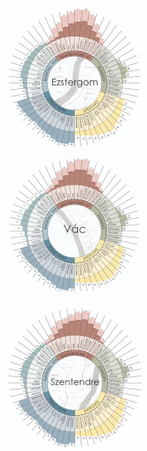
SYMBOLS:

- \+ -Strengths
- — -Weaknesses
- -Opportunities
- !!! -Threats

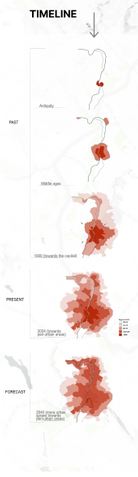
### ACCESS AND MOBILITY CONNECTIONS




### CLIMATE ANALYSIS OF THE




### TIMELINE







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# Danube Vitality: A Landscape for Resilience and Community

## "Reviving Nature, Empowering Communities"

### Concept

We envision Vác as a model for **sustainable, inclusive, and economically vibrant urban transformation along the Danube.** Our focus is on the **five proposed areas** selected by the competition jury, located **in the southern part of the district.** Through **nature-based solutions** and **sustainable economic models**, we reimagine **underutilized spaces** as **productive, climate-adaptive**, and **socially inclusive landscapes.**

### Vác District




### INTEGRATION WITH BUDAPEST 2030 DEVELOPMENT PLAN

Healthy environmental conditions
Balanced human services
Preserving the city's individual character

\+

Cultural diversity
Inclusive, supportive and active society
Knowledge-, skill- and green-based economic development

\+

Urban development as an initiating force
Self-sustainable urban management

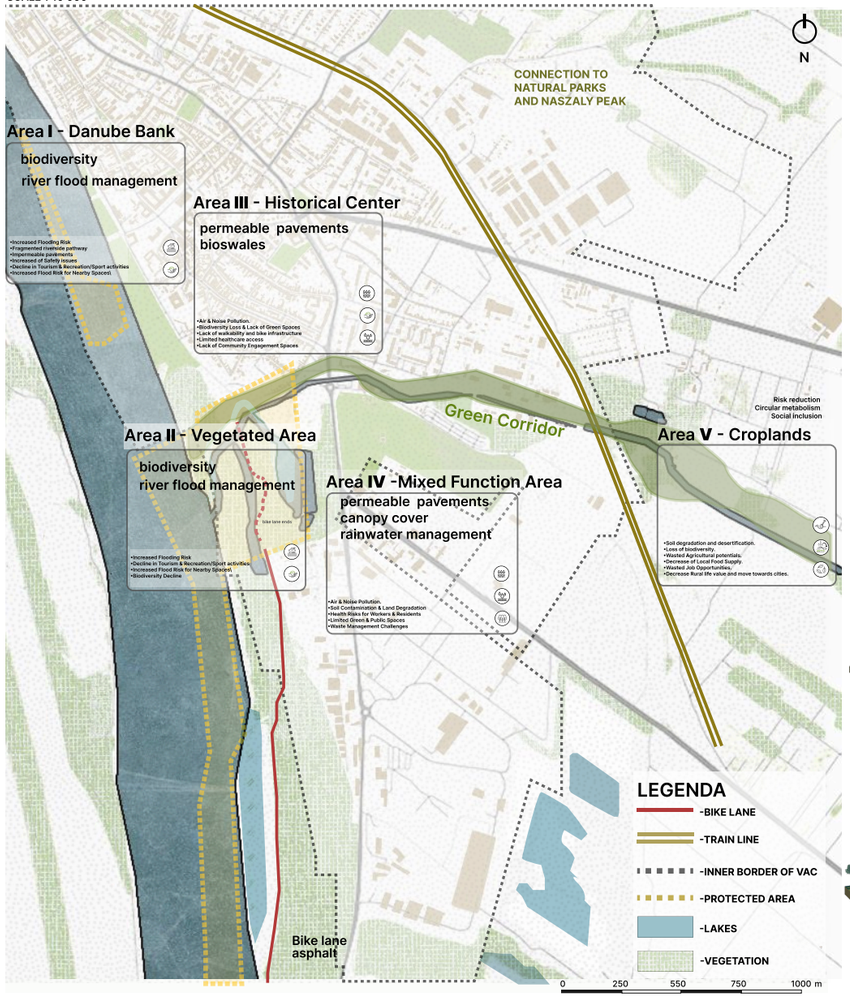
### STRATEGIES




### SOLUTIONS

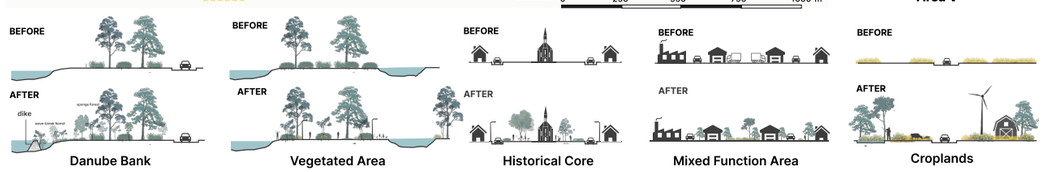



SCALE 1:10 000




### SOLUTION DIAGRAMS



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# Danube Vitality: A Landscape for Resilience and Community

"Reviving Nature, Empowering Communities"

## Bloom Vác

### Living Connections: Planting Resilience, Inclusion and Growth in Vác

We focus on the **revitalization of the underutilized spaces** into **vibrant hubs** that is not only **addressing local economic development** but also **fostering community connections.** we designed an **urban orchard** that serves as a **source of fresh, locally grown fruits** , a **gathering space** and a **learning hub.** This initiative is expected to generate new economic opportunities while promoting environmental sustainability and enhancing social well-being.

## Urban Concept Diagrams




Proximity to residential areas

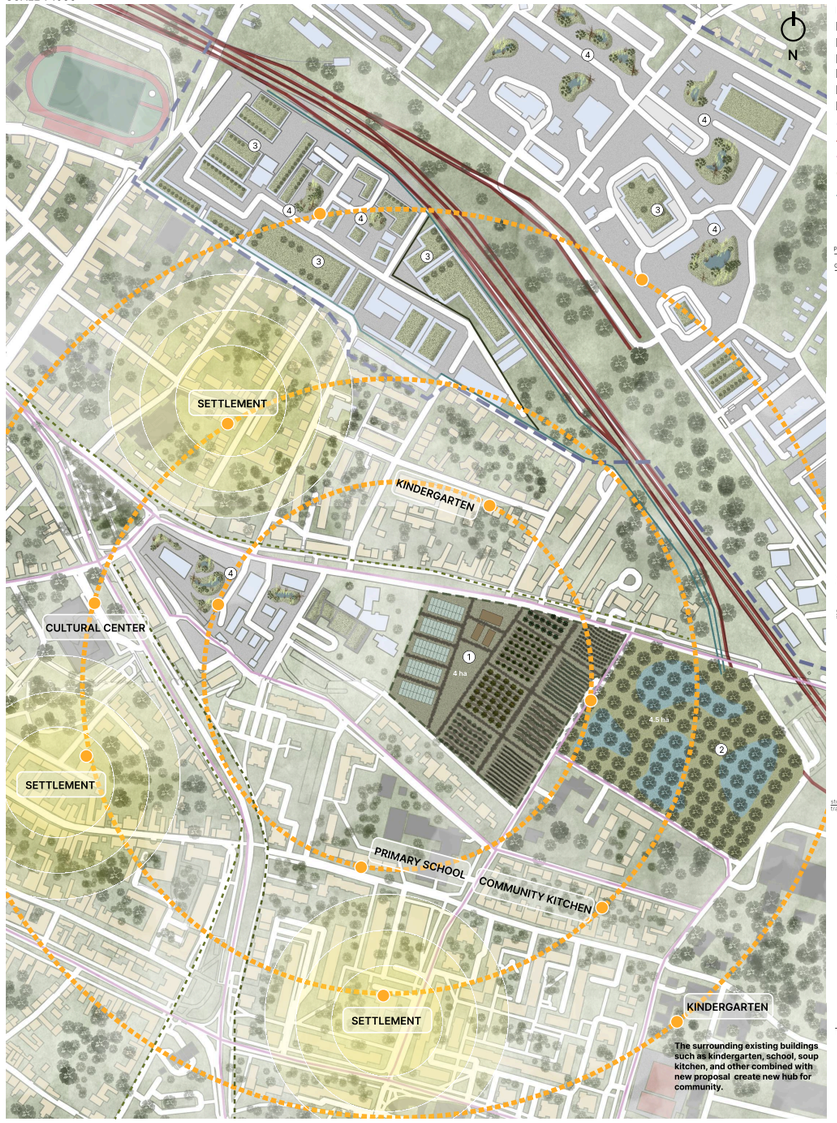
Well connected to city and other regional parts

Proximity to Naszálytej Dairy factory and other commercial shops

An opportunity to add new eco-tourism route into the city

FRUITS TREES' PROPOSAL

SCALE 1:1500

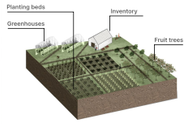



**LEGEND**

- -Vegetation
- -Concrete pavement
- -Residential buildings
- -Industrial buildings
- -Public buildings
- -Sport facilities
- -Industrial area
- -Existing railway line
- -Suggested bicycle line
- -Green walls for acoustic control
- -Rainwater runoff

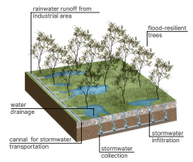
**EXPLICATION**

1. -Urban orchard
2. -Urban forest
3. -Green roof
4. -Bioswale




### ①-Urban orchard

An urban orchard with greenhouses, fruit trees, and berries provides sustainable food production within the city. Fruit trees and berry bushes yield fresh produce, while greenhouses extend the growing season. Rainwater or stormwater is collected and used for irrigation. The orchard promotes biodiversity, improves soil health, and engages the community in local food production.



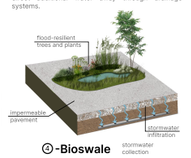

### ②-Urban forest

The urban forest serves as a natural stormwater management system, where rainwater is collected, filtered through the soil's infiltration layer, and stored for irrigation of the nearby urban garden. Wastewater from the surrounding industrial area is also directed into the forest. Flood-resistant trees, are planted to absorb excess water, reduce waterlogging, and withstand flooding.




### ③-Green roof

Green roofs with irrigation systems and water tanks manage stormwater, improve energy efficiency, and reduce environmental impact. They absorb rainwater, reduce runoff, store excess water for future use, and direct additional water away through drainage systems.




### ④-Bioswale

In industrial areas, bioswales manage stormwater runoff, reduce pollution, and improve water quality by slowing water flow, promoting infiltration, and filtering contaminants before they reach storm drains.

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# Danube Vitality: A Landscape for Resilience and Community

"Reviving Nature, Empowering Communities"

## Bloom Vác

With the Urban Orchard in **Vác,** we want to **provide fresh , affordable fruits** while **promoting food system** and **empowering the community**. Through **eco-friendly practices , training and education** and **job creation** we can enhance **food security**, **foster social inclusion**, enhance **biodiversity** and **support local economy growth.**

### Value Preposition

In **Bloom Vác,** we are imaging the city's relationship with nature, **transforming neglected spaces into thriving urban orchards**, thinking **not only in planting trees** but **growing opportunities** for residents.
This project is aiming **more than food production**, but ensuring that every piece of land, every drop of water and every hand involved contributes to **a greener, more inclusive future.**

### Key Partners

Local Authorities / Local NGOs and funding agencies — Vác Város Önkormányzat Képviselő-testülete/ (Fruitvéb)/ Agrikult Ltd/Nemzeti Együttműködési Alap

Local Farmers, Nurseries and horticultural farms — Váci Kertészet (tree nursery) / Gyümölcsöskert Kft(compost supplier) / Terápiás Kert, Sződ (fruits farm)

Local Business/ Factories and markets — Vác Bishop market/ Naszálytej mintabolt/ Rubra Art lounge Étterem (famous restaurant)

### Key Processes

Management processes — Develop a master plan for the urban orchard with all needed consideration

Core processes — Planting, harvesting, community picking events, selling points,fruits into production

Support processes — Marketing through local newspaper and posters, apps, training of volunteers

### Channels

Public communication for Vác — Through Vác daily newspapers, radio stations, schools and public areas

Sales — Local markets, Vác's cafes and grocery shops, On-site shop

### Key Products/ Services

Products — Organic fresh fruits/ produced food(jams, juices)/ seedlings/ gardening kit

Services — Gardening workshops/ "Pick your fruit" events/ job opportunities

### Key Resources

Human Resources — Vác horticulturalists and gardeners, community volunteers

Tangible Resources — Neglected urban lands,seedlings/ gardening tools, irrigation system and storage/rainwater harvesting

Intangible Resources — Experts' knowledge on farming and tracking, marketing tools ans sales management

### Cost-driver

Orchard preparation — Seedlings, compost and equipment

Personnel — Wages for employees

Maintenance and Management — Irrigation, pest control, waste management

Marketing — Online website, posters/flyers

### Income-Driver

Government and NGO's grants — Financial support for social inclusion and urban development

Sales Revenues — Organic fruits and produced goods

Event Revenues — "Pick up your fruits" events, collaborations with schools and kindergardens

### KPI key performance indicator

Environmental Impact — Number of trees cultivated, increase of food production, local biodiversity, more water retention level

Social impact — Numbers of jobs created, community members engaged and social events been held

Financial impact — Revenues from fruits sales and local business purchasing, funding received from grants

### Customer & beneficiary input

Customers — Vác's Residents, students

Customers — Vác's visitors/ tourists seeking eco-tourism activities

Customers — Local bakeries and factories,Fin fagyizólice cream shop(),Naszálytej mintabolt (dairy factory)

Beneficiaries — Vác's Residents, volunteers,elderly, including the unemployed

Beneficiaries — Vác's municipality and NGO's for partnering in food security projects

### Users Personas Canvas

**Customers**

**Small Business Owner**
**Adam ,30 years old**

NEEDS
- Owner of Rubra Art Lounge, a popular cafe in Vac
- Wants to source fresh, organic, and locally grown fruits for smoothies, desserts

SOLUTIONS
- A steady supply of high-quality local fruits at competitive prices.
- Marketing collaboration with Bloom Vac.

**The eco-minded mother**
**Lili, 32 years old**

NEEDS
- Stay-at-home mom with two kids.
- Wants healthy, non-chemical fruits for her family

SOLUTIONS
- Access to fresh, organic fruit directly from the orchard
- Educational programs for her children about farming and sustainability.

**Beneficiaries**

**The Retired Engineer & Community Volunteer**
**Marton, 67 years old**

NEEDS
- Seeks meaningful engagement and social interaction.
- Limited opportunities for elders to participate in physical activities

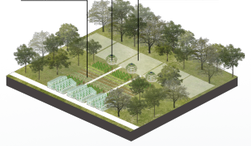
SOLUTIONS
- A volunteer program where he can train younger community members.
- Gardening activities that keep him physically and mentally active.

**The Job-Seeking Single Mother**
**Edit, 42 years old**

NEEDS
- Currently unemployed, looking for stable work
- Wants a flexible, steady income to support her children

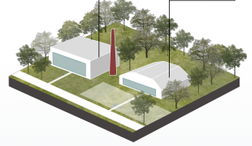
SOLUTIONS
- Job opportunities in orchard maintenance, sales, and event organization.
- Flexible working hours, allowing her to balance work and family life.

### Urban orchard



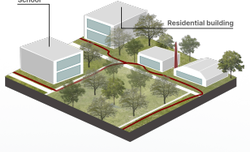

Inclusive community gardening and fair sharing
Integrating compost piles in urban garden development

### Reusing buildings




Reusing buildings for the community`s knowledge sharing
Workshop venues

### Establishing links between new vision and existing situation




New bicycle lanes are created to make safer accessibility from settlements, schools to orchards

Social Environmental Impact SDG

ONLINE APP — GREENHOUSES — COMMUNITY GARDEN — BIOSWALES — VOLUNTEER PROGRAMS — ON-SITE SHOP — TRUCKS EXPORTING GOODS TO LOCAL SHOPS

"PICK UP YOUR FRUITS"



# Re:Connected

Third Round

**Jannemijn Carlier, August Hansson, Sandhos Hibma, Nina Kleinstra, Anne Ottens, Martijn van Ruiswijk, Feie Zijlstra**

Hogeschool Van Hall Larenstein, The Netherlands

*The Hortus Hungarikum: empowering local voices to make landscape choices*

The Hortus Hungarikum inspires locals to reclaim their landscape, addressing challenges like urbanization, fragmentation, declining social and environmental quality. Commencing as a foundation, initiated by a few and developed collectively, eventually involving the broader community.

The Hortus bonds residents and is used for planning and designing purposes. By executing affordable, labour-intensive measures creators will transform the landscape, providing benefits such as a cohesive community, robust ecosystems, flood resilience, and opportunities for local products, cafés, and tourism.

With ongoing collaboration and planning, the landscape evolves to meet community, nature and climate needs while the community fosters ownership. Residents have the best understanding of their community's needs, living conditions and environment. By connecting the community with higher-level stakeholders, valuable knowledge is exchanged.

Vác, located north of Budapest, shows the problems of the Danube bend clearly. New housing blocks are built at the side of the city disrupting the natural system. New residents in these blocks are solely focussed on Budapest. In order to fix these problems we proposed three Horti Hungarika for creators to implement. The Rural Hortus Hungarikum is displayed in more detail. A former mansion is restored and turned into a beautiful Hortus.

Ownership by the people, a landscape returned to its former glory and social bonding in communities: these are the objectives they can achieve by implementing a Hortus.

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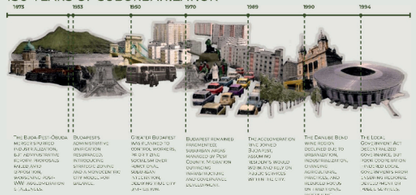
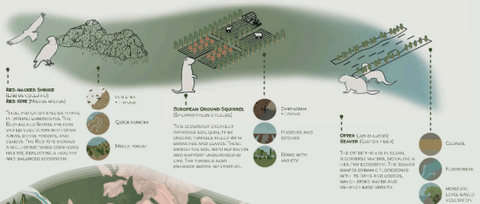
# RE:CONNECTED

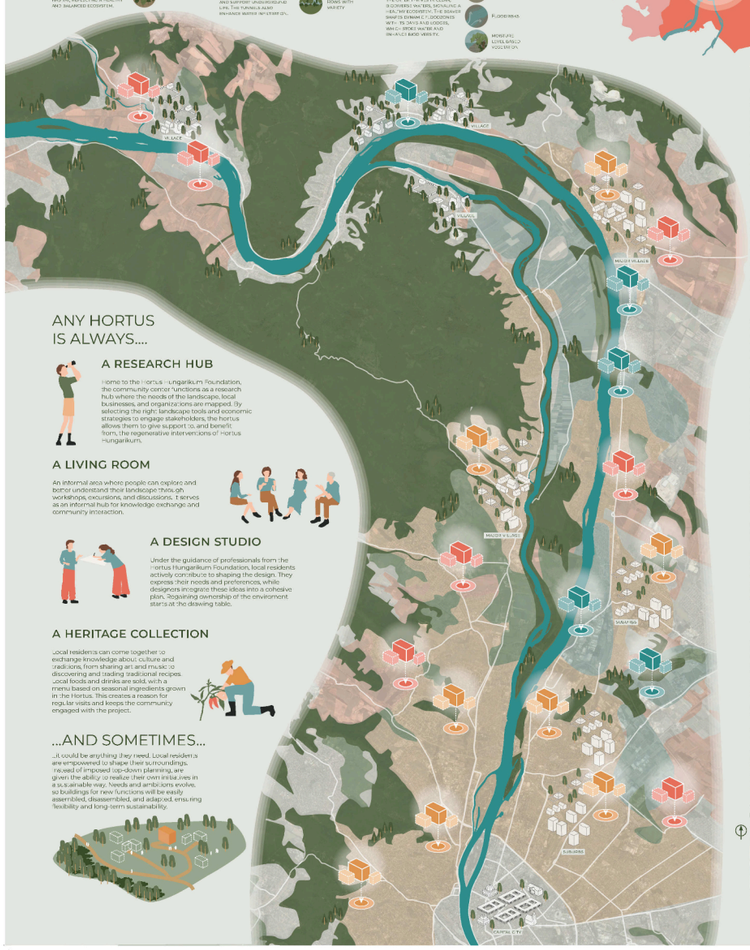
## REQUEST BY LANDSCAPE - RESPONSE BY LOCALS

### 150 YEARS OF SUBURBANIZATION




### EXISTING LANDSCAPE GRADIENT






### ANY HORTUS IS ALWAYS....

#### A RESEARCH HUB

Home to the Hortus Hungaricum Foundation, the community center functions as a research hub where the needs of the landscape, local businesses, and organizations are mapped. By selecting the right landscape tools and economic strategies to engage stakeholders, the hortus allows them to give support to, and benefit from, the regenerative interventions of Hortus Hungaricum.

#### A LIVING ROOM

An informal area where people can explore and better understand their landscape through workshops, excursions, and discussions. It serves as an informal hub for knowledge exchange and community interaction.

#### A DESIGN STUDIO

Under the guidance of professionals from the Hortus Hungaricum Foundation, local residents actively contribute to shaping the design. They express their needs and preferences, while designers integrate these ideas into a cohesive plan. Fostering ownership of the environment starts at the drawing table.

#### A HERITAGE COLLECTION

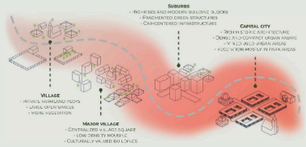
Local residents can come together to exchange knowledge about culture and traditions, from sharing art and music to discovering and trading traditional recipes. Local foods and drinks are sold, with a menu based on seasonal ingredients grown in the Hortus. This creates a reason for regular visits and keeps the community engaged with the project.

### ...AND SOMETIMES...

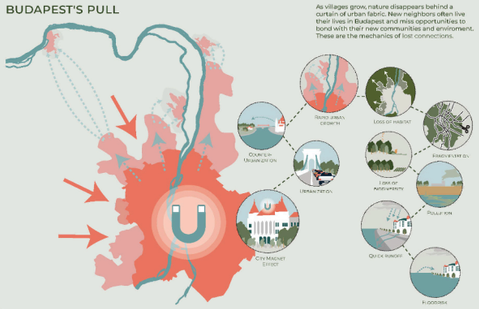
...it could be anything they need. Local residents are empowered to shape their surroundings. Instead of imposed top-down planning, are given the ability to realize their own initiatives in a sustainable way. Needs and ambitions evolve, so buildings for new functions will be easily assembled, disassembled, and adapted, ensuring flexibility and long-term sustainability.



### EXISTING URBAN GRADIENT




### BUDAPEST'S PULL




### LOST CONNECTIONS

Budapest's economic appeal has a pulling effect on people from rural Hungary and beyond, known as urbanization. As the city reaches its capacity, living conditions decline.

Counter-urbanization emerges, with people relocating to suburban areas. This trend triggers rapid urban expansion that often lacks proper planning, which results in insufficient social infrastructure and deepens dependence on Budapest. A clear urban gradient is noticable around the capital city.

This rapid expansion prioritizes short-term solutions that put pressure on the landscape. Ecosystems are fragmented by infrastructure, species lose their habitats, and biodiversity gives way to agricultural monocultures. Additionally, the reduction of water-retentive soil exacerbates droughts and floodrisks.

As villages grow, nature disappears behind a curtain of urban fabric. New neighbors often live their lives in Budapest and miss opportunities to bond with their new communities and environment. These are the mechanics of lost connections.

### THE WORLD AS OUR GARDEN

In our current system, we are used to waiting for slow and complex government processes while nature disappears around us at an alarming rate. As landscape feels vast and abstract, making it hard to protect and nurture. In contrast, caring for a garden is intuitive; its boundaries are clear. Our proposed solution is to bridge that gap by carving out defined spaces within the landscape and placing them in the hands of local communities. By turning 'landscape' into something tangible, locals feel they have the power to impact it and can directly reap the rewards.

Once these spaces are deeply valued by locals, they won't be easily stripped away anymore. They form a resilient backbone within the landscape and provide a strong base where larger scaled landscape intervention structures can be latched on to. This ripple effect involves local residents and businesses alike and will extend the positive impact far beyond the project boundaries.

### HORTUS HUNGARIKUM

(**'hɔrtʊs hʊŋ ga.ri.kʊm**) - noun
A community-managed landscape where local residents are given the space, resources, and agency to shape their environment according to Hungarian traditions and local environmental needs. It exists of a core that functions as an estate-like hortus with a community center, an improvement zone where the most urgent landscape problems are adressed, and a connection zone where local stakeholders are encouraged to integrate in the landscape system.

*Etymology: Latin hortus ("garden") + Hungarikum ("typically Hungarian heritage").*

### URBAN HORTUS HUNGARIKUM

**Situation:** A landscape characterized by high building density, limited vegetation, and frequent reliance on a capital city for social infrastructure.

**Problems:** Loss of social cohesion, loss of habitat, watersystem issues

**Solution:** A network of park-street conversions and green corridors that form an attractive districts for shops, restaurants and bars.




### RURAL HORTUS HUNGARIKUM

**Situation:** A production landscape characterized by large scale monocultural fields, industrial buildings, and logistical infrastructure.

**Problems:** Pollution, fragmentation and loss of biodiversity

**Solution:** The hortus kickstarts biodiversity and connects farms and fields with nature, making a transition to regenerative farming easier.

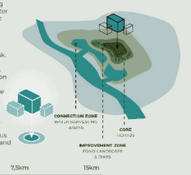



### WATER HORTUS HUNGARIKUM

**Situation:** A low-lying landscape where water accumulates without sufficient absorption into the terrain. It is characterized by a fluctuating cycle of drought and flood risk.

**Problems:** Floodrisk, Quick runoff, Pollution

**Solution:** A biodiverse wet landscape with floodprotection and a network of water retention basins that create rich fishing spots and adventurous water-ways for boats and canoes.







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# RE:CONNECTED

## RESPONSE BY LOCALS - IMPACT OF THE HORTUS

### POTENTIAL OF VÁC

The city Vác is located 34 kilometres north of Budapest. The population count is 35.000. Due to the rapid urbanization in the Danube Bend this number is increasing. To accommodate these new residents, new efficient housing blocks appear around the city. Since the new residents primary focus is Budapest, bonding opportunities with local people and their environment are often missed. A Hortus Hungarikum is a five-step-system that could stimulate their connection while solving landscape problems.

The most urgent landscape problems found in Vác exist of the monocutture at the east of Vác, this is causing loss of biodiversity and pollution of the Combás-patak stream and surrounding areas. Flooding issues are present in this area; Floods that normally occur once in 30 years, now occur more often. The growth of Vác also added to fragmentation and loss of green caused by its urban fabrics and infrastructural patterns.

Aside from the rich history and culture of Vác, big plots of rural areas in between nature create opportunities for the Hortus system. Nature can expand and improve while involving the many stakeholders and variety of inhabitants of Vác. Together they can take action and create their new natural heritage.








### STAKEHOLDERS

A big range of stakeholders could benefit from the Hortus Hungarikum in the urban setting of Vác.

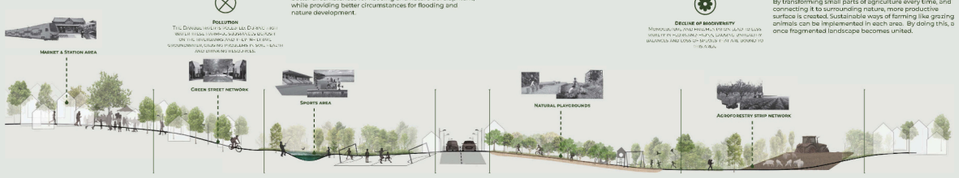
Schools can use the Hortus to make herb gardens or small allotments. They can teach kids about sustainable living and working in nature, while they can involve the kids in the process of changing their surroundings and creating their own ideas, like a playground kids help design.

The Church has an important role in Vac, and with its already strong community it can use the extra space for events. Daring the participation of events they might strengthen their bond with the next generations and other groups for their church.

Besides these big groups, all people in Vác could benefit from the Hortus. Everyone that might miss social interaction, connection with nature or purpose can look for a task that fits their needs, or simply pass by. The Hortus serves as a meeting point and creates more of these while expanding.

### WATER HORTUS HUNGARIKUM






### STAKEHOLDERS

An important stakeholder for the Water Hortus are schools, as the primary function of the Hortus is education. Classes can be taken outside into this diverse area.
Learning about the landscape in which you grow up can cause more awareness and transforms the landscape into heritage of the area.

This area stimulates many Hungarika in the Water Hortus, such as fishing and fish-containing dishes. Also, it provides better circumstances for flooding and nature development, while providing better circumstances for flooding and nature development.

### RURAL HORTUS HUNGARIKUM



### STAKEHOLDERS

The rural area might seem difficult to transform due to its purpose and values, but by involving many stakeholders, it is possible.

Farmers should be involved from the start, so they can have an impact on the process and are told how they can benefit from the system. Universities and schools can help provide manpower and knowledge, guiding creators and farmers in the transition.

By transforming small parts of agriculture every time, and connecting it to surrounding nature, more productive surface is created. Sustainable ways of farming like grazing animals can be implemented in each area. By doing this, a once fragmented landscape becomes united.

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# RE:CONNECTED

## HORTUS HUNGARIKUM AT KASTÉLY

### OPPURTUNITIES

The chosen spot for our Hortus Hungarikum is around and inside the existing Pfuflisch-Marx Kastely. The castle-like mansion with its surrounding area has a rich history that includes an old distillery and an old university research center.

It consists of an old English-style landscape garden with fishing lakes and beautiful nature. The estate area no longer reflects its former glory, but the old rundown area is a perfect spot for the community to connect to their heritage and gives them creative freedom to develop and change the area the way they want.

Accessibility is also a big part of our proposal, a hortus next to the train station and close to the natural beauty of the landscape. With the improved route around the city this new area will become even more accessible and will attract people from all over the country. To further develop a natural transition from the urban landscape to the rural area the northern part of the estate is a perfect spot for developing new housing areas. By keeping the landscape garden style in to the new development it will become a natural transition from city to countryside, while keeping tradition and heritage.

The poorly used farmland areas along the river connecting our hortus has immense opportunity for community-driven development and collaboration with local farmers. Thes underutilized fields are also perfect spots for research and innovation, universities and the community can explore sustainable farming techniques to improve biodiversity, reduce both fragmentation and pollution.



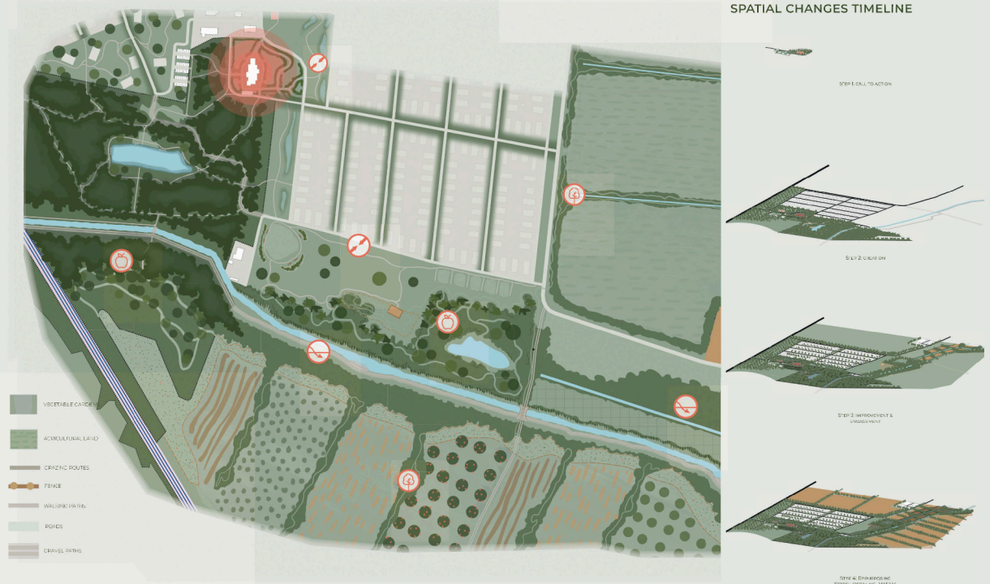
### THE HORTUS CORE







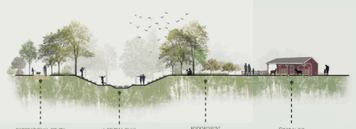
### SPATIAL CHANGES TIMELINE







### TRANSITIONING ZONE




### INNOVATION ZONE




### TRANSITIONING ZONE

The goat shed serves as a transition zone, inviting surrounding neighbourhoods to interact and connect with nature. It offers education for all ages, with learned lessons reflected in the adjacent natural areas. Nearby fields support local agriculture, allowing residents to grow their own produce, enriched by animal excrement as fertilizer. Whether heading from the city to nature or vice versa, recreational routes offer interactive learning through play and information.



### AGROFOREST

The agroforest blends strokes of layered forests with open meadows and wood production fields, fostering a rich and dynamic landscape. When selected trees are cut, goats help shape natural layering by grazing on bushes and young branches. Hungarian Grey cows maintain open spaces by creating meadows, while chickens improve soil health by scraping and digging. The animals can be herded to regulate grazing areas effectively, ensuring balanced land use.




### INFILTRATION ZONE

Phytoremediation is a process where vegetation can filter pollution from the soil. The following species that can be used in the area that have a high intake of pollution are: - alfalfa (Medicago sativa) - clover (Trifolium) - Festuca, willow (Salix) - mustard (Sinapsis alba) - rapeseed (Brassica napus) - courgette (Cucurbita) - reed (Phragmites australis) - stinging nettle (Urtica dioica) - and Poplar (Populus alba) that can also filter air pollution



### INNOVATION ZONE

The innovation zone provides a hands-on learning experience with a focus on nature-based farming, soil improvement, and eco-friendly production. Wetland plants like bulrush, reed, and willow are cultivated for biobased building materials and carbon storage. Ducks and parasitic wasps can be used for natural pest control. The grounds can be used for experiments that include using natural pesticides, growing diverse vegetables, and exploring paludiculture. Visitors can see how farming and nature work together sustainably.



### FOOD FORREST

Harvesting activities stimulate active involvement and a sense of reward for users of the hortus. Within the forest, cows and chickens can roam freely, while goats are kept separate to prevent excessive grazing on bushes. The area features a rich variety of species like: - cranberry (Vaccinium macrocarpon) - blueberry (Vaccinium corymbosum) - chestnut (Castanea sativa) - apple (Malus sylvestris) - pear (Pyrus communis)



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# RE:CONNECTED

## GUIDELINES FOR CREATING

This system shows the functioning of the Hortus Hungarikum. It has five steps that in total take an estimated 3,5 - 7,5 years. The Hortus Hungarikum system can be implemented in various ways. Locals can reclaim their landscape and adapt it to its needs. Also, the system will blend and bond new and native inhabitants of the landscape. This visualisation gives insight in how the system functions, cost and revenue and monitoring, evaluation and maintenance (M&E&M).

Until implementation, a Hortus Hungarikum remains a concept. Therefore, it is a possibility that the system needs to be adjusted to work. To make this possible a lot of space has been created for monitoring and evaluation. Furthermore, lots of values are estimated, but do not form strict values that must be accomplished or adhared to.

### PARAMETERS OF SUCCES



**MULTIFUNCTIONAL AREAS**
- ITEM / CURRENTLY IN FACILITIES
- MULTIFUNCTIONAL USE IN EXISTING FACILITIES
- URBAN UNDERSTANDING BALANCE FOR NATURE / CULTURAL
- ADVANTAGE / DISADVANTAGE WITH THE GOAL OF ZERO LANDFILL WITHIN 'NEW' ECOSYSTEMS



**WATER STORAGE**
- AMOUNT OF M3 AVAILABLE
- INFILTRATION CAPACITY M3/SQM/HOUR OR LENGTH OF RUN OF WATER POSSIBLE WITH 'ONE JERRAL TIMELOPMENT'
- WELL MAINTAINED WITH STORAGE SPACES



**STAKEHOLDERS INVOLVED**
- NUMBER OF STAKEHOLDERS INVOLVED
- TOTAL # OF SEMI / LOCAL RESIDENTS WITHIN 'RANGE IN ENERGY'
- RELEVANCE OF INVOLVED STAKEHOLDERS
- WITH RESPECT TO LOCAL STAKEHOLDERS IN ARE, INVESTMENTS



**BONDING OF COMMUNITY**
- HIGH DEVELOPED INFRASTRUCTURE (LOW, MEDIUM, CONSULTATION, MASSIVE)
- CONNECTING ARES TO OTHER FACILITIES
- LIVELY STREETS
- NEIGHBOURING SPACES
- SCHOOLS AND OTHER EDUCATIONAL ENTITIES ARE EXISTING
- DIVERSITY IN AGES / PRESENT IN ALL LAYERS OF THE HORTUS HUNGARIKUM
- HIGH PARTICIPATION/YOUTH TESTED



**NUMBER OF PEOPLE INVOLVED**
- NUMBER OF PEOPLE INVOLVED (GREEN ENERGY)
- FINISH / NOT TO MUCH, YET, WHO CAN WORK IN THE FUTURE



**BLUE / GREEN SPACE**
- AMOUNT OF HECTARES IMPROVED, IMPLEMENTED OR NEW BUILD GREEN SPACE WITH NEW URBAN DEVELOPMENTS
- WELL MAINTAINED GREEN AND BLUE SPACE



**DIVERSITY IN PEOPLE**
- DIFFERENT TYPES OF KNOWLEDGE/ EXPERTISE
- AGE
- CULTURAL BACKGROUND
- OLD AND NEW INHABITANTS OF THE NEIGHBOURHOOD



**NATURE QUALITY**
- TOTAL AMOUNT OF PRODUCTS SOLD
- PERFORMANCE / ONE PRODUCT TYPE
- M2 OF LIVABLE FOREST (GOOSE FOREST, FOOD FOREST)
- DIVERSE FRUIT ART / LANDSCAPE
- INDICATOR ANIMAL ABUNDANCE
- HIGH BIODIVERSITY FLORA
- SOME OTHER THINGS (ATTRACTING ANIMAL, NON EVENING VIEW) - QUALITY WATER AND WATERWAYS
- ECHOLOGICAL WATER FLOWS AND MORE % SOLD AROUND WATERFLOW
- SYSTEM HEALTHY HIGH WATER AND SOIL QUALITY / HIGH SOIL QUALITY AND LOW % OF PESTICIDES
- HOW MUCH % OF WORKERS / MAIN ABOUT NATURE QUALITY
- MAKE THE BIGGEST AS POSSIBLE IN - THINGS WHICH HUMANS DISAPPEARED = ANY BETTER HOME?



**STAKEHOLDERS INVOLVED**
- NUMBER OF STAKEHOLDERS INVOLVED
- TOTAL # OF SEMI / LOCAL RESIDENTS WITHIN 'RANGE IN ENERGY'
- RELEVANCE OF INVOLVED STAKEHOLDERS
- WITH RESPECT TO LOCAL STAKEHOLDERS IN ARE, INVESTMENTS



**BONDING OF COMMUNITY**
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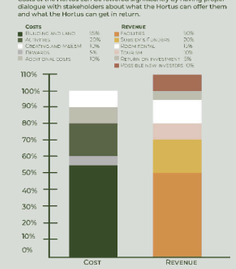
- DIVERSITY IN AGES / PRESENT IN ALL LAYERS OF THE HORTUS HUNGARIKUM
- HIGH PARTICIPATION/YOUTH TESTED

### COST AND REVENUE

All costs and revenue are estimated based on proposed examples that either should be or can be part of the system. All costs and revenue have several variables that can heavily influence its values.

The Hortus Hungarikum is a foundation. So, aim is to not strive for making profit. Yearly remaining revenue should be reserved to invest in new Horti Hungarika in the Danube Bend.

Costs of the Hortus can be lowered significantly by having proper dialogue with stakeholders about what the Hortus can offer them and what the Hortus can get in return.




### DYNAMICS OF ALL INVOLVED

The system starts with five locals, but eventually a sufficient part of local society are involved. Due to these high numbers, the foundation needs some organisation. On top of the system are the creators. They are members of an association and control the board, are active users of the system and do the physical activities.

For these physical activities, the creators need some expert accompaniment. Hopefully, this can be done by someone who is part of the community and could do it for free. If not, this expert might have to be hired.

Commissions can be formed to make development plans, M&E&M-plans, a PR-strategy, and for any further locals' needs. All locals can take part in these commissions. It is critical to include those who possess relevant knowledge to the Hortus Hungarikum in the commissions. This can be done via experts of creators that have experience in the relevant subject.

Finally, a board must be formed who oversees the system, communicates with externals, develops regulations, arranges finances and chairs the bimonthly assemblies. The creators, commissioners, board and possibly experts meet to discuss, check each other's work and check the finances.

### VALUE OF THE COMMISSIONS

The Commission of Development Plans is responsible for drafting the development plan and identifying relevant problems and objectives. They gather input from locals and stakeholders to ensure the plan reflects the community's desires. Additionally, they revise and update the initial development plan in step four to address new and emerging challenges.

The Design Commission creates designs based on the development plan and guides the ongoing processes of the Hortus Hungarikum, ensuring that all activities align with and achieve their objectives.

The Engagement Commission is formed in step three to foster greater involvement and participation. This commission develops and manages all engagement activities and systems to maintain a high level of community involvement.

The Reward System Commission oversees the implementation of the reward system.

### MONITOR, EVALUATE AND MAINTAIN

Monitoring, evaluation and maintenance are critical for the Hortus. Creators should be able to do M&E&M by themselves. The table below displays what factors of the system are part of the Hortus' M&E&M strategy.

In addition, how these factors are M&E&M'd and to what step they are relevant is shown. In relation to these factors, symbols are shown in front of the first eight factors, visualised in the flowers. At each phase of the Hortus, the flower displays to what extent goals of the Hortus are achieved.

These goals can be measured via the parameters of success, and methods of measuring can be found in the M&E&M table. As the Hortus grows, the flower blooms.

| ASPECT TO MONITOR, EVALUATE AND/OR MAINTAIN | METHOD OF MONITORING | APPLIED ON STEP | METHOD OF EVALUATION | EVALUE ON STEP | METHOD OF MAINTAINING | STEP TO MAINTAIN |
|---|---|---|---|---|---|---|
| NUMBER OF PEOPLE INVOLVED | SHEET / DIGITAL SURVEY (AMONG INITIATED LOCALS) | A.L. | COMPARE WITH NUMBER AS ACHIEVED OR DESIRED | A.L. | IT'S AN ENCADEMENT ACTIVITY | A.L. |
| STAKEHOLDERS INVOLVED | SURVEY FOR (POTENTIAL) INVOLVED STAKEHOLDERS | A.L. | ARE ALL NECESSARY STAKEHOLDERS INVOLVED? | A.L. | SAME PATH, SAME'S THEM | A.L. |
| WATER STORAGE M^3 | VOLUMES, SPECIFICATIONS AND INFILTRATION CAPACITY | A.L. | DO HUMANS STILL DECLINE AND ARE IT FIT OF THE MANY BENEFIT? | A.L. | NO / DO MUCH WATER LEAKS, PRESENT SELVING | A.L. |
| GREEN/BLUE SPACE M^2 | MEASURE, SEARCH METHODS | A.L. | DOES THE GREEN MATCH THE EXPECTATIONS? | A.L. | IN DESIGN CHOOSE FOR WORK OR LESS CREDITS/SAVE | A.L. |
| NATURE QUALITY | INVENTORIZE AND ANALYSE | A.L. | ARE THE OBJECTIVES ACCEPTS SO FAR? | A.L. | WHY ARE IT SO? NOT HERE | A.L. |
| COMMUNITY BONDING | SURVEY | A.L. | CHOICES IN RESOURCES | A.L. | WORK ON RESULTS DISCUSSION | A.L. |
| MULTIFUNCTIONALITY | INVENTORIZE THE VARIETY OF FUNCTIONS | A.L. | IS MORE ASSEMBLY, WHAT FUNCTIONS CAN BE ADDED? | A.L. | ADD MORE FUNCTIONS INSTEAD OF EXPANDING | A.L. |
| DIVERSITY IN PEOPLE | SURVEY ABOUT THIS (BACKGROUND) | A.L. | ARE THERE GROUPS OF LOCALS MISSING IN THE WORK ON THE HORTUS HUNGARIKUM? | A.L. | HOW TO INVITE THEM AND WHAT CAN WE DIFFERENTIATE MORE | A.L. |
| LANDSCAPE CHANGES | BEFORE AND AFTER PICTURES, MAPPING | 2, 4, 5 | CHANGES IN ASSEMBLY, BY A PIECE OF LANDSCAPE | 2, 4, 5 | PROCESS, SHOULD BE FREE, TO TO FUTURE ESSENCE | 2, 4, 5 |
| ENGAGEMENT ACTIVITIES AND OTHER SITE | INVENTORIZE AND SURVEY | 2, 3, 4, 5 | CHANGES SURVEY IN ASSEMBLY | 2, 3, 4, 5 | CHANGES ON HANDLE ACTIVITIES | 2, 3, 4, 5 |
| OBJECTIVES | PERFORMANCE TURBIL WORK, INVOLVING PARAMETERS | 2, 3, 4, 5 | ARE THE OBJECTIVES ACCEPTS SO FAR? | 2, 3, 4, 5 | PROCESS, DISCUSSION HOW TO TO HORTUS ESSENCE | 2, 3, 4, 5 |
| CULTURAL VALUE | SURVEY | 2, 3, 4, 5 | IS / IS NOT ACHIEVED? | 2, 3, 4, 5 | WHAT IS NEEDED TO MAKE IT HAPPEN? | 2, 4, 5 |
| WILL VALUE | SURVEY AND FEEDBACK | 4, 5 | ASSEMBLY DISCUSSION, WHAT CAN BE IMPROVED? | 4, 5 | PROCESS IDEATS DISCUSSION | 4, 5 |

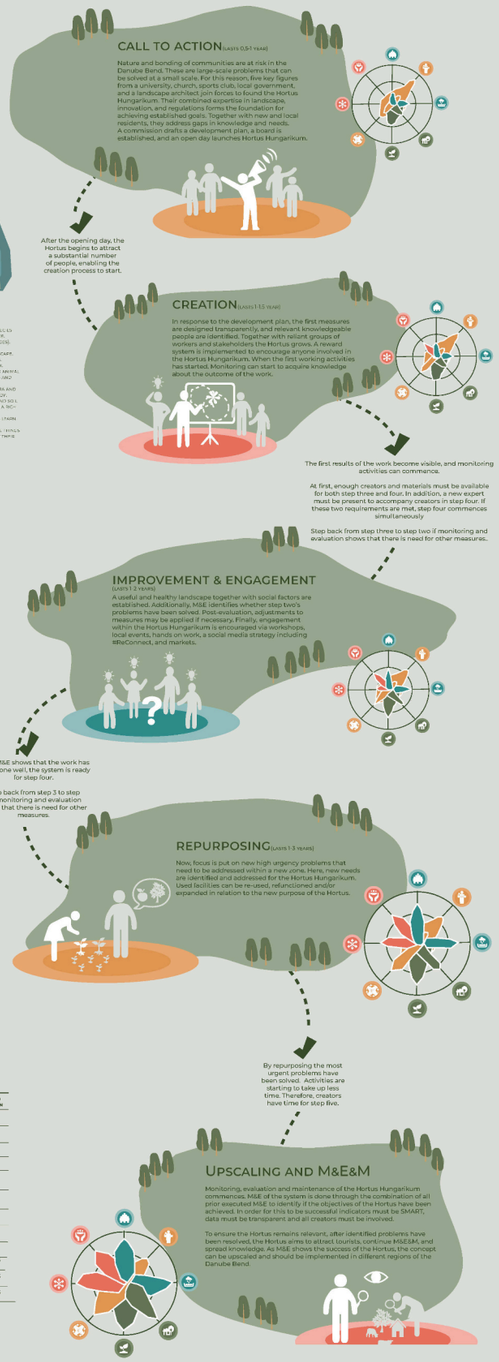
**LANDSCAPE CHANGES:** BEFORE AND AFTER PICTURES TO SEE THE DIFFERENCE. SURVEY TO GATHER PEOPLES FEELING AS IT WORKED OUT.

**ENGAGEMENT ACTIVITIES:** FEEDBACK OF VISITORS. HOW ACTIVITIES ARE ABOUT THE ACTIVITIES.

**OBJECTIVES:** PHASING IN HORTUS TYPE DEPENDING ON WHERE WE'RE AT IN THE PROCESS. COMPARE INVENTORY OF NATURE QUALITY, DESTINATION SPECIES, WHERE SCIENCE, COMMUNITY WORKS INC.

**WORKERS OUTPUT:** HOW DO WORKERS FEEL? ARE ACCOMPANYING A WHILE BEFORE THE WORK IS THE WORK TOOLS ACCEPTABLE TO THE SITE ETC.?

**WHOLE SYSTEM:** IS THERE ANY POSSIBILITY FOR IMPROVEMENT? DOES BOARD AND COMMISSION MEMBERS REACH OUT AT A TIME OR OTHER SIMPLE? EVALUATION TAKES ABOUT THE SYSTEM. EPIC? POSSIBLE CYCLE PARTNERSHIPS FOR HUNGARIAN AND BEEN TO MAKE UP LIST. THIS IS THE MOST EFFECTIVE METHODS FOR WORKERS, MONITORING OR MAINTAINING.



# Living Boundaries

**Marko Drozd, Oskár Madarász, Yifei Shen, Yi Sun**

Sapienza University in Rome, Italy

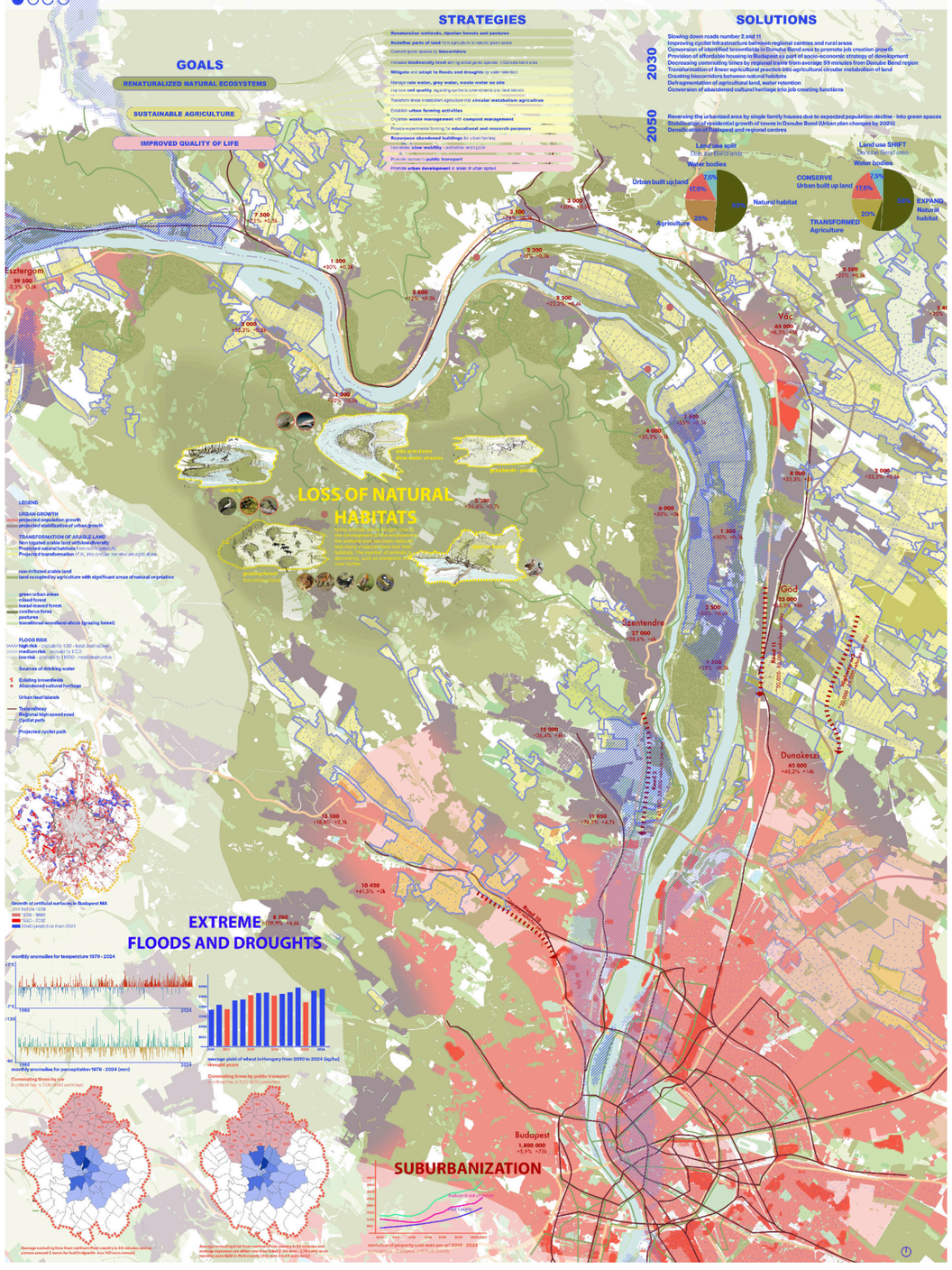
Third Round

One of the defining features of the Danube Bend region is its rich arable land, which is becoming increasingly valuable due to climate change. However, rapid suburbanization and unsustainable farming practices threaten its future, leading to soil degradation and loss of active farmland. Living Boundaries envisions a future where this land is managed sustainably producing food for local citizens while supporting diverse ecosystems. The agricultural landscape is transformed into a network of small-scale urban farms and regenerative agricultural spaces, seamlessly integrated with wetlands, riparian forests, and Danube River streams. This approach restores balance between human activity and ecological processes, creating a selfsustaining circular system. Urban farming enables people from all social backgrounds to grow, trade, or sell produce at local markets while also creating agricultural career opportunities. This model challenges large-scale monoculture, which harms biodiversity, depletes soil, and increases vulnerability to droughts. By integrating green and blue infrastructure, this vision ensures sustainable water management and preserves soil fertility. The new agricultural mosaic acts as a buffer against climate extremes, reducing the risks of floods and droughts. Communitydriven farming and ecological restoration reconnect people with nature, fostering knowledge-sharing, hands-on education, and stronger local food systems.

Through this holistic approach, the Danube Bend region can become a model for sustainable landscape transformation, one that prioritizes both human well-being and biodiversity conservation.

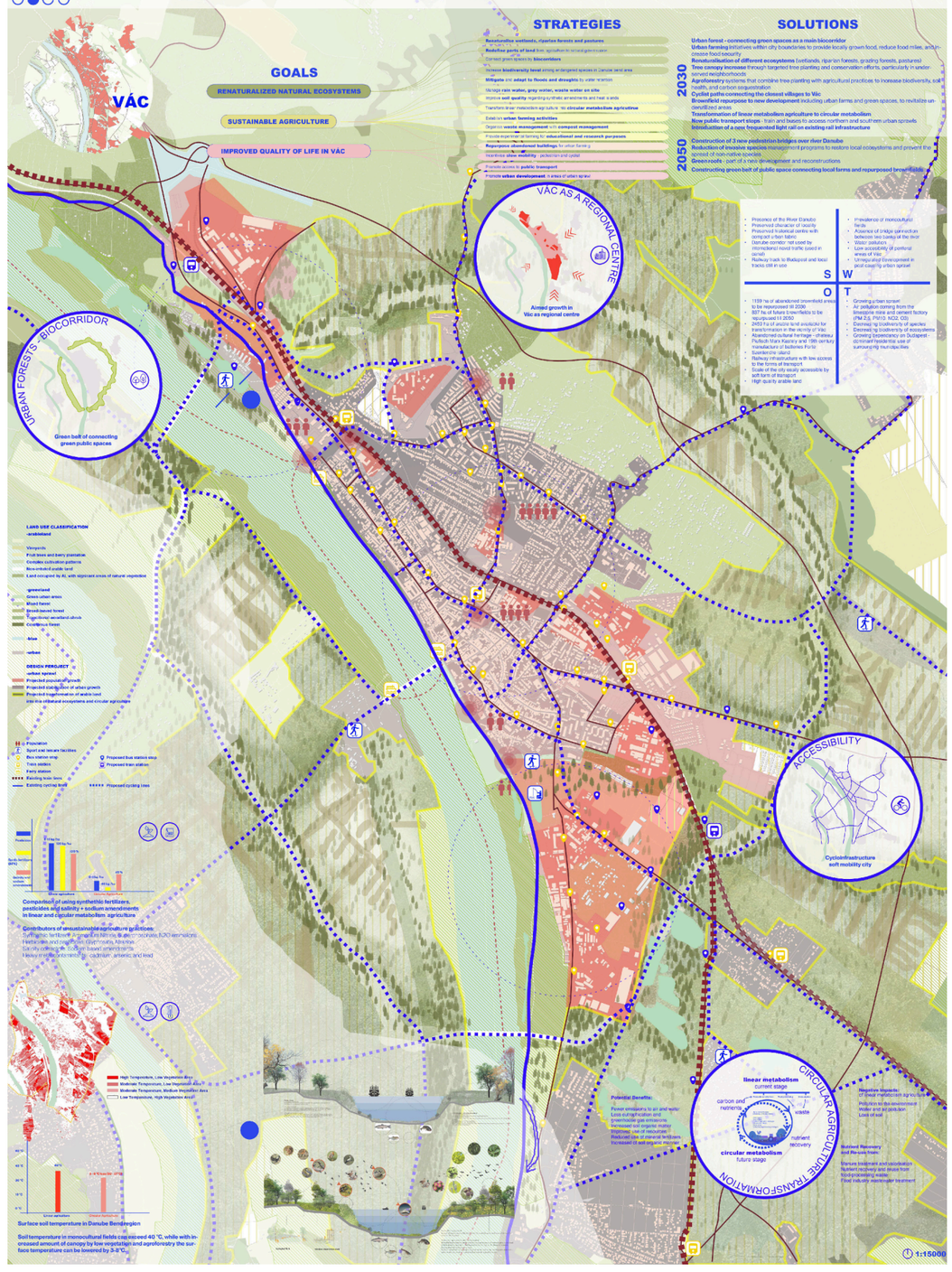
# DANUBE_104
## Living boundaries

The alternative vision for the Danube Bend landscape does not require a major transformation, as such changes could be questionable in terms of whether they enhance or devalue the region. Instead, the focus should be on preserving and conserving the existing values while restoring available land to its natural state. On one hand, this approach may seem modest, but at the same time, maintaining these values is challenging in a region experiencing rapid growth, with an average population increase of 15–20% in every town within the Danube Bend. Additionally, economic growth in the region should be directed towards enhancing both cultural and natural heritage, reinforcing the area's ecological and social values. This balance between conservation and development requires strategic planning, ensuring that infrastructure and tourism initiatives align with sustainability goals.




# DANUBE_104
## Living boundaries

By 2050, Vác aims to become a true regional center with a sustainable and climate-resilient identity. Prioritizing the protection of natural habitats, such as wetlands, riparian forests, and pastures, the city will transform into a mix of natural ecosystems and local farmlands with a circular metabolism system, promoting the sustainable use of arable land. Urban sprawl will be addressed by revitalizing the city center and transforming brownfields and abandoned cultural heritage sites into thriving hubs of activity. Through investments in accessible infrastructure, including bike lanes and efficient public transport, the city will become a well-connected, 15-minute cohesive urban center with vibrant public spaces and sustainable agriculture as a key driver of the economy. Community engagement and collaboration will be central to shaping the urban farming activities, ensuring that residents play an active role in creating a sustainable and resilient city for generations to come.



# DANUBE_104
## Living boundaries

The proposal focuses on revitalizing Vác's Alsóváros, southeastern industrial and brownfield areas, to create a sustainable and interconnected urban-ecological interface. Key interventions include transforming brownfields into circular agricultural and urban farming zones, restoring ecosystems through urban forestry, and renovating industrial heritage sites into cultural and economic hubs. Enhanced accessibility will be achieved through new cycling paths, public transport stops, and green belts connecting neighborhoods to the city center and ecological zones. By integrating urban expansion with ecological restoration, this project aims to bridge fragmented areas and establish a vibrant, sustainable, and inclusive urban fabric.

### GOALS
- RENATURALIZED NATURAL ECOSYSTEMS
- SUSTAINABLE AGRICULTURE
- IMPROVED QUALITY OF LIFE IN VÁC

### STRATEGIES
- Restorative wetlands, riparian forests and pastures
- Redefine parts of land from agriculture to resuming semi-nature
- Connect green spaces by biocorridors
- Increase biodiversity level among endangered species in Danube, local area
- Mitigate and adapt to floods and droughts by water retention
- Storage rain water, grey waters, waste water on site
- Improve soil quality regarding synthetic amendments and heat islands
- Transform linear metabolism in agriculture into circular metabolism agriculture
- Lead to urban farming activities
- Organize waste management with compost management
- Provide experimental farming for educational and research purposes
- Repurpose abandoned buildings for urban farming
- Incentivize slow mobility - pedestrian and cyclist
- Promote access to public transport
- Promote urban development in areas of urban sprawl

### SOLUTIONS
- **Urban Compost & Decentralized Composting Networks** – Establishing composting initiatives, supported by digital platforms, to connect households and businesses organic waste into nutrient-rich soil.
- **Agrovoltaics & Ground Canopy** – Combining solar energy production with agriculture to maximize land efficiency and generate renewable energy.
- **Phytoremediation** – Using plants to clean up polluted soil and improve environmental health in degraded urban and industrial areas.
- **Pasture Bio-Corridor Creation** – Establishing ecological corridors to support wildlife movement and connect fragmented habitats.
- **Wetland & Riparian Forest Restoration (Csonog Stream)** – Restoring natural water ways and wetland ecosystems to enhance biodiversity, improve water quality, and mitigate flood risks.
- **Regenerative Urban Farms** – Transforming fractional, linear farming practices into a circular system that enhances soil quality, biodiversity, and local food production.
- **Forte Factory Transformation into Community Urban Farming** – Converting an old industrial site into an agriculture- and educational space for urban farming initiatives.
- **Urban Forests & Green Belts** – Expanding tree coverage to improve biodiversity, air quality, and urban cooling, while creating recreational green spaces.
- **Water Collection from Green Roofs** – Capturing and reusing rainwater from rooftops for irrigation and urban greening projects.
- **Removal of Invasive Species** – Restoring local ecosystems by identifying non-native species to improve biodiversity and soil health.
- **Modular Rooftop Farms** – Implementing small-scale urban agriculture units on rooftops to increase food production within city spaces.

2030

2050

### VÁC, ALSÓVÁROS
SOUTHEASTERN PART OF VÁC

LEGEND
- Factories need to be renovated
- Old residential area
- New buildings (Residential & commercial areas)
- Mix of natural ecosystems and circular agriculture
- Rivers
- Sport and leisure facilities
- Ecological protection area
- Panoramic recreation area
- Animal breeding area
- Sheep
- Planting area
- Walking path
- Camping and recreation area
- Cycling path
- Riparian landscape
- Drying area
- Proposed bus station stop
- Train station
- Proposed train lines
- Proposed cycling lines

MEASURING IMPACT

water collection from roofs = 100 x0,708 m x 0,6 =
- average annual precipitation in Vác = 708 mm
- estimated roof water collection efficiency = 60%

425,4 liter/year

surface temperature of soil decreased
- by soil canopy = -2-10 °C
- by agrivoltaics = -5 - 15°C

2 – 15 °C

soil pollutant reduction
- heavy metals = 40 kg / ha
- pesticides = 2 - 10 kg / ha
- heavy metals = 50%
- nutrient runoff = 50 %

40 kg/ha

number of affected species supported
- by circular metabolism farming per hectare: tens

10-30 per ha

Urban farms
Organized community farming making producing your own food accessible

URBAN FARMING

LOCAL MARKET

GREEN PUBLIC SPACE

BUILDING REFURBISHMENT

GREEN INFRASTRUCTURE

LIVABILITY

BEFORE
Various zones all separated by large ecological zones

AFTER
Green belt that breaks the boundary between the urban zone and the ecological zone

BEFORE
Only a small residential area in the southeast and transportation is inconvenient

AFTER
A community with comprehensive infrastructure and a livable environment

Modular rooftop farms
Small-scale agriculture units to maximize food production within city spaces

Agroforestry zones
Complying trees and crops for creation of buffer zones

CONSTRUCED WETLANDS

CIRCULAR AGRICULTURE

Agrovoltaics and ground canopy
Reducing the surface temperature while producing green energy

Urban forest
Connecting all crucial green spaces in Vác serving as a main biocorridor

Phyto-remediation
Plants extracting polluted soils from heavy metals

Ring Community

urban street

Agroecology

1:1500

# DANUBE_104
## Living boundaries

**VALUE PROPOSITION - *Rent-a-Root* :** Provides an organised model of urban farming on different levels of participation, which is based on circular metabolism agriculture practices. This model creates availability for local inhabitants to either grow their own foods, create a small business by selling them or to buy from local farmers without having to buy a land and thus providing wider range of population to growing foods on their own. The organisation is based around a digital model of rent availability, maintanance support and professional advisory so that it is available also for beginners. The business model integrates ecosystem renaturalisation as a source of biodiversity, waste valorization and water management and other nature inspired solutions to gardening.

### SOCIAL BUSINESS MODEL CANVAS
Rent-a-Root (digital green agriculture startup in Vác, Hungary)

**Key resources**

Human: Urban planners, ecologists, local residents, urban developers, local agricultural professionists, municipality of Vác, gardeners

Tangible: Abandoned brownfields, public spaces, free non urbanized land (agricultural or brownfield) urban land, farming tools, seeds, and water resources

Intangible: Urban farming knowledge, community cooperation, technical expertise

**Key products and services**

- Organic food
-Urban farming plots
-Public green spaces
-Green urban development
-Organic produce available for purchase at local markets
-Agrotourism
-Compost (substrate)(biofuel)
-Educational workshops on urban farming and sustainability
-Opportunities for community participation in farm activities

**Mission statement**

Creating a sustainable and inclusive urban-ecological interface in Vác, by promoting urban farming practices that integrate circular agricultural systems and natural ecosystems.

**Key processes**

- Ecological restoration
- Circular metabolism agriculture: composting, permaculture, and crop rotation
- Urban farming: acquisition of underutilized urban land for farming
- Community engagement: training and recruitment of local residents in sustainable farming
- Agroforestry and urban forestry

**Key partners**

-Local farmers
-Local community groups
-Landowners willing to lease undersued land
-Municipality
-Ecological experts
-Urban planners
-Net Zero Cities partners
-NGOs

**Vision statement**

The Living boundries imagines a place where urban life mixes with diverse countryside as a scope of new way of living, working and benefiting from the nature just as servicing and protecting the value of the countryside (soil, air, water, flora and fauna)

**Channels**
- Workshops,
- Community centers,
- Online forums,
- Local municipality websites,
- Environmental campaigns,
- Community participation

**Social & Environmental Impacts**

SOCIAL
-Educational benefits through skill-building and environmental awareness
- Improved local food security
- Increased employment opportunities and economic empowerment
- Strengthened community engagement and social inclusion

ENVIRONMENT
-Enhanced biodiversity and green infrastructure in urban spaces
- reduced ecological footprint

**KPIs**

ECONOMY
- Volume of **fresh produce** sold annually (m3/an)
- Square meters of **underutilized urban land converted to farming** (m2)
- Amount of **compost produced** (kg/an)

SOCIAL & CULTURE
- Number of **residents trained in sustainable farming**
- **Community participation** rates in workshops and events

ENVIRONMENT
- Number of **ecological species** (amount)
- **Biodiversity** Level
- Amount of **rainwater collected** (liters/m2)

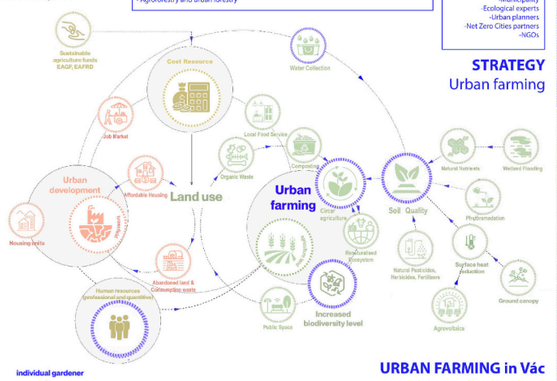
**Income driver**
- Sales of fresh produce at farmers'markets and through CSA programs
- Fees for educational workshops and farm visits
- Composting service subscriptions
- Grants and subsidies from governments or NGOs
- Eco tourism activities

**Cost driver**
- Urban site preparation,
- Transport infrastructure development,
- Operational costs for farming zones

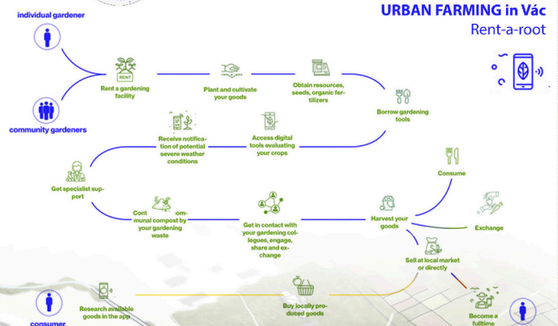
**Customers**
- Restaurants and small businesses focused on sustainable sourcing
- Families and individuals interested in farm-to-table food options
- Urban residents seeking fresh, affordable, and organic produce
- Schools and community groups engaging in educational activities

**Beneficieries**
- Unemployed or underemployed residents of Vac trained in urban farming
- the broader Vac communities
- marginalized groups
- local farmers
- broader ecosystem of southeastern Vác
- inhabitants of Vác and surrounding villages
- inhabitants of Metropolitan area of Budapest
- local soil and water
- municipality of Vác
- cyclists

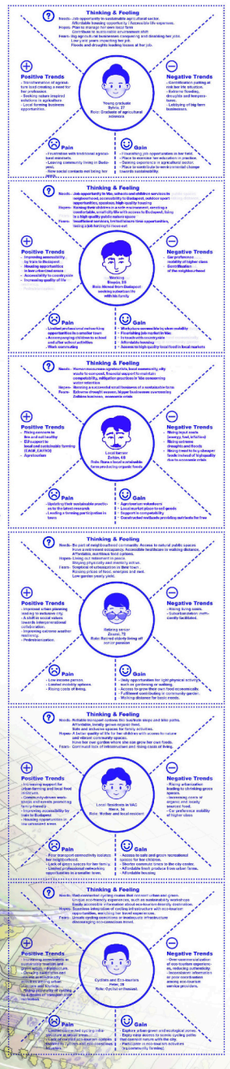
### STRATEGY
Urban farming

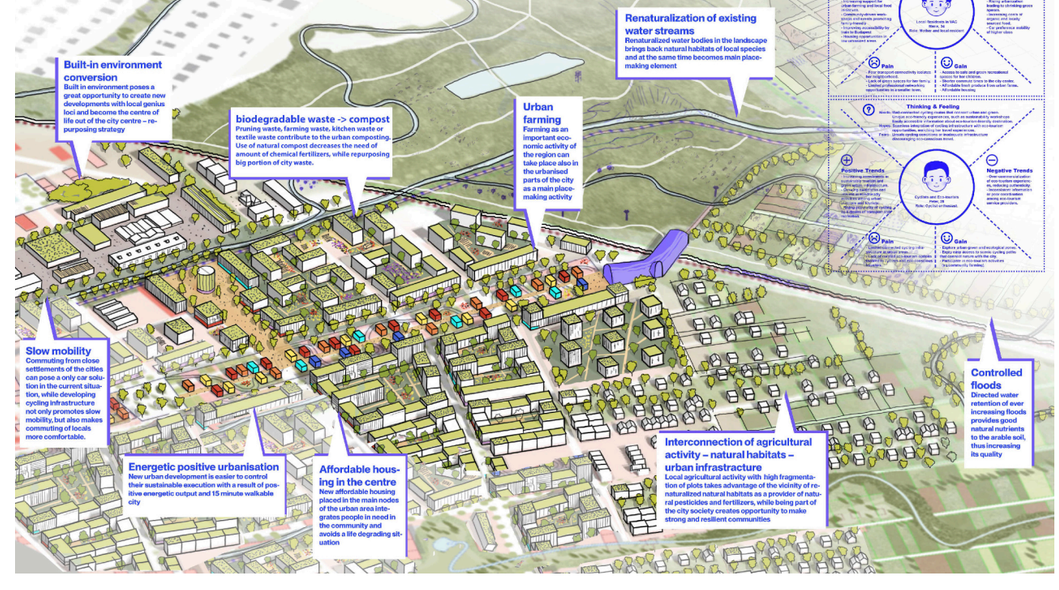



### URBAN FARMING in Vác
Rent-a-root




### USERS PERSONA CANVAS
Demographic samples



# Climate-positive Future

Third Round

**Mojtaba Nafari, Saman Hoodfar, Nino Kakhetelidze, Vyara Mihaylova, Alexandra Filipova**

Sapienza University in Rome, Italy

This project proposes a comprehensive climate-positive urban regeneration plan transforming it into a model for development along the Danube River corridor. Through ecological restoration, resilient transportation, and a circular economy approach, the project aims to establish a resilient and net-positive urban environment.

The ecological strategy focuses on restoring wetlands and riparian green spaces, improving biodiversity, and mitigating flood risks. Ecological corridors will reconnect fragmented habitats, while nature-based solutions—such as permeable surfaces, urban forests, and green roofs—will reduce the urban heat island effect and enhance climate resilience.

A key intervention is the introduction of a zero-emission mobility network. This includes expanded cycling infrastructure, electric shuttle services, and improved river-based transport, reducing dependency on private vehicles and enhancing connectivity to Budapest.

The project also integrates a Farm-to-Market Social Enterprise to support local agriculture and foster a circular economy. A regional food distribution network will connect local farmers directly with urban consumers, reducing food miles and promoting regenerative farming. An agro-innovation hub will serve as a center for climate-friendly farming, education, and entrepreneurship, with initiatives such as community-supported agriculture, farmers' markets, and cooperative food processing.

Structured in short, medium, and long-term phases, the project ensures a balance between environmental, social, and economic well-being. Vác will become a climatepositive urban model, demonstrating how cities can actively contribute to ecological restoration while fostering economic resilience.

# Climate-Positive Future

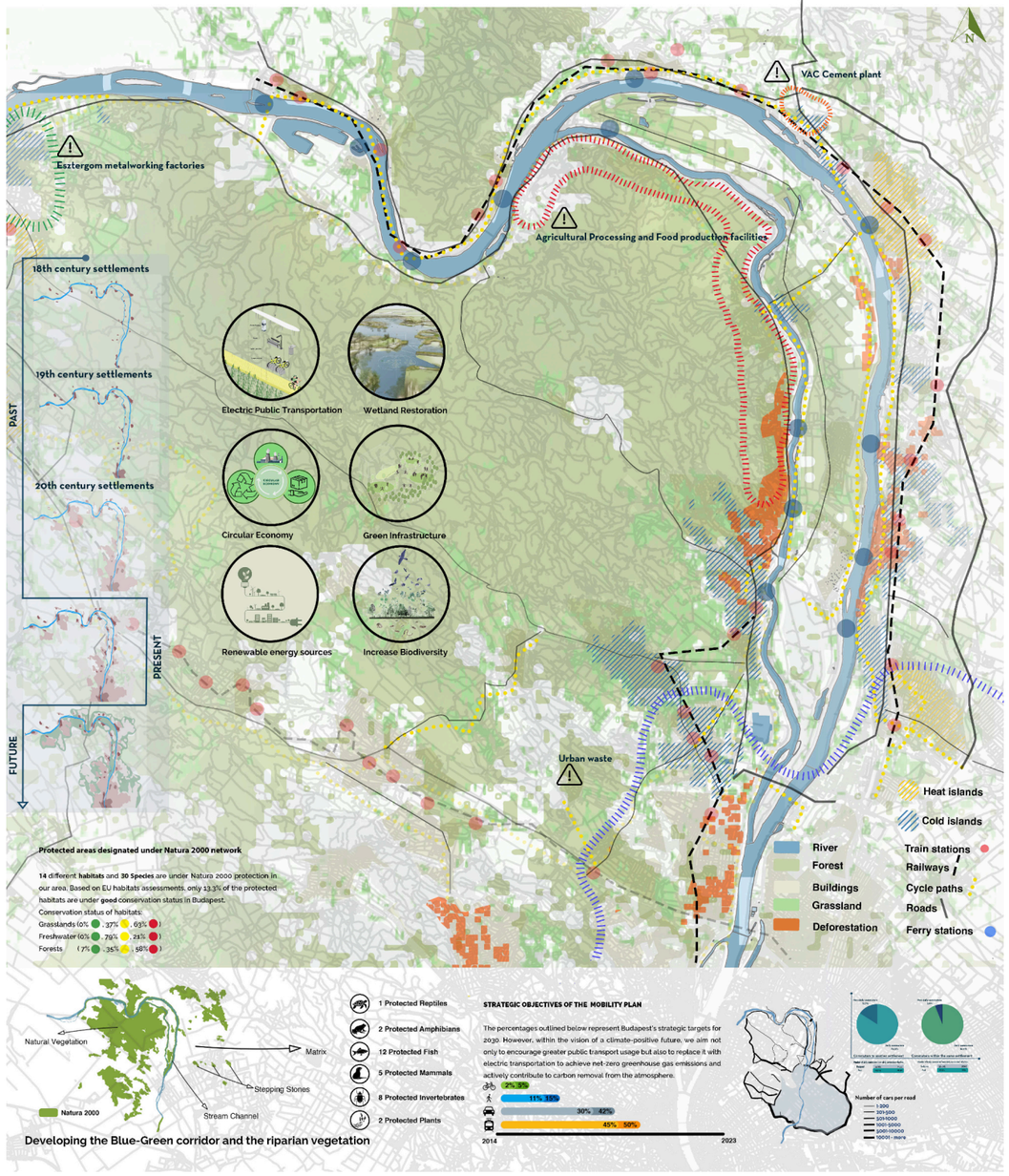
109

This project envisions a **Climate-Positive Future** along the Danube River corridor, transforming the spaces between Budapest and Esztergom into an interconnected, regenerative urban landscape. Through innovative, sustainable design strategies, the project aims to surpass net-zero emissions and establish a region that actively contributes to climate restoration while generating new economic opportunities. The project will not only reduce carbon emissions but also create jobs, stimulate green investment, and support a thriving local economy. Our goal is to establish an ecosystem where urban life and nature coexist, fostering a healthier and more balanced relationship between people and their environment.

At its core is regenerative urbanism, where development returns more resources than it consumes, supporting both ecological and economic resilience. With a focus on green jobs, sustainable tourism, and revitalizing underused spaces, the project ensures equitable access to green spaces, transportation, and local resources. Evolving over short, medium, and long-term phases, this vision establishes a Climate-Positive region that leads in sustainable urban development.

Northern Budapest and the Danube Bend
2024-2025






# Climate-Positive Future

109

Northern Budapest and the Danube Bend
2024-2025

We selected **Vác** among the three designated areas due to its strong potential to align with our vision of a climate-positive future. Vác combines residential, historical, industrial, agricultural, and Natura 2000-protected areas, offering a versatile foundation for our vision.
The area is well-connected through highways and railways but lacks efficient access to Budapest's city center. This creates an opportunity to prioritize soft mobility and zero-emission transportation systems, aligning with our zero emmision goals.
Our focus will be on enhancing **blue-green infrastructure**, including wetland restoration, riparian green space rehabilitation, and preventing ecological fragmentation. Residential areas will be upgraded to coexist with nature, aiming to **restore** past environmental damage. Additionally, sustainable practices in agricultural and industrial zones will drive economic growth while minimizing environmental impacts. Vác's ecological diversity, connectivity, and economic potential make it an ideal location for implementing strategies to achieve a climate-positive future.

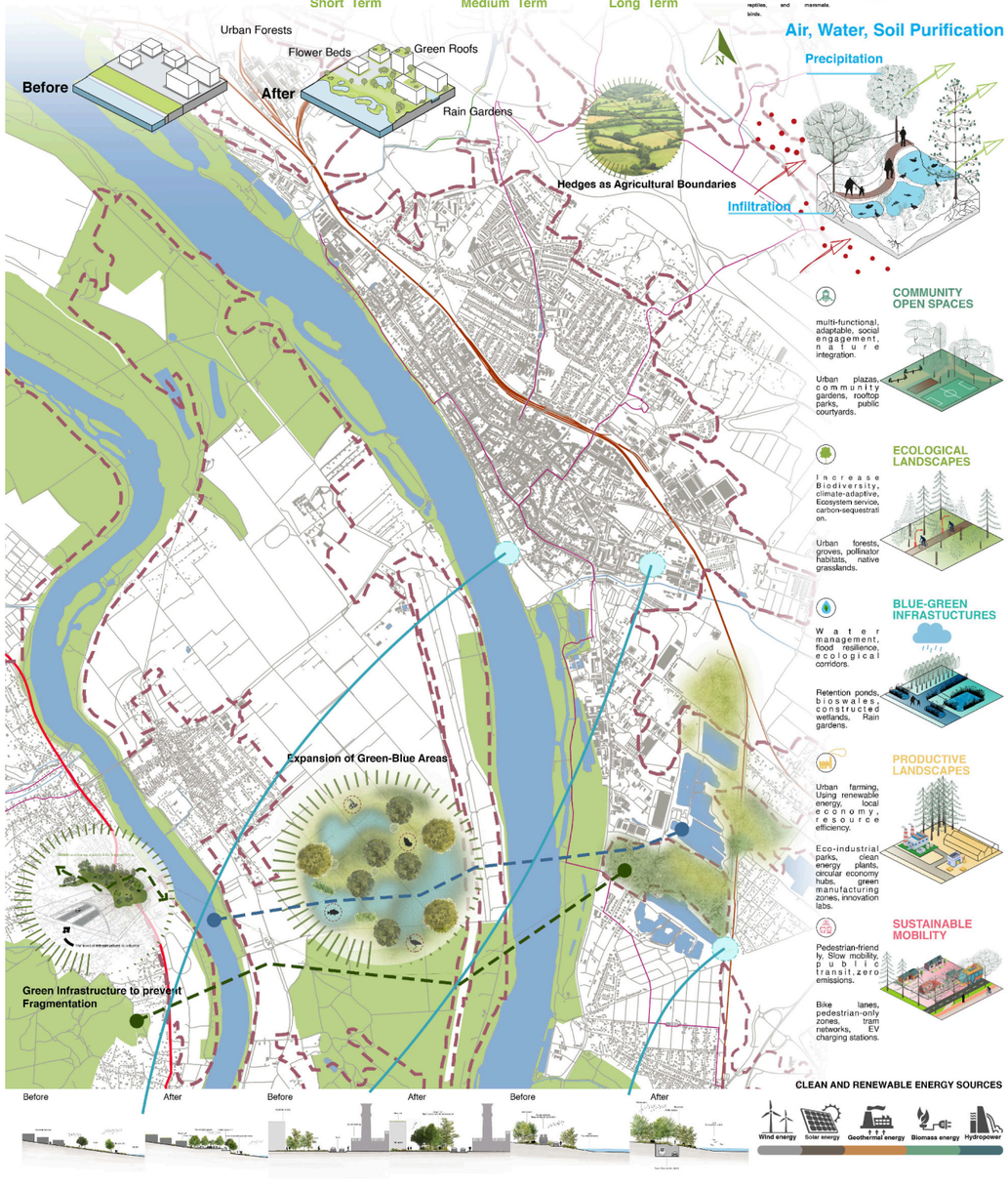
## Blue-Green infrastructure Growth




## Forest Succession



| Plant Stage | Shrub Stage | Young Forest | Mature Forest |
|---|---|---|---|
| 0-5 Years | 6-25 Years | 26-50 Years | 51-150 Years |
| Pioneer Plants, grass & wildflowers, attract insects, amphibians, reptiles, and birds. | Tree seedings & larger shurbs take over and provide habitat for rodents & mammals. | Deciduous trees grow into a shading canopy and dominant the forest. | Large Evergreen take over the forest. |



# Climate-Positive Future

109

Northern Budapest and the Danube Bend
2024-2025

We selected this area of the Vác region for several key reasons. First, considering our goal and vision of a climate-positive future, comprehensive development based on green-blue infrastructure is essential. This area provides a unique combination of natural and built environments, including the river, lakes, wetlands, forests, agricultural lands, grasslands, residential, commercial, mixed-use areas, and even historical sites. Therefore, it offers an ideal setting to implement and demonstrate our proposed solutions to achieve the project's primary objective.

**Protected Plants**

*Colchicum arenarium*

*Iris humilis* subsp. *arenaria*

**Green Canopy Street**




**Rainwater Management**



**1 Waterfront Garden**



Riverfront design, Water management, Recreational space, Water & Soil purification, Public access.

**4 Forest Garden**



Forested areas, Agricultural lands, Soft mobility pathways, Social interaction, Regional transportation.

**2 Station-front Garden**



Electric public transport, Renewable energy, Solar power, Green canopy, City integration, Zero greenhouse gases.

**5 Botanical Garden**



Plant conservation, Increase biodiversity, Native plants, Educational programs, Sustainable gardening, Eco-tourism.

**3 Historic Garden**



Cultural heritage, Preservation, Landscape design, Historical plants, Restoration, Heritage tourism, Outdoor museum.

**6 Kitchen Garden**



Use of native crops, Local and organic farming, Organic local product stores, Zero chemicals.




# Climate-Positive Future

109

Northern Budapest and the Danube Bend
2024-2025

## Farm-to-Market

To create a sustainable and resilient farm-to-market ecosystem that empowers local farmers, preserves biodiversity, and strengthens the social and economic fabric of the Vác region through innovation and cultural exchange.

**Vision & Mission**
Biodiversity, Local Economy, Sustainability

**Target Groups**
**Customers**
Tourists, Residents, Educational Institutions
**Beneficiaries**
Community, Artisans, Local Farmers

**Value Proposition**
**Customer Benefits**
Fresh Local Produce, Cultural Experiences, Educational Programs
**Farmer & Artisan Benefits**
Market Access, Training & Innovation, Community Support

**Channels**
Physical, Marketplace, Online (Website & Social Media), Community Outreach

**Key Products & Services**
Fresh Produce, Artisanal Goods, Workshops, Farm Tours, Cultural Events

**Key Processes**
Infrastructure & Market Development, Training & Certification, Tourism & Community Engagement

**Key Resources**
Infrastructure, Human Resources, Financial Resources

**Key Partners**
Farmers & Artisans, Educational, Institutions, NGOs, Government Agencies

**Financials**
**Costs**
Marketplace, Maintenance, Training Costs, Marketing
**Revenue Streams**
Tourism Income, Grants & Sponsorships, Educational Fees, Vendor Fees

**KPIs & Impact Measurement**
Farmer Participation, Product Sales, Workshop Attendance, Employment Growth, Tourist Visits

**Social Enterprise Portrait**
Economic Growth, Cultural Exchange, Environmental Sustainability, Tourist Visits

FARM
MARKET
EDUCATIONAL FACILITY

## + Peri-Urban Agriculture

- Reduces **transportation costs** and no carbon emissions
- Strengthens local farmers and creates sustainable **job opportunities**
- Use of **organic fertilizers** to prevent contamination of wetland
- **Rainwater harvesting**
- Enhances **food security**



## + Local Farmers' Market

-**Farm to Fork**
- Promoting organic and regenarative agriculture
- Eco tourism & **Agritourism**
- Job opportunities boosting local economy
- Host **workshops**, food festivals, cooking classes, and **educational events**





People produce and deliver for people

## + Educational center

-Wetland conservation **awarness**
- Hands-on **learning for all ages**
-Encourages **urban farming**
Activities as a bridge between generations
- **Research** opportunities

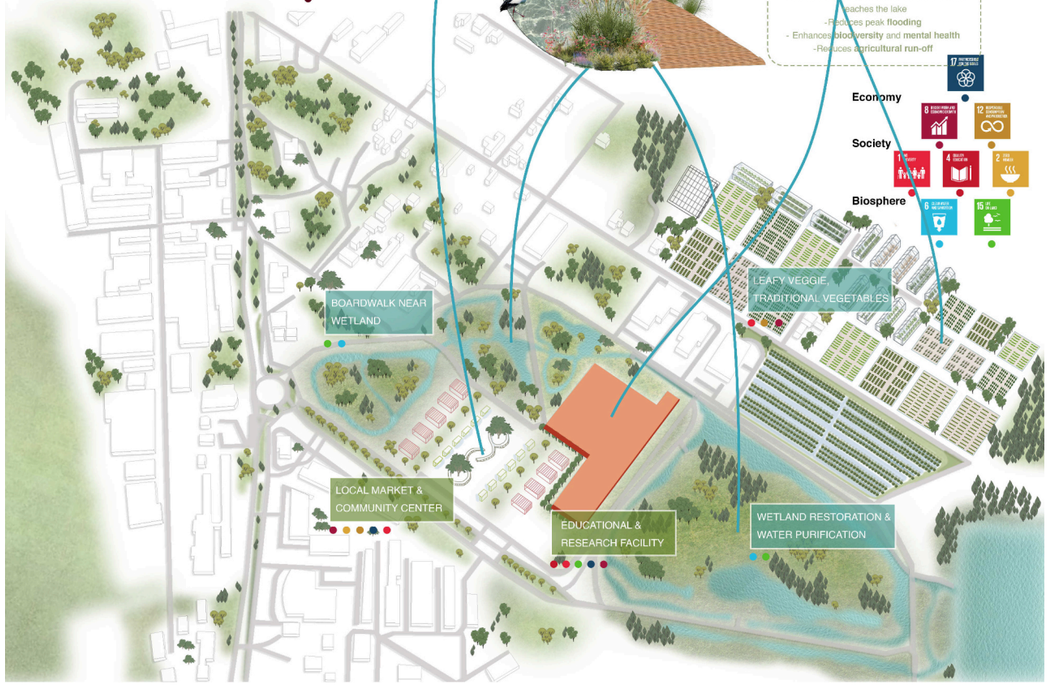




## + Wetland

-Regulates natural **hydrological cycles**
- Acts as a **biofiltration buffer** before the water reaches the lake
-Reduces peak **flooding**
- Enhances **biodiversity** and **mental health**
-Reduces **agricultural run-off**

Economy
Society
Biosphere



# Entwined

# Third Round

**Charlie Bailey, Todd Carroll, Shabnam Eshghi,
Lashika Sabesan, Veronika Surovtseva**

HSWT Weihenstephan-Triesdorf University of Applied Sciences
& Nürtingen-Geislingen University, Germany

The Danube Bend is a region where natural landscapes, cultural heritage, and urban settlements intertwine. As one of Europe's largest river systems, the Danube has shaped both the physical environment and human history. Today, the region faces challenges from urban sprawl, fragmented landscapes, and disconnection between settlements and the river. Our vision, Entwined, aims to prevent uncontrolled expansion, strengthen ecological corridors, and reconnect people with the Danube.

At the regional scale, we structure the landscape through a rhythm of green and urban spaces. The Duna-Ipoly National Park, Szentendre Island, and the eastern floodplains are linked into a continuous network of forests, agricultural lands, and flood zones. These green corridors serve as biodiversity habitats and play a role in flood mitigation while maintaining a clear boundary between urbanized areas and nature.

Instead of new high-speed infrastructure, we enhance mobility through alternative transport options. A slow-speed river transport system with a series of piers in the western branch of the Danube improves accessibility between key nodes while maintaining the ecological balance of the river.

At the urban scale, we examine settlement structures along the river, particularly in historical towns like Vác and Szentendre. Many of these towns have lost their connection to the waterfront due to industrial barriers and outdated zoning. Our proposal reclaims these spaces, repurposing underused industrial and military zones into mixed-use districts with residential and commercial functions. Strengthening existing green belts prevents further urban sprawl and ensures a better relationship between the built environment and natural systems.

Focusing on Szentendre's southern periphery, we translate this regional approach into a detailed urban vision. The goal is to Increase value of city periphery by diversification of edge qualities - encouraging heritage agriculture. Green typologies vary from open agricultural lands, urban foodscapes such as community gardens and orchards entwined into semi-urban fabric of residential edge, to multifunctional parks and deculverted waterscapes.

A strong green framework – green belt and corridors through the town - brings residents to the Danube through a sequence of agricultural lands, urban foodscapes, community gardens, and multifunctional parks. Underused commercial zones by the river are restructured into new residential areas oriented toward nature, while the central district near the station is densified to support economic activity and local services.

Szentendre's artistic legacy is reinforced through the transformation of its historic fabric into a contemporary cultural center. This distributes activity across the town with new public spaces and leisure areas along the river. Additionally, heritage agriculture is integrated into the urban edge, connecting residential areas with historical wineries, orchards, and gardens. Deculverting waterways restores lost hydrological connections, creating a more dynamic relationship between settlements and the Danube's floodplain.

By entwining ecological restoration, cultural identity, and urban renewal, our vision ensures a balanced and resilient future for the Danube Bend. Through careful land use strategies, integrated transport, and stakeholder engagement, Entwined strengthens regional connections while enhancing local quality of life.

## REGIONAL CONCEPT

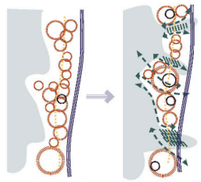
The landscape of the Danube Bend faces regional challenges as a result of uncontrolled suburban sprawl, fragmentation, and flooding. As the longest river in Europe, the Danube was once an important trade link between crucial economic centres. In modern times, however, the river is a controlled yet underutilised obstacle that results in frequent flooding, unsustainable car-dependency, and a lack of connection between the communities of people and wildlife which call the bend home.

### LOCATION




### ENTWINING NATURE WITH URBAN LIVING

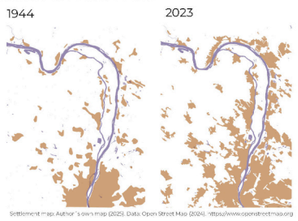
Urban sprawl breached with ecological corridors



the rhythm of green and urban

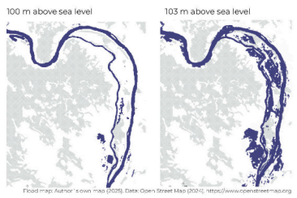
Unsustainable suburban sprawl is mitigated through the densification of single-family housing. Densifying neighborhoods prioritises valuable green space, meaning wildlife habitat and people's connection to nature is improved and entwined.

### LIMITING URBAN SPRAWL



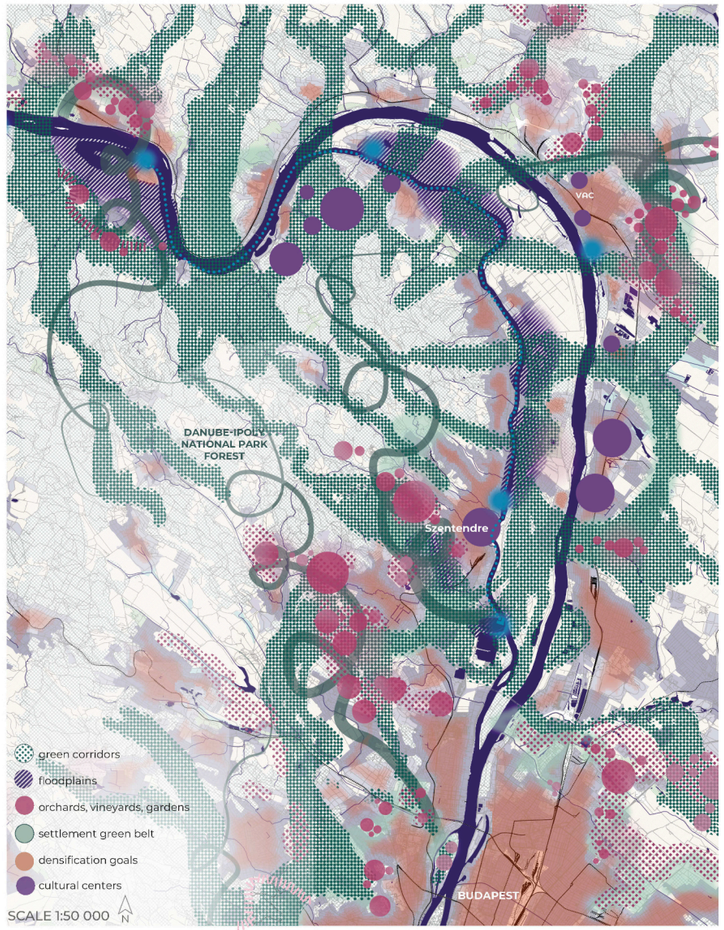

Settlement map: Author's own map (2025). Data: Open Street Map (2024). https://www.openstreetmap.org

### MITIGATING FLOOD RISK

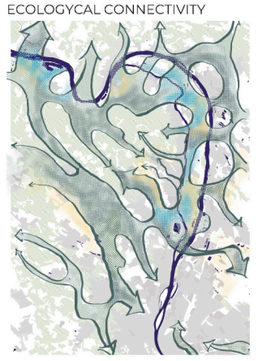



Flood map: Author's own map (2025). Data: Open Street Map (2024). https://www.openstreetmap.org

Climate-change-induced flood risk is reduced through the incoporation of impermeable urban surfaces, an increased carbon intake, and the daylighting of culverted watercourses into SUDS.




### ECOLOGYCAL CONNECTIVITY



Local ecology emanates from the forested hilltops and the river basin, connected by groves cascading toward alluvial flood plain. Augmenting these tracts and their trans-Danubian corridors supports biodiversity and impromptu interaction with nature for all beings.

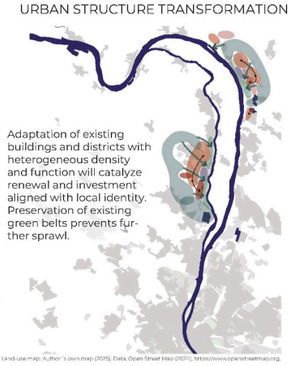



Area high-speed roads funnels traffic parallel to the Danube by skirting the periphery of existing nodes, encouraging sprawl. Enhanced localized transport links of varied modes and speeds will broaden network capacity and improve connections while nurturing a sense of place in regional centers.

### BROADEN TRANSPORT NETWORK



### URBAN STRUCTURE TRANSFORMATION



Adaptation of existing buildings and districts with heterogeneous density and function will catalyze renewal and investment aligned with local identity. Preservation of existing green belts prevents further sprawl.

Land-use map: Author's own map (2025). Data: Open Street Map (2024). https://www.openstreetmap.org

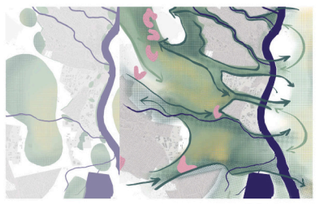


## SZENTENDRE CONCEPT

Waves of development and dispersion define Szentendre, the chosen focus area, through layers of imperial history in the Danube Bend. In recent times, Szentendre and its environs flourished intermittently as a site for fruit and wine production before a wave of visual artists declared a local colony in the early 20th century. Although Hungary faces population decline presently, the Budapest metropole is stable and spreading to cities like Szentendre due to relative proximity via rail transport boosted by compelling cultural and recreational elements originating in the complex local history defined by the Danube. Typical patterns of sprawl nonetheless dominate. This provokes critiques of the long-term impacts of such trends on the attractive quality of life promised in such peripheral cities. We resolve them here by entwining targeted redevelopment in Szentendre with comprehensive ecological corridors, transport realignment, and land use rehabilitation to secure an auspicious future in which distinctive vines of local history continue to sprout anew.




### PROVIDING GREEN CONNECTIVITY



Elaborate existing green spaces and identify new passages along deculvertized and intermittent streams in low-lying areas, reducing habitat fragments and enabling casual outdoor recreation and synthesis with local agriculture.

### TRAFFIC REDISTRIBUTION



Update current trunk road and feeder street system to integrated network with diversified street profiles.

Improving traffic flow while fostering navigability and comfort for users of multiple modes and supporting new intraregional automobile alternatives

### INDUSTRY RELOCATION + URBAN DENSIFICATION



Convert riverside military uses to densified multi-functional quarter while updating low-value and derelict industrial plots oriented by landscape infrastructure to enliven and disperse cultural venues in central zones.

### A STROLL THROUGH ENTWINED SZENTENDRE




Land-use map: Author's own map (2025). Data: Open Street Map (2024). https://www.openstreetmap.org

## SOUTHERN PERITHERY DESIGN

ZENTENDRE'S OUTHERN ERITHERY

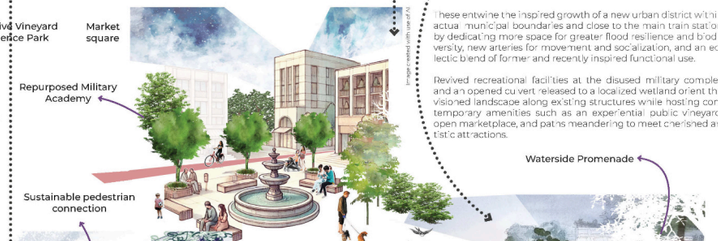


The transformation of the southern outskirts of Szentendre entwines the communities of the Danube Bend, creating a dynamic and unique green space that integrates densified housing areas with local wildlife areas; Szentendre's habitats and homes are now seamlessly connected to the Duna-Ipoly National Park to the west and Szentendre Eco Island to the east. The once-industrial and military buildings within this green corridor are sustainably adapted to host vibrant community events and markets, showcasing local art, fruit, an wine products transported via the city's new green transport links. Szentendre is a thrivin green city that truly serves its residents, fostering a sustainable and interconnected futur **Szentendre; a green city that serves its residents.**










These entwine the inspired growth of a new urban district with actual municipal boundaries and close to the main train stat by dedicating more space for greater flood resilience and b versity, new arteries for movement and socialization, and an ec lectic blend of former and recently inspired functional use.

Revived recreational facilities at the disused military comple and an opened culvert released to a localized wetland orient th visioned landscape along existing structures while hosting cor temporary amenities such as an experiential public vineyard open marketplace, and paths meandering to meet cherished ar tistic attractions.

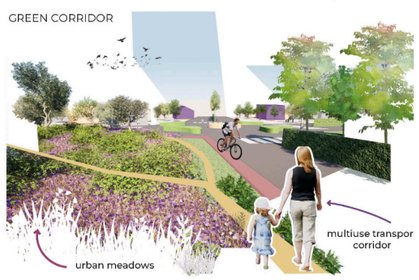
Section A




Section B




GREEN CORRIDOR

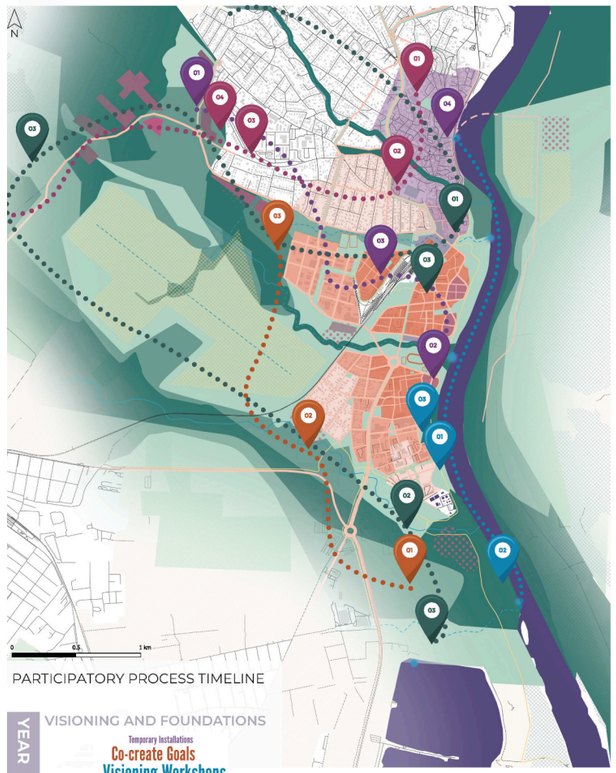



Land use map: Author's own map (2023). Data: Open Street Map (2024). https://www.openstreetmap.or



## INTERACTIVE DESIGN STRATEGY

ocial engagement sequences for the future Danube Bend and Szen- endre imbue a sincere and comprehensive inspiration as lasting guid- nce. These sequences imagine creative landscape design strategies merging where guiding themes of land use, ecology, and transport entwine such that Szentendre and its stakeholders may steward their own landscape future for years to come.




### PARTICIPATORY PROCESS TIMELINE

**YEAR 1-5**

VISIONING AND FOUNDATIONS

Temporary Installations
Co-create Goals
Visioning Workshops
Guided Walks
Participatory Mapping
Interactive Website

**YEAR 6-15**

EARLY IMPLEMENTATION AND ENGAGEMENT

Develop Cultural Center & Artvillage
Cultural Fair
Pop-Up Prototypes
Mobile App for updates
Orchards within a Green Belt

**YEAR 16-25**

SCALING AND SOLIDIFYING

Expert Watergate Facilities
Participatory
Scenario Planning
Committee Monitoring
Adding Eco-tourism Sitest Green Belt
Develop Cultural Center & Artvillage

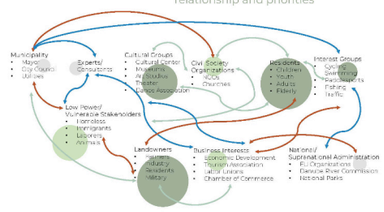
**YEAR 26-30**

INNOVATION AND REFLECTION

Build partnership
Exchange
Augmented Reality Experiences
River Festival
Updates Master Plan
Global Knowledge
Expand Community
Engagement Plateform

### STAKEHOLDERS MAPPING

relationship and priorities

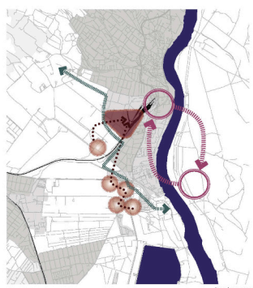



### SOCIOECONOMIC SYSTEM MODELS

INDUSTRIAL RELOCATION INCENTIVES




Industry benefits: improved infrastructure access, co-location with partner industry, co-design with community (positive relations), land acquisition at advantageous price.
Municipal benefits: co-design with industry (positive relations), industrial development and land use aligns with landscape vision, tax revenue from increased value of site.



SZENTENDRE ISLAND AGRO-TOURISM




Visitor benefits: relaxation, unique experience, local interaction, contribute to sense of place

Local benefits: enhanced farm output, locally generated revenue, landscape promotes interaction within community and beyond, provision of essential goods

Land use map: Author's own map (2023). Data: Open Street Map (2024). https://www.openstreetmap.or

CULTURAL CENTE
SZENTENDRE ARTIST COLON




AGRICULTURAL TOURISM
ETYEK-BUDA WINE REGIO




RELATIONSHIP WITH RIVER
DANUBE RIVER RECREATIO




SZENTENDRE FOODSCAPES
COMMUNITY GARDEN




GREEN BELT AND CORRIDORS
DUNA-IPOLY TOURISM



# Eco-Resilient Urban Node

Third Round

**Serra Aleyna Bilgin, Oguzhan Sahin, Safaa Nohair, Ayshan Hajiyeva**

Sapienza University in Rome, Italy

The Eco-Resilient Urban Node envisions a future where the Danube River transect becomes a global symbol of harmony between nature, cities, and communities.

By 2050, this iconic region will exemplify regenerative urban living, with restored ecosystems, carbon-neutral cities, and interconnected green corridors enhancing biodiversity, mitigating climate change, and fostering human wellbeing. This transformative vision will inspire cities worldwide to embrace integrated systems thinking, creating a legacy of resilience for generations to come.

At its core lies Vác, a city transforming into a model of resilience. The Gombáspatak district pioneers a circular economy hub, applying the 5 R's Framework (Reduce, Reuse, Recycle, Repair, Rethink) to transform waste into resources. The initiative includes the Textile & Natural Dyeing Center, recycles and dyes fabrics using plant-based colors; Electronic E-Waste & Plastic Recycling, extracts materials from electronics and converts plastics into new products; Furniture and Bicycle Repair Hub, restores and resells items, extending their lifespan; Tire Repurposing, transforms tires into urban furniture and playgrounds and the Wastewater Treatment Plant, cleans and reuses water from dyeing and industrial processes. The project divides the area into functional zones: Zone 1 for collection and sorting, Zone 2 for processing and recycling, Zone 3 for resale, learning, and community engagement.

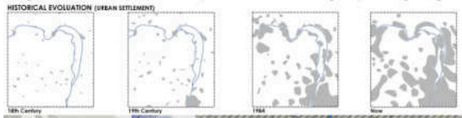
A highlight is the textile recycling and natural dyeing initiative, which transforms discarded textiles into vibrant fabrics using plant-based, non-toxic dyes. The Textile & Natural Dyeing Center promotes eco-friendly fashion and local craftsmanship. This scalable initiative can be adapted to other cities, offering a blueprint for integrating circular economy principles into urban systems worldwide.

# Danube_090

## ECO-RESILIENT URBAN NODE ●○○○

The Eco-Resilient Urban Node envisions a future where the Danube River transect—from Budapest's northern edge to Esztergom—becomes a global symbol of harmony between nature, cities, and communities. By 2050, this iconic region will exemplify regenerative urban living, where ecological restoration, circular economies, and resilient societies thrive in unison. The transect will feature restored ecosystems, carbon-neutral cities, and interconnected green corridors that enhance biodiversity, mitigate climate change, and foster human well-being. Advanced technologies and community-driven innovation will power a zero-waste future, where resources are valued, and waste is reimagined as a resource. This transformative vision will inspire cities worldwide to embrace integrated systems thinking, creating a sustainable legacy for generations to come.

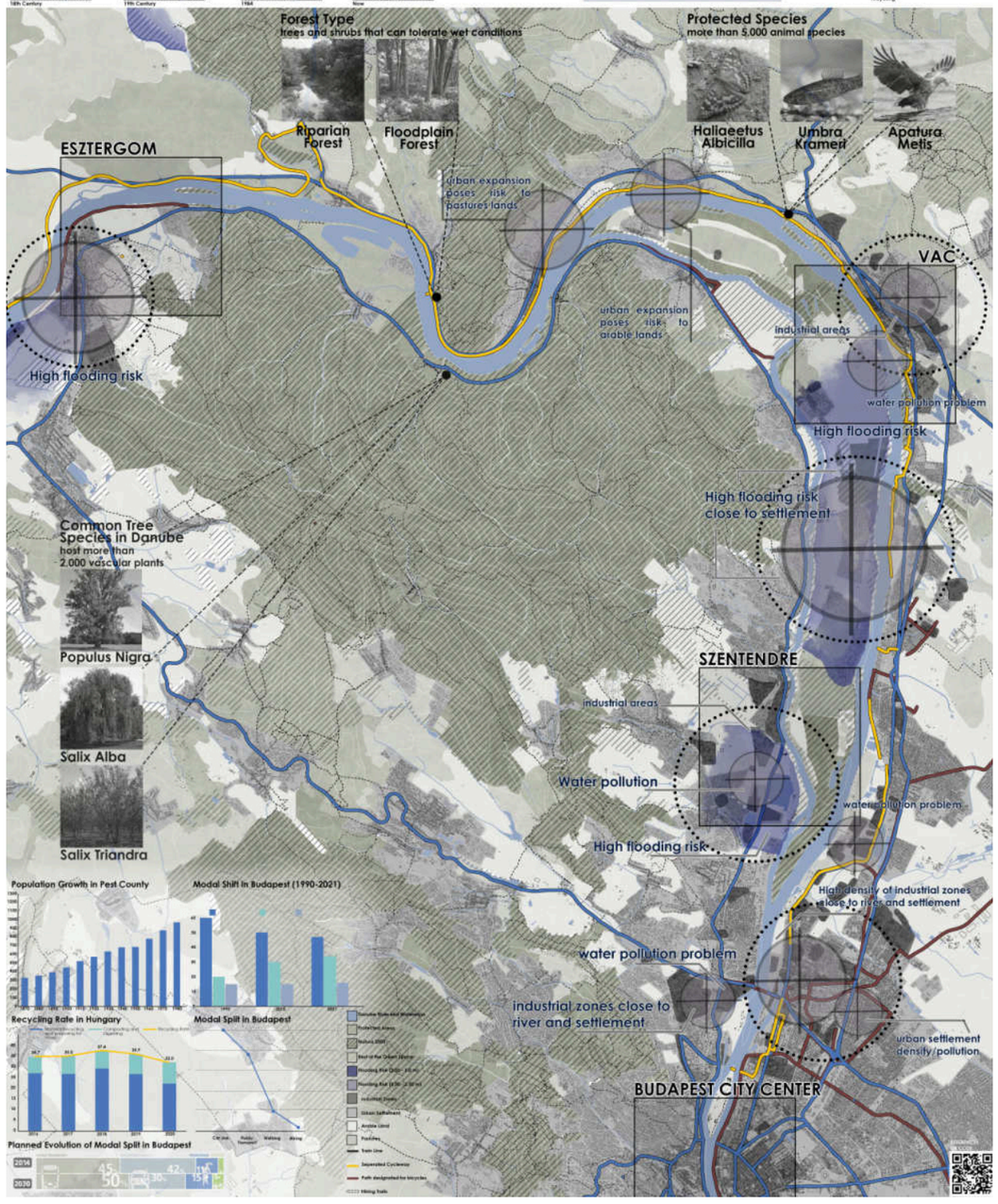
HISTORICAL EVOLUTION (URBAN SETTLEMENT)




The urban settlements along the Danube between Budapest and Esztergom transitioned from agricultural communities in the 18th century to industrial centers in the 19th and 20th centuries. Budapest grew rapidly, while the areas between budapest and Esztergom retained a more rural character.

**ECOLOGICAL INTEGRITY**
**+**
**SOCIAL CONNECTIVITY**
**+**
**ECONOMIC VITALITY**
**=**
**ECO RESILIENT URBAN NODE**













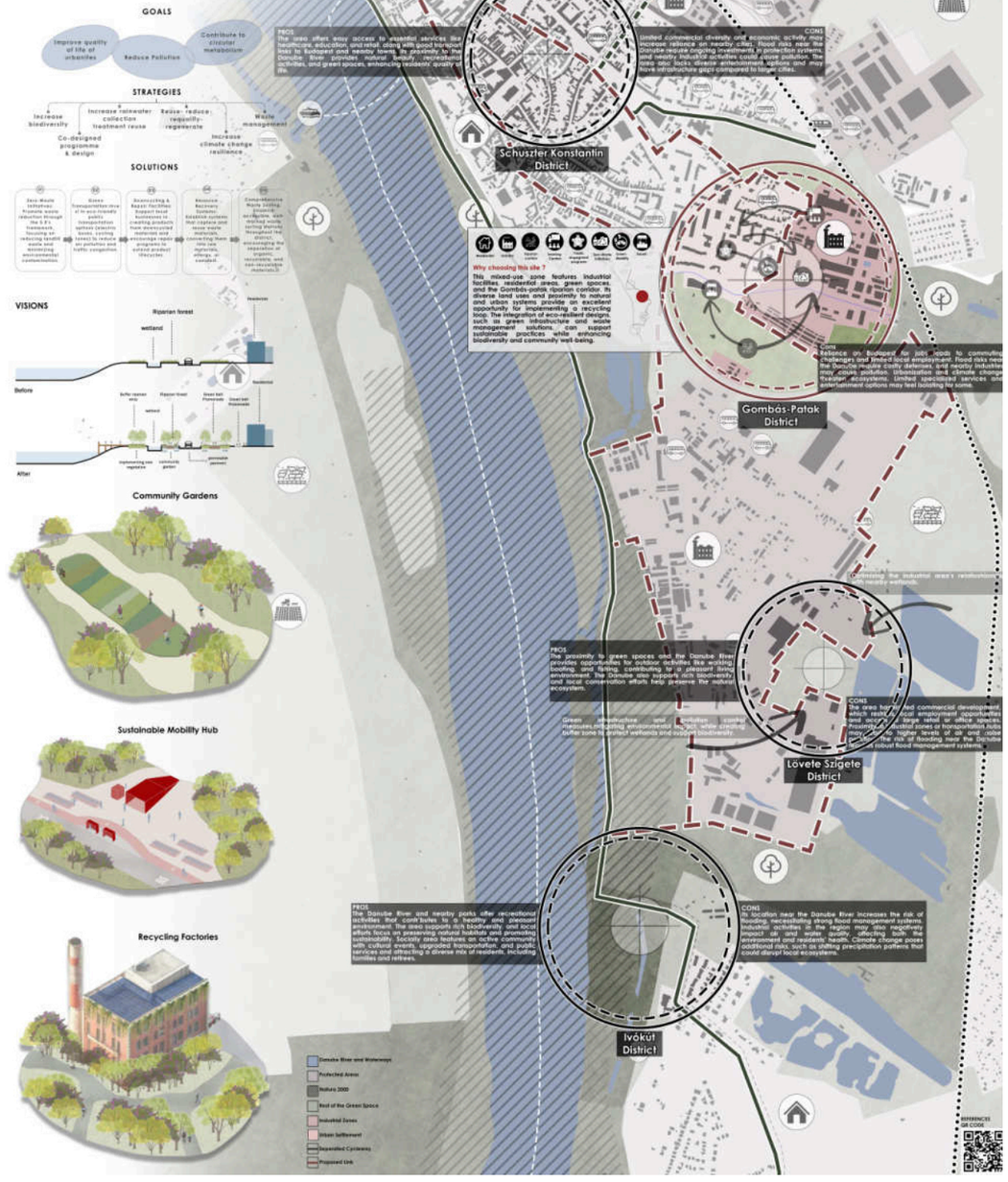


# Danube_090

## ECO-RESILIENT URBAN NODE ○●○○

**The project focuses on the development of a eco-resilient urban node in Vác, Hungary, within a mixed-use zone that integrates industrial facilities, residential neighborhoods green spaces, and a riparian zone near the Gombás-patak stream. This unique area offer a dynamic interplay between urban and natural systems, presenting opportunities to implement sustainable solutions that enhance resilience to environmental, social, and economic challenges.**

**The landscape development vision for Vác transforms the city into a model of sustainability and resilience, integrating circular economy principles and vibrant community spaces. Decentralized resource hubs will enable efficient waste management, material recovery, and repair services, ensuring resources stay within the local economy. Sustainable mobility networks will prioritize walking, cycling, and public transit, reducing emissions and improving accessibility. Public plazas, learning centers, and cultural landmarks will foster social cohesion and community engagement, creating spaces for education, innovation, and cultural expression. By embracing co-design and the principles of reuse, reduce, recycle, repair, and rethink, Vác will reduce pollution, optimize resource management, and improve quality of life. This vision positions Vác as a thriving urban ecosystem that balances economic, social, environmental, and ecological goals, serving as a model for sustainable urban development.**



Danube_090

# ECO-RESILIENT RECYCLING URBAN NODE

**PROJECT AIM**

The Gombás-patak district in Vác, Hungary, is envisioned as a model for a circular economy, integrating sustainability with socio-economic development. Using the 5 R's Framework—Reduce, Reuse, Recycle, Repair, and Rethink—this eco-resilient system transforms waste into valuable resources while engaging the community in sustainable practices. From plastics and metals to textiles and organic waste, our goal is to reduce landfill dependency, lower carbon emissions, and foster a culture of environmental responsibility.

We plan to establish accessible collection points across the city and partner with local businesses, schools, and communities to ensure effective waste sorting and recycling. Leveraging modern recycling technologies, we will process materials into valuable resources, such as reusable raw materials, energy from waste, compost, and upcycled products.

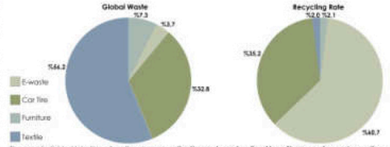
**REDUCE** ..... Minimizing the consumption of resources and materials, lowering waste generation at the source.

**REUSE** ..... Extending the lifespan of textiles and other products by finding new uses for them or repurposing components.

**RECYCLE** ..... Transforming discarded textiles and other materials into new products, creating a circular flow.

**REPAIR** ..... Fixing broken or damaged textiles, bicycles, and appliances to prevent unnecessary waste and extend their usability.

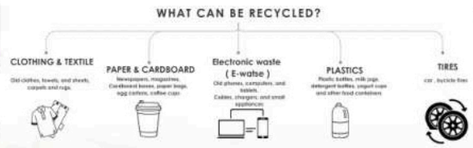
**RETHINK** ..... Encouraging people to rethink their purchasing, consumption, and disposal habits, promoting more sustainable choices.




The area is divided into three functional areas: ***collection and smart sorting (Area 1), processing and recycling (Area 2), and resale, learning, and community engagement (Area 3)***. Core operations include textile recycling with natural dyeing, e-waste repurposing, electronic repair, furniture and bicycle repair, tire reuse for urban design, and wastewater treatment.

This initiative not only minimizes environmental impact but also creates green jobs, enhances biodiversity, and inspires behavioral change, positioning Vác as a leader in sustainable urban innovation. The model is designed to be rescaled and applied in other cities, offering a replicable approach to circular economy practices and sustainable development.

**WHAT CAN BE RECYCLED?**










Danube_090

# ECO-RESILIENT RECYCLING URBAN NODE

**BUSINESS MODEL**

**Key Partners**
Local authorities and municipalities (waste management support)
Recycling companies (mechanical/chemical recycling specialists)

**Key Resources**
Collection infrastructure (bins, centers, logistics)
Sorting and recycling facilities

**Key Activities**
Collection of used clothing through drop-off points, donation drives, and smart bins
Sorting and grading textiles (reusable, recyclable, waste)
Reselling second-hand clothes and upcycled fashion products

**Channels**
Textile drop-off points across the district
Partnerships with local retail stores for reselling
Second-hand and upcycled product sales via online marketplaces

**Value Propositions**
Affordable second-hand clothing for the community
Promoting sustainable consumption and awareness
Convenient textile recycling for residents

**Customer Segments**
Local residents and households
Local businesses supporting sustainability
Schools and universities (awareness campaigns)

**Customer Relationship**
Educational workshops on textile recycling and reuse
Loyalty programs for frequent recyclers
Partnerships with schools and community groups

**Cost Structure**
Setting and managing facility operations
Infrastructure setup (bins, collection points, sorting facilities)

**Customer Relationship**
Educational workshops on textile recycling and reuse
Loyalty programs for frequent recyclers
Partnerships with schools and community groups

**Revenue Stream**
Sale of second-hand clothing and recycled textiles
Donations and sponsorships from businesses
Sale of upcycled products

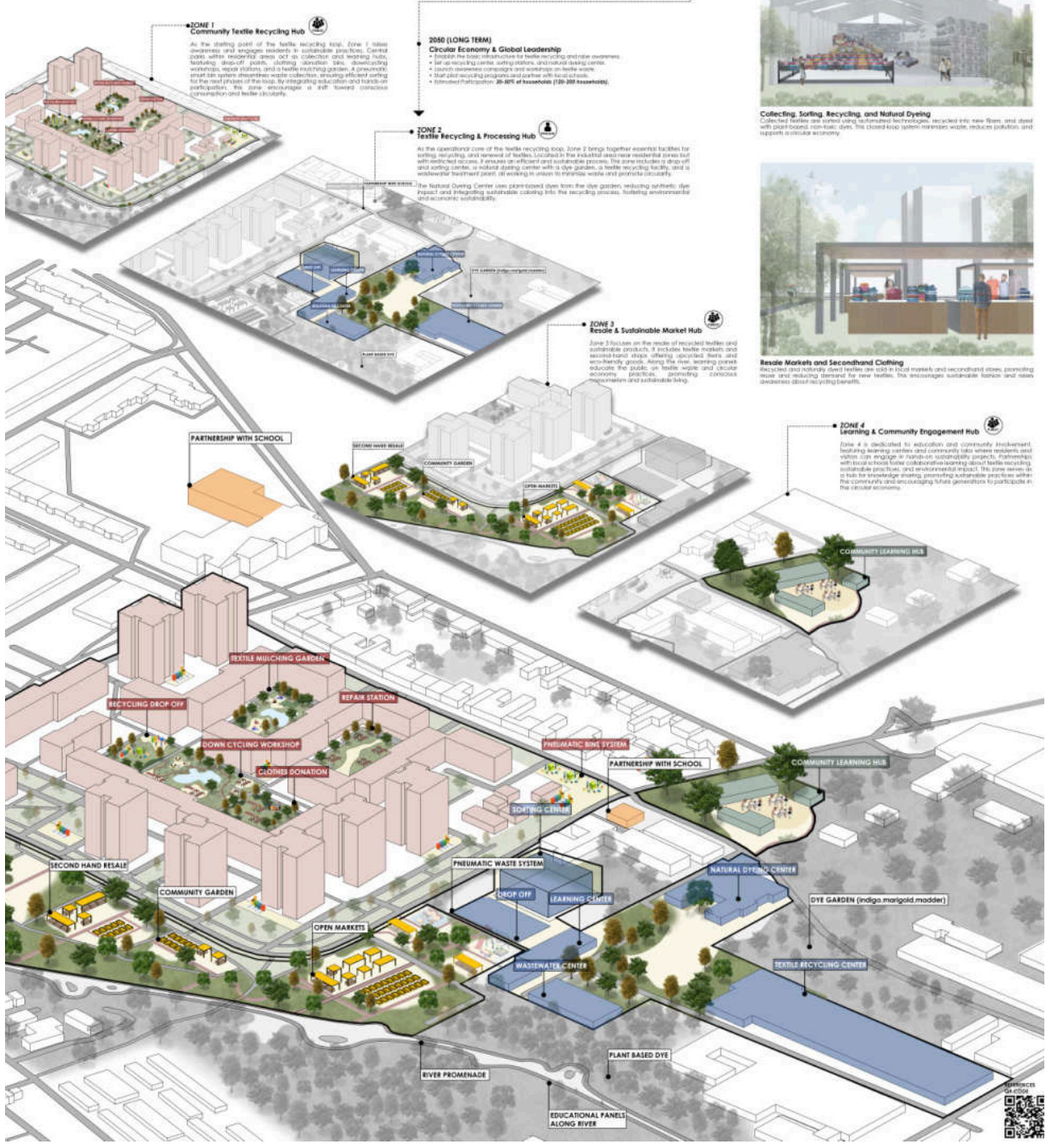
**TEXTILE INDUSTRY AND WASTE**

The textile industry contributes around 10% of global greenhouse emissions and 20% of global wastewater pollution. Additionally, it is responsible for 85 million tons of textile waste, which overwhelms landfills and incinerators, and 70% of this waste could be recycled. Cotton t-shirt can require 2,700 litres of water. This makes it one of the most polluting industries in the world. Our fundamental responsibility as humans is to eradicate textile pollution entirely—or, at the very least, reduce it to its absolute minimum.

**2025 (SHORT TERM)**
**Foundation and Awareness**
- Establish the basic infrastructure for textile recycling and raise awareness.
- Set up recycling center, sorting stations, and natural dyeing center.
- Launch awareness campaigns and workshops on textile waste.
- Start pilot recycling programs and partner with local schools.
- Estimated Participation: **30-50% of households (120-200 households).**

**2030 (MEDIUM TERM)**
**Expansion and Integration**
- Expand facilities and integrate recycling into daily life.
- Expand recycling infrastructure and dyeing centers.
- Partner with businesses for recycled textiles and introduce community incentives.
- Develop community labs and improve wastewater treatment for dyeing.
- Estimated Participation: **50-70% of households (200-280 households).**

**2050 (LONG TERM)**
**Circular Economy & Global Leadership**
- Establish the basic infrastructure for textile recycling and raise awareness.
- Set up recycling center, sorting stations, and natural dyeing centers.
- Launch awareness campaigns and workshops on textile waste.
- Start pilot recycling programs and partner with local schools.
- Estimated Participation: **80-90% of households (120-360 households).**






**Pneumatic Waste Collecting System**
An innovative waste collection system using air pressure and underground tubes to transport textile waste. Equipped with smart sensors, it reduces traffic, emissions, and ensures timely collection, targeting the Gombás-patak corridor.



**Collecting, Sorting, Recycling, and Natural Dyeing**
Collected textiles are sorted using automated technologies, recycled into new fibers, and dyed with plant-based, non-toxic dyes. This closed-loop system minimizes waste, reduces pollution, and supports a circular economy.



**Resale Markets and Secondhand Clothing**
Recycled and naturally dyed textiles are sold in local markets and secondhand stores, promoting reuse and reducing demand for new textiles. This encourages sustainable fashion and raises awareness about recycling benefits.

# Building Tomorrow with Yesterday

# Third Round

**Nóra Szélyes, Boglárka Molnár, Balász Csép, Nikoletta Kribus, Emma Bodor**

Sapientia Hungarian University of Transylvania, Romania

Our goal was to create harmony between nature, the built environment, and the community, recreating the marshy landscape of the past and setting an example for other cities. We envision transforming Vác Liget into a sustainable, biodiverse, community-focused area that blends heritage with innovative design.

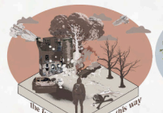
Our main concept focused on connecting sites, freeing up the watercourse, managing water, enhancing urban biodiversity, and fostering a closer connection to nature. We chose the Liget, in Vác, and found that the relationship between the environment and people was one-sided. While flooding is a concern at certain times, our goal was to not only address drainage but also to store water for the dry months when it's needed most.

The most important part of our plan is to create a pond system in the grove where there was once a marsh, and an amphitheatre waterfront with jetties and floating islands to slow the water flow but still give it a free path.

The pond system will be filled in during floods and trees will prevent evaporation. In this way, we will help the former marshland to re-form. The soil we dig up for the pond creates an embankment,next to the residential area. We would allow the water to flow freely, with a stepped design and a safe increase in the floodplain. Approximate size of one lake: 25mx5mx3m. In this way the water capacity of 20 ponds is 7500 $m^3$. 20 catchment lakes, would reduce water scarcity by 7.5% per year.

# 054 analysis of the Danube bend

## BUILDING TOMORROW, WITH YESTERDAY




### Hope for the lost city

Once upon a time , there was a poor young man called Pepper Pot Peter .

Peter grew up in a beautiful realm , where nature and people lived in harmony . The land was filled with green trees , trickling streams and happy , cooperative communities . It was a magical place , as the great river was doing its biggest dance right here .

But as time went by , something changed and trust between people disappeared .

### utopistic visions




Our integrated landscape vision:
- Erosion control, biodiversity conservation, usability for people, long term water storage and not drainage.
- Decarbonised world: creating cyclic paths, footpaths, encouraging walking, making hiking trails safer, creating bike parking/rental facilities, promoting electric buses/bikes/scooters, creating charging stations.
- Eco bridges – community initiatives, green infrastructure, recycling, organizing events, community gardens, tank cleaning, workshops.
- We utilize existing opportunities with 100% efficience and minimal artificial interventions to establish a connection with the community, giving back forgotten brownfield areas so that this community can reclaim and reuse them.
- We reimagined previously unused areas, integrating them into our plan to avoid occupying new areas, instead returning existing spaces to the community.
- Road construction and upgrading - new roads/improvement of existing roads.

Improving transport - increasing public transport, increasing parking facilities.
Cycle paths, footpaths.
We placed great emphasis on restoring natural ecology, as the primary goal is to rehabilitate nature and its self- healing processes. Additionally, we focused on showing crown the river's current by introducing land extensions into the riverbed, promoting sediment deposition and the formation of islands. This will not only be beneficial for wildlife but also on the local population, whom we isolate with occupational gardens and opportunities to create their own gardens.
Use of energy-efficient technologies and materials -reduction of energy consumption.
Water and energy saving - rainwater harvesting systems, environmentally sustainable tourism, waste reduction and recycling, restoration of green spaces and natural habitats + planting.
Democratic planning - involve people in planning, get their views on benefits, suggestions/proposals.
Sparing the land.





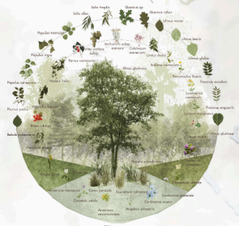


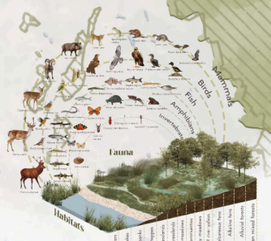
Strengths:
* natural beauty and turism
* cultural and historical heritage
* recreational opportunities
* transportation accessibility

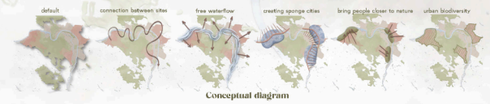
Weaknesses:
* infrastructure deficiencies
* environmental challenges
* abandoned industrial areas

Opportunities:
* development of sustainable tourism
* ecoturism and active turism
* creative industries and cultural events

Threats:
* economic instability
* environmental degradation and climate change
* mass tourism




Conceptual diagram




Legend
- Esztergom, Vác, Szentendre
- water
- natura2000 sites
- protected sites
- settlements in the Danube bend
- brownfield sites

# 054 analysis of the Vác

## BUILDING TOMORROW, WITH YESTERDAY




### Hope for the lost city

The Peters town was plagued by alternating droughts and floods , and everyone tried to survive on their own . Jack saw the sorrow of the people . They wept for the lost beauty of the past and lamented that there was no hope .

One day , Jack decided to set out on a journey to find a solution and bring life back to the city . On his way , he visited a wise old woman , the keeper of the Grove , and a young girl who gave him some useful advice .







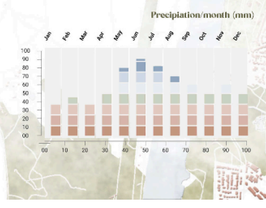
Our goal:
develop in harmony between nature, the built environment and the community, recreating the character of the marshy landscape of the past, setting an example for other cities.

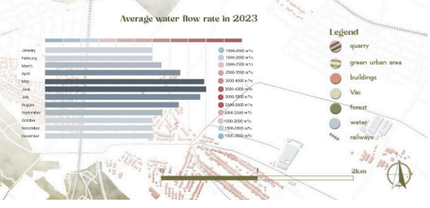
Our strategy:
restoring ecological balance, establish a human-water-nexus, rehabilitation of natural temporary water retention areas, establishment of a green protection zone against flooding.













Conceptual diagram

Legend
- quarry
- green urban area
- buildings
- Vác
- forest
- water
- railways

# 054 the plan and the design
# BUILDING TOMORROW, WITH YESTERDAY

Hope for the lost city

Peter returned to the city with a wealth of knowledge and hope. He gathered the people of the city and shared what he had learned on the road. They worked together, planting trees, digging ponds and building communities. Through education, they learned new technologies and how to live sustainably.



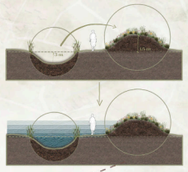
detail drawing of the pier



detail drawing of the floating garden

We will create pond systems to capture water from flooding. In this way, we will help the former marshland to re-form, and the water that is collected will be available for use in the dry months, and the floodplain educational path can be restored.
The soil we dig up for the ponds creates an embankment,next to the residential area.
We would allow the water to flow freely, with a stepped design and a safe increase in the floodplain.
Trees that can no longer be saved can be used to build furniture.





We will create piers and floating gardens that slow the water flow, so that the jetties can be safely used as an open beach at average water levels.
Floating gardens can help to protect aquatic habitats by promoting the growth of aquatic plants that produce oxygen and provide food for aquatic animals, creating richer biodiversity.
Help to purify water, as plants absorb nutrients in the water, such as nitrates and phosphates, which can cause algae growth. In this way, gardens not only produce food but also contribute to environmental goals.

Thuja spp. Carex spp. Salvinia natans Trapa natans
Stuller pulustris Hottonia palustris Mentha aquatica Equisetum spp.

plant use in floating gardens



Primula veris Eryngium planum Papaver rhoeas Veronica spicata Hypericum perforatum
Salvia partensis Leucanthemum vulgaris Thymus serpyllum Ajuga reptans Achillea millefolium

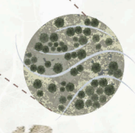
plant use on the embankment



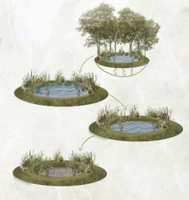




an enclosed area for dogs



Ponds are shaped to fit between the trees, protecting the trees. Trees would exhibit evaporation, making it sustainable for a long time.
The grove will have several functions: recreational area, flood protection area, water storage area.
Approximate size of one lake: 25mx3mx3m. In this way the water capacity of 20 ponds is 7500 m³. This soil would create an embankment of 1110m x 1,5m x 4m.





# 054 the future of our plan
# BUILDING TOMORROW, WITH YESTERDAY



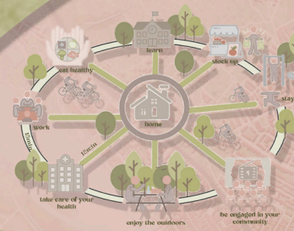
Hope for the lost city

Years later, Peter returned to the city again and walked through the town. The trees were green, the streams flowed merrily, and people smiled as they worked together. The town was thriving, and Jack knew that the future could be bright again if people worked together to take care of it.



As he walked around the city, he came to the Hill of Education, where a wise old woman taught him the power of knowledge.
"The future can only prosper if people learn to take care of each other and their environment," she said. Jack smiled and walked on.

Education




Next stop was the Community Garden, where people worked together to grow vegetables and plant trees. Working together filled the space with laughter and friendship. Here, Jack understood that only by working together can they make a difference.






Community

Physical and mental well-being

Plants are for everyone

He then arrived at the Living Environment Island, where birds and bees were happily flitting among the freshly planted flowers. Here, the keeper of the grove explained that preserving nature is the key to people's future.

biodiversity could increase by up to 30% in 25 years



20 catchment lakes, would reduce water scarcity by 75% per year, so that it would be largely eliminated in 13-15 years




Water can flow more freely.
Recreation and relaxation: a well-developed beach and waterfront infrastructure provide opportunities for recreation, swimming, sunbathing and sports.
Safety.
Tourism and economic development: If the location is attractive, it can increase the number of tourists, which can also benefit the local economy.
Community space: such a beach can be a meeting point for locals and visitors, strengthening community ties.

Environment

Mitigate climate change

Finally, Peter arrived at the last stop, the Water Management Corridor, where the young girl showed how rainwater can be collected and the land made fertile again.
"Water is the source of life. If we take care of it, life will return," she said.

Peter saw that people understood the importance of working together to save their city, and walked away happy and proud to help more cities.
And everybody lived happily ever after.




Water management

"Building tomorrow, with yesterday" Our vision: to transform the Vaci Liget into a sustainable, biodiversity-rich, community and recreational area that reflects both the heritage of the past and the innovative urban design solutions of the future.

For the nature... For the people... For the city...



# International Student Competition Exhibition

From placelessness to a radical HERE. Exploring Budapest’s northern periphery and the Danube Bend.

This preview shows the wining teams and the third round finalists of the 2025 student competition.
We received 51 submissions from 12 different countries in total.
All projects have been intensively evaluated by an international jury of eight experts.
We will soon present all submissions online.

See you at the Landscape Forum in Budapest and Vac from June 18 - 21. 2025
https://forum.ln-institute.org
https://forum.ln-institute.org/student-competition-2024-2025

LE:NOTRE *Institute*
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