

Making Urban Nature Bloom

**FOUR YEARS OF PARTNERING
FOR NATURE-BASED SOLUTIONS
ACROSS EUROPE**



Horizon 2020
European Union Funding
for Research & Innovation



NATURVATION
cities - nature - innovation



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Intza Balenciaga

Officer, Governance and Social Innovation, ICLEI Europe



Matthew Bach

Coordinator, Governance and Social Innovation, ICLEI Europe

FOREWORD

Four years, six cities, nearly a hundred meetings involving hundreds of stakeholders. This could be one way of framing our co-creative process on nature-based solutions took place as part of the NATURVATION project.

Impressive as these numbers may be, they tell us precious little about the Urban-Regional Innovation Partnerships, the six groups that went to great lengths to integrate nature-based solutions into local projects, plans and policies.

These numbers also fail to give voice to those who were involved, to the diversity of their knowledge and experiences, and

to their shared commitment and passion for making urban nature bloom.

By telling their stories, we want to ensure that others can learn from the partnerships they painstakingly build and sustained. And beautiful as this book may be, it doesn't gloss over the challenges that were encountered and overcome along the way.

It is our hope that this book will inspire you to undertake a collaborative journey of your own, one which will cast your city's nature in a new light – as the foundation for a sustainable urban future.

INTRODUCTION

How nature can contribute to meeting urban challenges

As the world becomes both hotter and more urbanised, urban nature is under ever greater pressure, while at the same time carrying within it the seeds of a sustainable future – one built around nature-based solutions.

These solutions provide multiple benefits across a range of sustainability challenges facing cities – from managing flooding to securing improved health outcomes for different groups of society. **Nature-based solutions use the natural properties of ecosystems. They have the potential to limit the impacts of climate change, enhance biodiversity and improve environmental quality, while contributing to economic activities and social well-being.**

Examples of nature-based solutions are green roofs and city parks that limit heat stress, city lagoons that store water, and community gardens that enhance biodiversity and attract pollinators. Yet despite their significant

"Nature-based solutions are an increasingly popular means for tackling urban sustainability challenges, and the idea that we can work with nature to improve our cities is now seen as vital."



Harriet Bulkeley
Professor of Geography,
Durham University

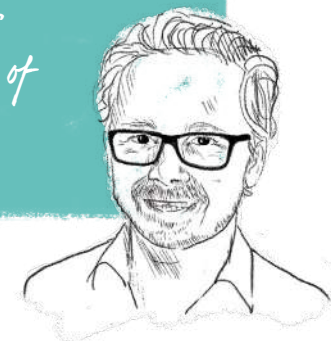


potential, the use of nature-based solutions remains fragmented and highly uneven in cities.

To bring nature-based solutions into city planning, the NATURVATION (NATure-based URban innoVATION) project was created. The four-year project involves 14 institutions across Europe in the fields of urban development, geography, innovation studies, and economics, building capacity of local governments to incorporate nature-based solutions in their localities.

Over the course of the project, ICLEI Europe served as a process facilitator, leading partners to assess what nature-based solutions can achieve in cities, examine how innovation is taking place, and work with communities and stakeholders to develop the knowledge and tools required to realize the potential of nature-based solutions for meeting urban sustainability goals.

"Over the past 25 years, we've seen local governments strive to green their infrastructure – the rise of nature-based solutions offers a new opportunity for cities to put nature at the heart of their planning."



Stefan Kuhn
Deputy Regional Director, ICLEI Europe

Six European cities were involved in this project as urban-regional innovation partnerships (URIPs). These served as on-the-ground innovation hubs to increase the potential of nature-based solutions to address sustainability challenges in their particular contexts.

Over the course of this book, you will discover stories from the partnerships, which brought together local authorities, researchers, civil society, practitioners, urban planners, and architects, truly demonstrating that nature-based solutions can be delivered by anyone. Though the projects outlined here are from a European perspective, the lessons are global.

"To break the dominance of grey infrastructure, new approaches are needed for the development, implementation and mainstreaming of nature-based solutions."



Kes McCormick
Associate Professor,
Lund University

In the next chapters, you will find out about the partnerships' successes and challenges. You will also come across snapshots of innovative projects, key features for constructive partnerships, and pathways for cities to mainstream nature-based solutions. It is our hope that these experiences and insights will inspire and support you in making your urban nature bloom.

PARTNERING FOR NATURE-BASED SOLUTIONS

Over four years, ICLEI worked hand-in-hand with the NATURVATION project to create local partnerships in six European cities to advance discuss nature-based solutions. The aim was to bridge the gap between research, policy, and practice, and enable action for urban nature.

The project started in 2016, involving 14 partners in six countries. Each city was guided by one academic partner and one municipal partner, who worked together to coordinate stakeholders from city government, private industry, NGOs, and researchers. Together, these groups forged new partnerships and brought together diverse viewpoints (though, as we learned, this is easier said than done).

Over the course of the project, our six partner cities examined their current nature-based solutions, learned from interventions shared by other municipalities, and formed new connections that will facilitate the future implementation of nature-based solutions across European cities.

"The URIP process allows municipalities to shape key research questions and have an influence on the direction of research."

Kes McCormick
Associate Professor,
Lund University

"It's been great to work with other European cities and to learn from the wider URIP network, rather than just within Newcastle itself."

Helen Hinds
Head of Resilience Planning, Newcastle City Council

- Changing socio-economic and political fortunes
- Industrialization, population growth after decline, rising inequalities, land use, air pollution, extreme heat and drought, loss of natural habitats, and decreasing biodiversity



Leipzig



Barcelona

- Urban resilience and adaptation to climate change
- Environmental justice, human well-being, and social-ecological connectivity between the urban core and its peri-urban area



Győr

- Industrial development and installation of new residential areas
- Air quality, biodiversity, human health and well-being

- Climate adaptation, biodiversity and densification to achieve a dense and green city



Newcastle

- Governance of water/flooding
- Land use and urban regeneration
- Health



Malmö

- Climate adaptation and governance
- Green infrastructure, urban densification, and urban health
- Social inclusiveness



Utrecht

Cities in Action: Fostering Urban Nature-based Solutions

As part of the urban-regional partnership process, we encouraged the six partner cities to examine their own nature-based solutions—some implemented during the course of this project.

These diverse cases highlight the potential for nature-based solutions to take hold across European cities, addressing core issues such as declining neighbourhoods, lack of funding for public spaces, and post-industrial transformation, as well as organizational challenges (knowledge, skill and governance gaps).

The six examples show how the implementation of nature-based solutions builds on innovation and how each project adapts to its own unique governance and funding environment. They also include reflections from project leaders and advice for other municipalities.

SPAIN

Barcelona

Passeig de Sant Joan
Green Promenade

HUNGARY

Győr

Apáczai University
Gardens

GERMANY

Leipzig

Querbeet Community
Gardens

SWEDEN

Malmö

Stormwater Park

ENGLAND

Newcastle

New Funding Models
for Public Parks

NETHERLANDS

Utrecht

Roerplein Pocket Park

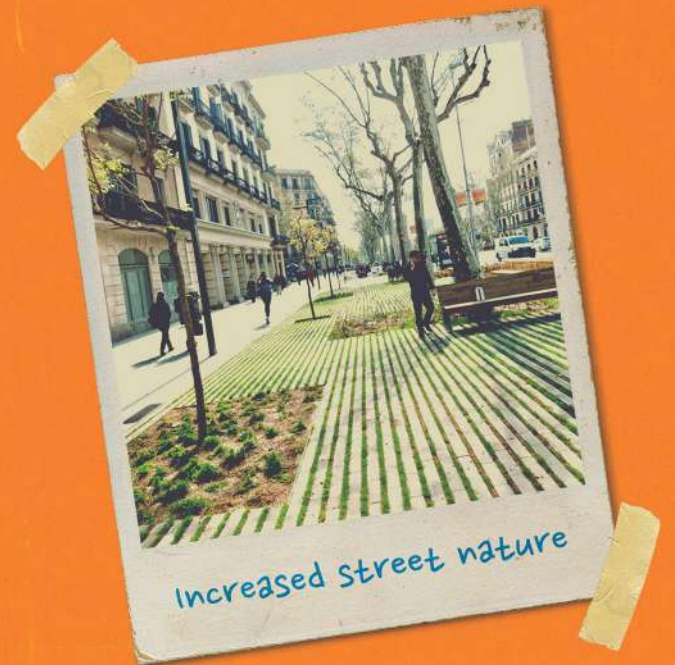
The boulevard is the first step to
connect Collserola Mountain
with Ciutadella Park



SPAIN

BARCELONA

Passeig de Sant Joan
Green Promenade



Increased street nature



Francesc Baró

Postdoctoral Research
Fellow, Universitat Autònoma
de Barcelona

As the largest city where one of our partnership took place, Barcelona faces unique challenges.

Heavy car traffic in a compact and densely urbanised environment with limited green space has created problems related to air quality, noise, and heat island effects. Barcelona's urban expansion, economic growth and development have also posed challenges to biodiversity conservation, though they have brought significant benefits in other areas.

Barcelona really has a need for nature-based solutions that are compatible with dense and compact areas and a Mediterranean climate.

The Barcelona partnership therefore chose to focus on climate action, human health, environmental justice, and on connecting the various metropolitan areas in and around the city.

"Access to green space in certain neighborhoods is really low, so nature-based solutions are something the city council is really trying to promote."



Luís Campos Rodrigues

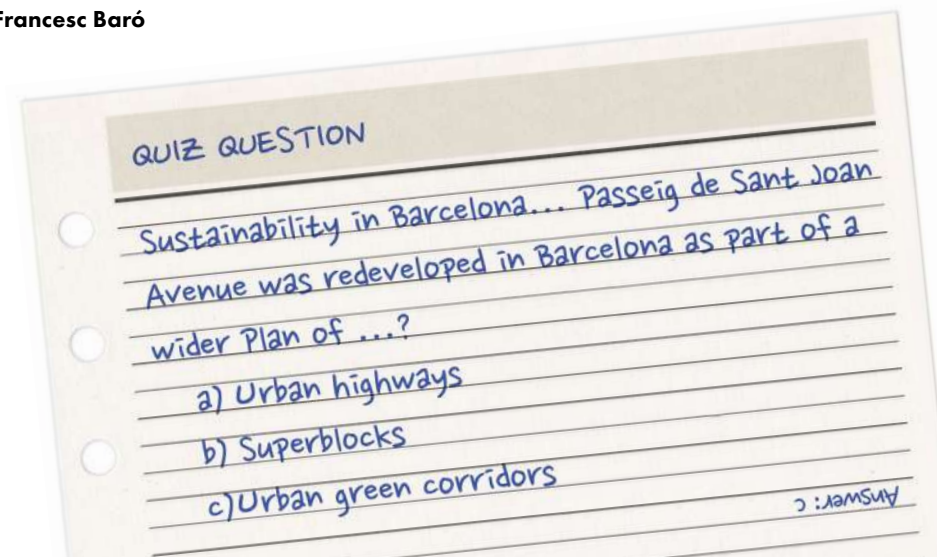
PhD in Environmental Sciences
Environmental Consultant at ENT Environ-
ment & Management / Fundació ENT

The Barcelona Laboratory for Urban Justice and Sustainability (BCNUEJ), a research group within Autonomous University of Barcelona, and ENT Environment and Management, a local consultant came together to coordinate the Barcelona process.

"We really wanted to involve civil society, which was something we struggled with throughout the project, but we eventually managed to create some great events related to environmental justice and citizen engagement".

"Basically, what we tried to do as part of the URIP process is create a platform for knowledge exchange for stakeholders in green infrastructure and sustainability in Barcelona."

Francesc Baró



In 2014, the Passeig de Sant Joan boulevard was redesigned as a 1.2 km green promenade through central Barcelona and represented the first step of a larger green corridor aiming to connect the Collserola Mountain with Ciutadella Park.

Passeig de Sant Joan was re-designed by the Barcelona City Council and the architect Lola Domènech. It consists of enlarged sidewalks and a rich variety of vegetation, creating an attractive green space and pleasant micro-climate in the heart of the city. It is noteworthy that the Green Promenade was not implemented during the URIP process, but it was still useful to study as NBS example within the NATURVATION project.

"The idea was to reduce space for cars and give more room to green space, transforming a heavy-traffic avenue into a green promenade."

Francesc Baró



The new promenade has created many benefits for our city. The area is now more pedestrian friendly, and kids really enjoy the playground. This has also led to better social connectivity, access to green space, and of course more environmental and ecological benefits – reduction of heat, increased biodiversity, stormwater control, etc.

"The activity generated with the sidewalks and playgrounds is not as green as the rest of the greenway but it creates more synergy with the economic activity around it."

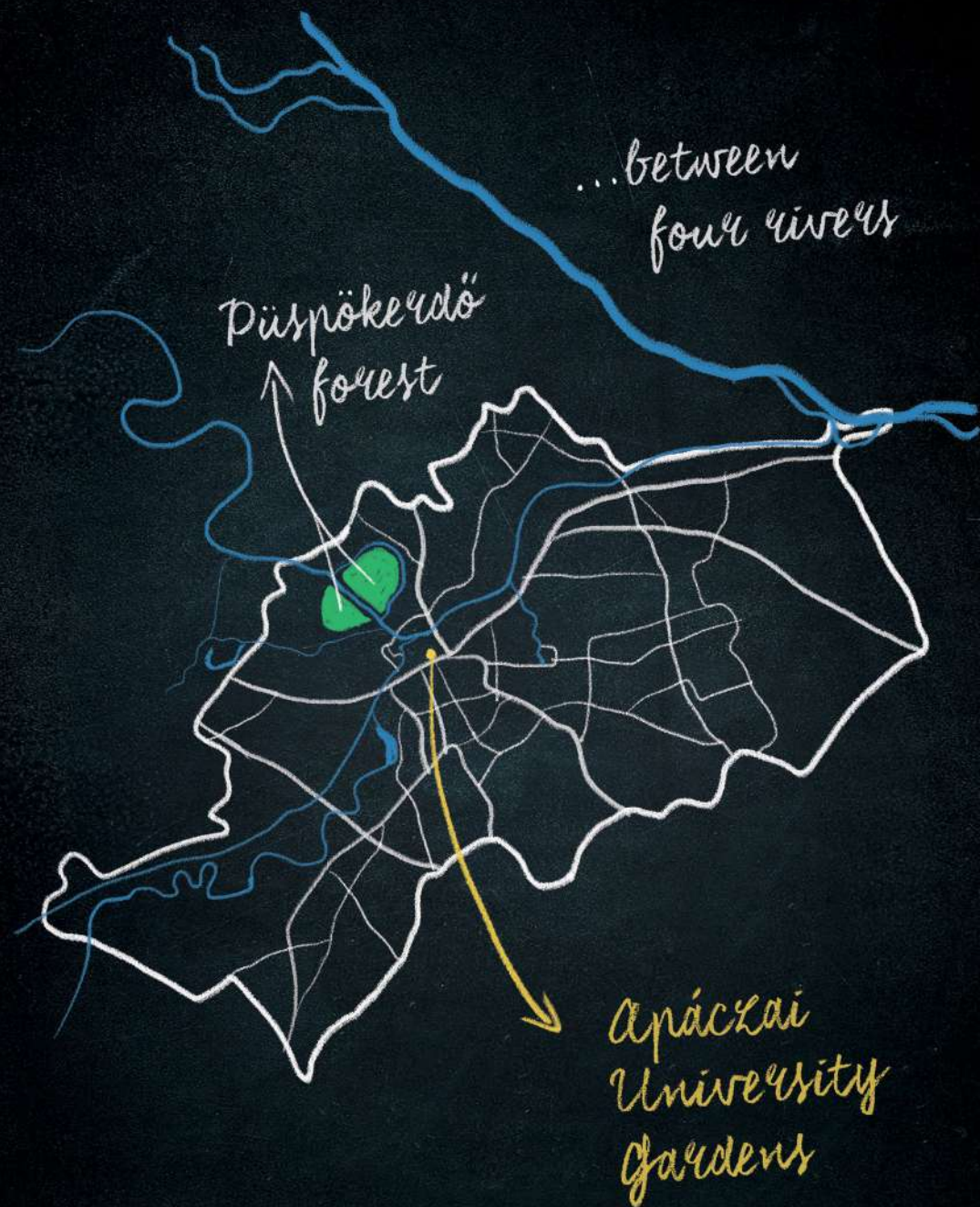
Environmental Department

Urban Green, Barcelona City Council (2017 – Barcelona City Snapshot)

However, our city did have to deal with several hurdles. There's a lot of competition for urban space in Barcelona, and this project was pioneering in removing space from cars. Private economic activity is often valued over green space, so the city of Barcelona really had to show the multiple benefits of this project.

What the local authorities did learn is that early civil participation is key for future civil engagement in nature-based solution implementation. It's hard to get people to buy into the project if they haven't been involved from the start. The commitment of the City Council experts and the availability of funds for these types of projects was also key. This allowed the city to be more creative and innovative in the implementation.

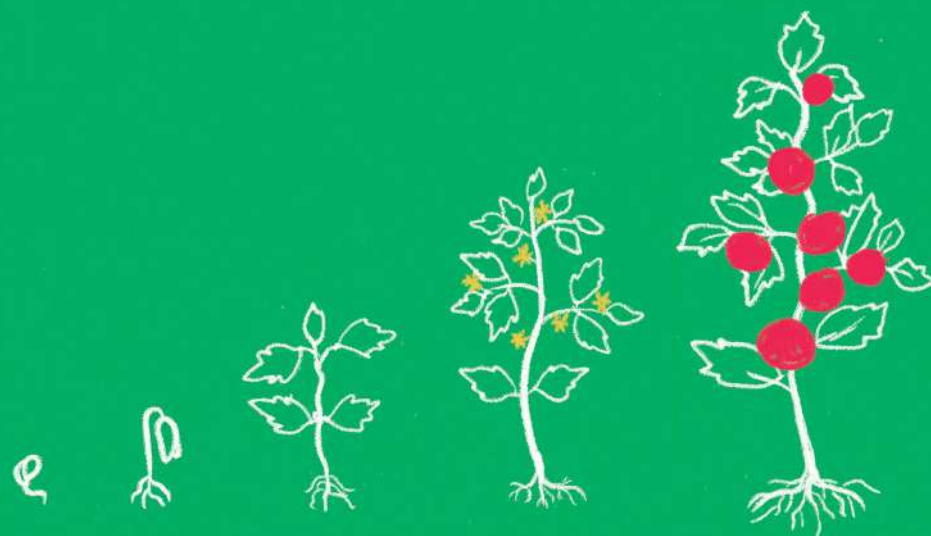


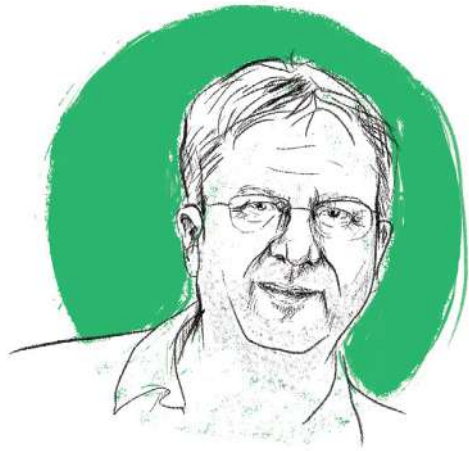


HUNGARY

GYŐR

Apáczai
University
Gardens



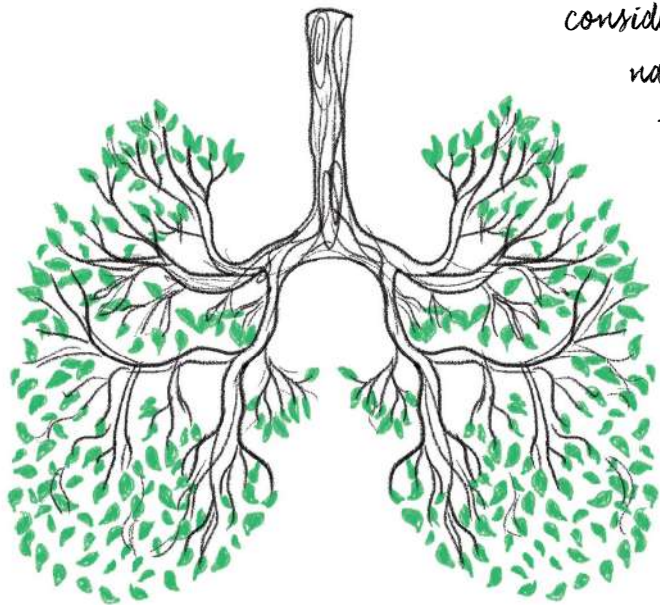

Mihály Lados

Senior Research Fellow
Centre for Economic and Regional
Studies (KRTK)

Győr is a small municipality of about 129,000 citizens, and also a fast-growing regional hub of northwestern Hungary in one of the most important traffic and logistics corridors of Central Europe—the Budapest-Vienna-Bratislava triangle. Significant new residential construction has become a large environmental problem, the historic city centre suffers from heat islands and Győr is becoming much denser.

"In a lot of Hungarian cities, people are moving away, but the population of Győr is increasing. This gives us lots of opportunity to take into consideration urban nature infrastructure for new projects."

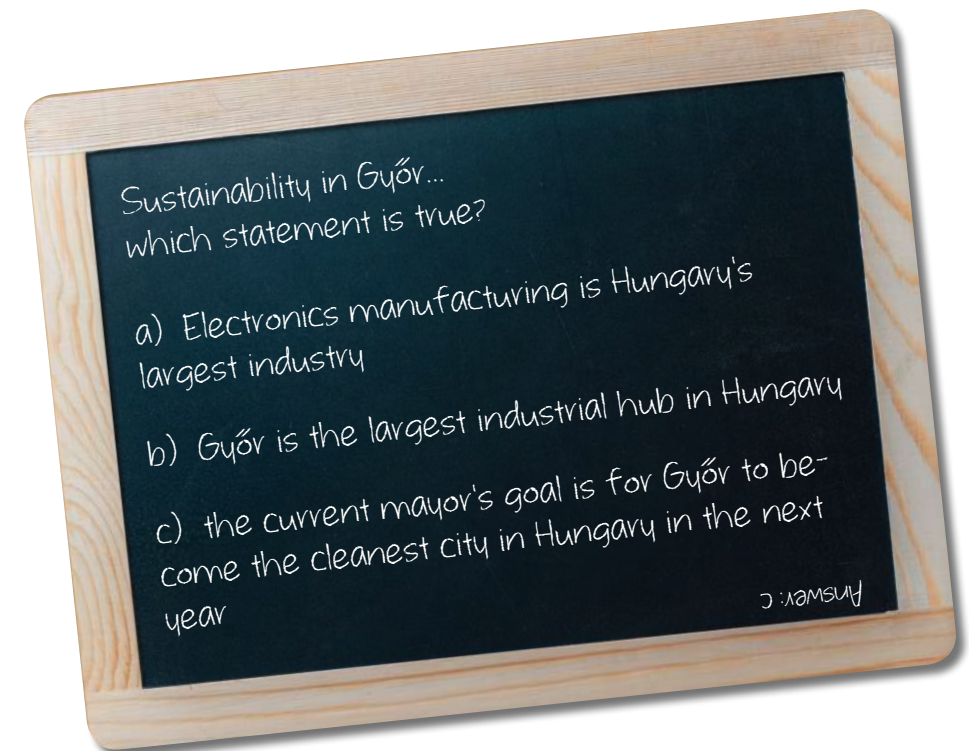
Mihály Lados


Dóra Almássy

Postdoctoral Researcher
Central European University

Győr has a strong industrial history, as well as a unique ecological situation, situated between three rivers and featuring a lot of indigenous flora and fauna. While green space is relatively abundant at 63m² per person, most of it is due to large peri-urban forests, which are considered the 'green lungs' of the city.

Leading this project are the Central European University and the Centre for Economic and Regional Studies (KRTK). Audi Hungary was also very active with us, bringing an interesting private industry angle.



The School Garden of Széchenyi István University in downtown Győr is one of the largest and most complex educational gardens of the country, spanning 5,238m².



The garden trains future teachers on properly organising and maintaining school gardens using environmentally-friendly methods. Groups of students are responsible for planting, maintenance and harvesting under the supervision of teachers and trainee teachers.

The goal of the project is to find a cost-effective way of incorporating sustainability into formal schooling. Indeed, once the trainee teachers graduate, they can bring these gardening practices to their new schools all across primary and secondary schools in Hungary.

The vice dean of the faculty, who drives the garden process and its integration into the educational program, also co-founded the Foundation for Hungarian School Gardens (Iskolakertekért Alapítvány) in 2015, which works to understand barriers and opportunities for the growth of school gardens in Hungary.

There are clear environmental impacts of the intervention, such as lush vegetation, an improved local microclimate and air quality around the school area, and improved soil quality. Nevertheless, the purpose of school gardening in Győr is neither agricultural yield nor biophysical impacts, but the activity itself – outdoor, cooperative, community-based work. The real impact lies in awareness raising and education by helping children experience a need for green space in their lives.

"It was really great that the school garden representative was consistently involved in our NATURVA-TION meetings, further contributing to our exhibition gathering for 9-14-year-old kids."

Mihály Lados



Querbeet gardens



*Easy access to woodlands,
parks, varied system of
rivers and canals.*

GERMANY

LEIPZIG

*Querbeet
Community Gardens*



**Yuliana Lazova**

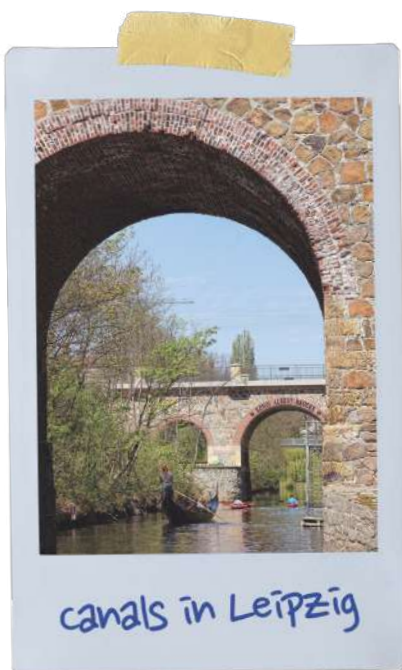
Research Associate Leibniz Institute for
Regional Geography

Leipzig is a mid-sized city that has recently re-established itself as a major economic and cultural centre in Eastern Germany. It is currently the largest city in the German state of Saxony and the fastest growing city in the country.

Recently, we have made a major change from an "energy" landscape to a "leisure and natural" landscape. We are particularly lucky to have easy access to extensive urban woodlands, alluvial forests, municipal parks, and garden colonies, as well as a varied system of rivers, brooks, and recently re-opened canals.

The sustainability challenges we face are primarily related to Leipzig's changing socio-economic and political fortunes over the last few decades. We are dealing with environmental legacies of industrialization, consequences of economic recovery and population growth, and rising inequalities, which lead to issues like increased pressure on land, traffic-related air pollution, extreme heat and drought, the loss of natural habitats, and decreasing biodiversity.

Though the city of Leipzig wasn't directly involved in our process, the city of Grimma, just outside of Leipzig, stepped in and was an important partner, as well as the Leibniz Institute for Regional Geography.



"For me, it was a challenging process, trying to get these stakeholders involved. They needed to get something out of it, so we had to think about what could be useful for them."

**Anja Werner**

Research Associate Leibniz Institute for
Regional Geography

Sustainability in Leipzig... True or false?

The Porsche plant in Leipzig also cares about environmental protection. The largely unspoiled area of the plant grounds has its own natural landscape gardeners - in the form of 27 Exmoor ponies and 50 European bison, as well as three million honey bees.



The Querbeet Gardens are a collection of four community garden plots in Leipzig's East Quarter, one of our more structurally disadvantaged neighbourhoods. Nature-based solutions are part of the plan to revitalize the area, including citizen-led initiatives to turn vacant plots into community gardens.

The City of Leipzig founded Querbeet in 2016 to offer opportunities for urban gardening, provide space for social interaction, and support informal environmental learning. The gardens prioritise the organic cultivation of fruits and vegetables, and also feature bee colonies and barrier-free entry.

"We don't just constantly work until we break our backs, but also sit and chat over a cup of coffee. That's when people talk about their wishes and problems, where we can help."

Municipal Officer,
City of Leipzig



Interested citizens can find available plots via a plot register, which also helps the city find suitable sites for environmental compensation measures.

Social integration is a primary element of the project, and the organisers try to create a sense of community through events like flea markets and film festivals. Those types of events are often missing from Leipzig's East Quarter.

This project relied on collaboration between the city and a citizen-led initiative. Though such partnerships can be difficult to navigate for both parties, success factors included personal engagement, high levels of trust and mutual respect, low hierarchies, regular networking opportunities, and the accessibility of council staff

and city's locally-based "urban quarter managers." With less interaction and more bureaucratic borders, this partnership would not have been as successful.

However, we still have unresolved issues. The sustainability of green space projects like this depend on long-term use rights and reliable funding. Otherwise, Querbeet and other projects will quickly dissipate without long-term support from the city. Over-reliance on voluntary engagement also places communal nature-based solutions projects at risk. This is another area where the city could provide support through regular maintenance.



Baltic Sea

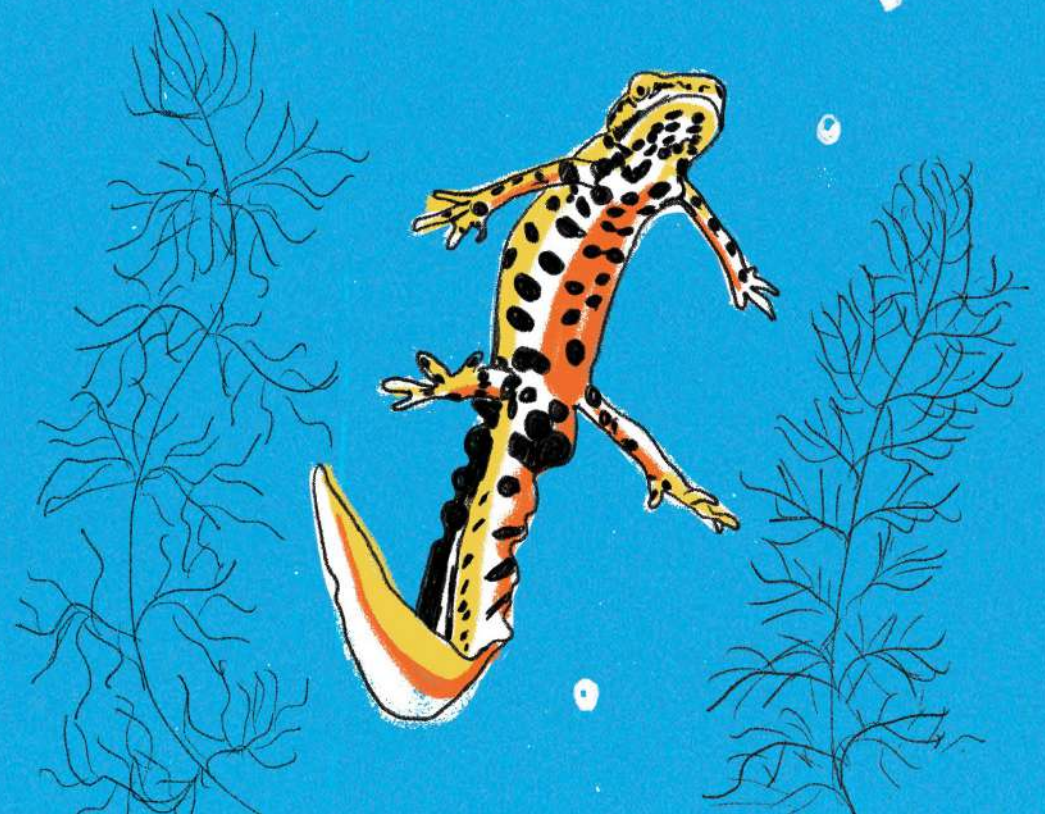


Dagvattenparken
"Stormwater Park"

SWEDEN

MALMÖ

Stormwater Park





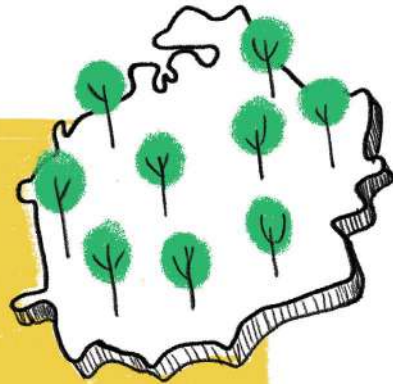
Malmö is a relatively small city, but an important economic, educational and cultural centre of southern Sweden.

Right now, the city is in the midst of a transformation away from its industrial history towards a service-oriented city, which has its own challenges. Malmö is a unique place to live characterized by a young, diverse, multicultural, and growing population, but also increasing densification, which is leading to a loss of urban greenery and biodiversity.

Helen Nilsson

Environment Department City of Malmö

"We want to grow inwards. There's not a lot of greenery in Malmö. We need to work more nature into the urban area."



Our working group was led by Lund University and the city of Malmö, so we had a great link between the research that was being done and city officials. However, the city in particular was very focused on practical, locally relevant outputs. We needed to frame the project in a way that was applicable to what was going on in Malmö, and what our stakeholders were really interested in. For that reason, we pushed for meetings to be very stakeholder-oriented.



"A lot of the issues in Malmö are actually more social-integration, providing affordable housing... there's a lot of unemployment."

Åke Hesslekrans

City Planning Department City of Malmö

Sustainability in Malmö...
which statement is true?

- a) 40% of business-related travel in Malmö is made by bike
- b) Malmö has 200km in bike lanes
- c) Malmö won 'Swedish Cycle Town' of the Year in 2010



Answer: a

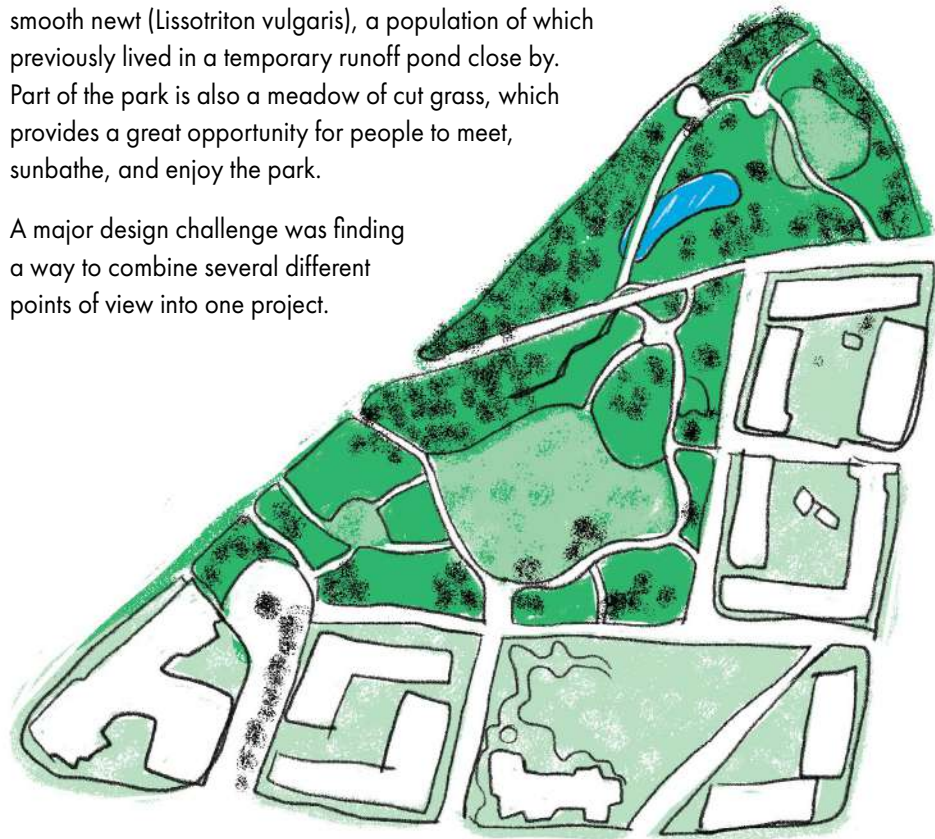
“Stormwater Park” or Dagvattenparken in Swedish, was built in the Hyllie district of southern Malmö in 2019. We’ve seen heavier rainfall in the last few years, and stormwater management has become more important for the city. The 23,000m² park is a green area, but it’s formed in a sloping shape to also serve as a stormwater reservoir, holding more than 6,600m³ of water.

Pedestrian and bicycle paths meet at a bridge, where park-goers can look out over the treetops, and a small pond serves as both a scenic area and a habitat for the smooth newt (*Lissotriton vulgaris*), a population of which previously lived in a temporary runoff pond close by. Part of the park is also a meadow of cut grass, which provides a great opportunity for people to meet, sunbathe, and enjoy the park.

A major design challenge was finding a way to combine several different points of view into one project.

“It’s designed as a park...lots of wildflowers... but underneath it’s also a rainwater reservoir.”

Helen Nilsson



The park’s detention basin required us to model the landscape to hold a large body of water, while, at the same time, we wanted to model it based on the recreational needs of the people that would use it every day. This resulted in a varied landscape that contains many different levels and passages, among other things a pedestrian bridge that spans the deepest area in the park.



Edit Stormwalther

Landscape Architect, City of Malmö

“Parks, as well as other surfaces, increasing need to be multifunctional, especially in rapidly growing cities. Dagvattenparken combines different functions without compromising their quality.”



green space accounts for 55%
of the land cover of the city.



Victorian parks
"Endowing Parks"

ENGLAND

NEWCASTLE

New Funding Models
for Public Parks



**Helen Hinds**

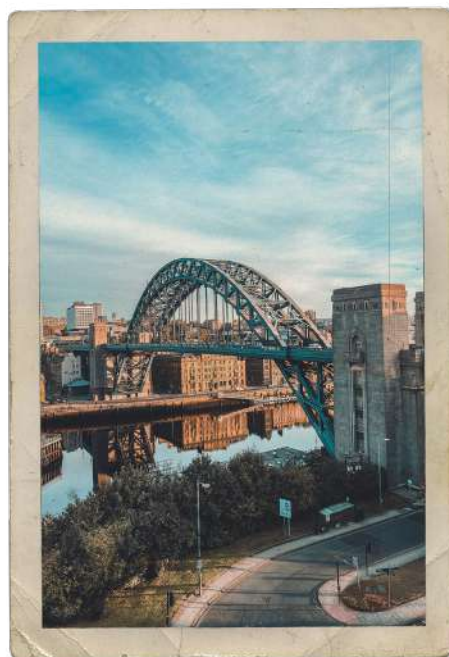
Head of Resilience Planning
Newcastle City Council

"We are not only interested in reducing the impact of climate change and severe weather events through nature-based solutions, but also in how to improve health."

"More people are living in cities. We need to learn how to live with nature, and use nature-based solutions to address inequality."

Newcastle upon Tyne is located on the north bank of the River Tyne in the north-east of England. We have a highly urbanized centre with light industry, and green space accounts for 55% of the land cover of the city. However, in recent years Newcastle has experienced flooding events, so flood risk management became a major concern. We are also focusing on the proper management of our estuaries and on reconnecting the River Tyne to the city.

The years of austerity impacted progress towards decarbonization and environmental objectives. However, following the publication of the City's Net Zero 2030 action plan in autumn 2020, Newcastle

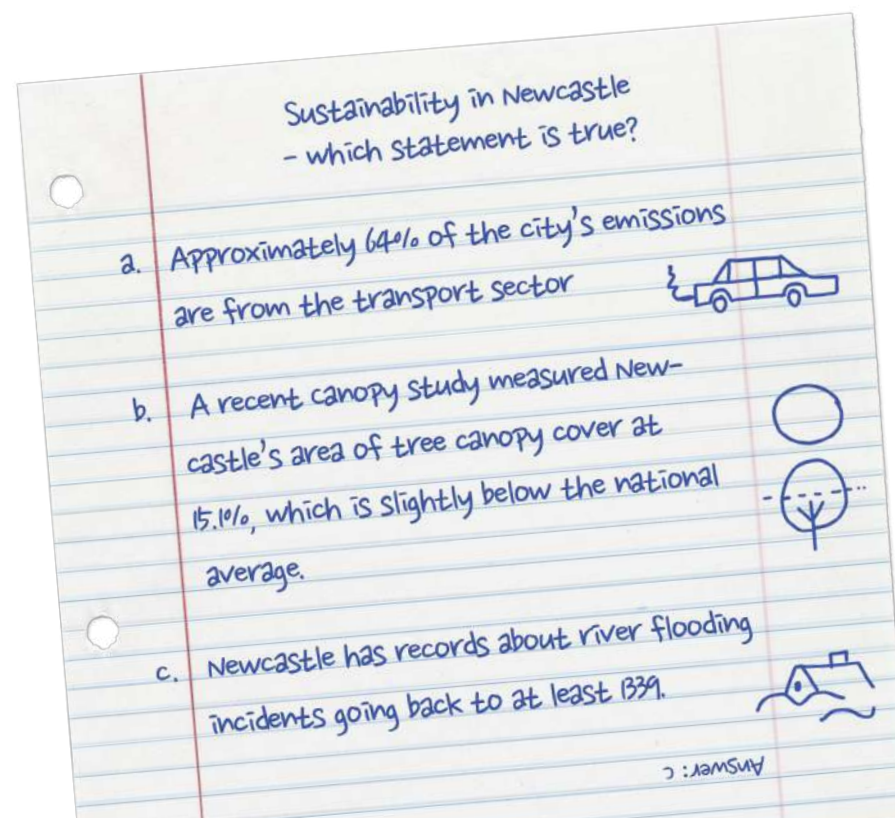


was named as a global climate leader by CDP, one of only 88 places globally and only one of four in the UK.

The Newcastle City Council was very active in NATURVATION, partnering with Durham University throughout the process. The city itself was very interested in the changes that could be made with nature-based solutions and how we could integrate this into other strategies, like climate action and eventually our COVID-19 response. We also worked with the Environment Agency, which served on the project's advisory board. Eventually, this became a very important partnership for us.

**Dr Andrea Armstrong**

Research Associate, Durham University



Cuts in public spending over a number of years meant spending on public parks was under pressure. A reduction in basic maintenance meant parks were in danger of falling into a state of disrepair. The Newcastle City Council responded by creating a new vision of Victorian parks as public green spaces which promote public health as part of the "Endowing Parks" plan.

Limited by the significant reductions in public spending, the Council had to seek out unconventional funding sources to keep our parks alive. Eventually, the Council

"From the public health point of view, our aim is to re-establish parks... as a focus for well-being and health in the city, which, in truth, was their original purpose"

Local Authority

"We need to see our parks not as something that sucks money, but as something that is a real resource in a different way."

Helen Hinds



founded the Newcastle Parks Trust as a charitable organisation to provide park maintenance. Care of 33 city parks was transferred to the trust, ensuring permanent care independent of municipal funding. This was a relatively new way to handle local green spaces, and the "Endowing Parks" project became seen almost by default as a national pathfinder for developing alternative business models for parks.

This project was important to us because of the benefits to public health and improvement of public green spaces. It also ended up creating an innovative business model that can be applied to other green areas. However, how this new funding model will affect park management remains to be seen.

Through this project, we have learnt that new governance arrangements can be used to manage green spaces, operating across scales to maintain urban areas during changes to local government capacities.

"It's still very early, and the use of parks could change since they now need to bring in commercial money from that space. Before, it was just city park space. It changes the dynamic around what a park is and who uses it."

Helen Hinds



*The Neighbourhood
Green Plan project*

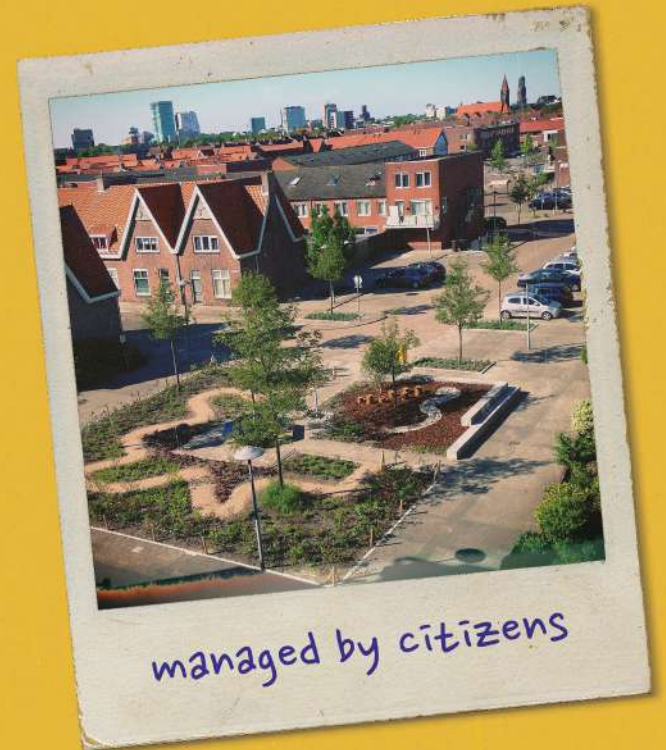


*Roerplein
Pocket Park*

NETHERLANDS

UTRECHT

Roerplein Pocket Park



managed by citizens



Jeroen Schenkels

Senior Advisor/Programme Manager
at the Municipality of Utrecht

Utrecht is a rapidly growing Dutch city with around 360,000 inhabitants, which puts pressure on urban green spaces. We expect to grow to 400,000 inhabitants by 2030, which will mainly be achieved by infill development. This growth, combined with climate change impacts, is the main sustainability challenge of the city, creating the potential for heat stress, loss of biodiversity, and reduced green spaces.

Recently, we set ourselves the goal of creating a healthy and climate resilient city. The municipality is taking a systems perspective to address this objective, so we're actively seeking integrated approaches that involve civil society. Of particular importance is stimulating social inclusiveness in districts with a high concentration of low-income and culturally diverse residents.

"Cities play an important role in bringing nature back to the attention of Dutch national policy makers."

Ton Dassen

Interim Head of Spatial Planning and Environmental Quality, PBL Netherlands Environmental Assessment Agency



Sander van der Jagt

Postdoctoral Researcher
University of Utrecht

The Utrecht process also focused on making use of innovative methods, including bicycle tours of green areas, meetings hosted by local civil society, and the testing out of project tools on diverse and lower-income areas that could benefit significantly from nature-based solutions.

Over the course of this project, the University of Utrecht and the City of Utrecht came together as lead partners. Like most of the partner cities where the municipality was involved, we were interested in a more bottom-up type of procedure that would really address the issues that stakeholders were interested in.

Sustainability in Utrecht - which statement is true?

- a) The city expects to grow to 500,000 inhabitants by 2030
- b) Utrecht has not planned yet the objective of creating a healthy and climate resilient city
- c) Utrecht seeks integrated approaches involving civil society

Answer: c

The Roerplein Pocket Park began as an initiative to turn a paved public square into a park. We wanted to support local urban green space interventions, so we developed the Neighbourhood Green Plan project, which led to Roerplein.

The small park was built in a highly paved neighbourhood with little green space, and is managed by local residents with our support. Citizens in this neighbourhood are somewhat distrustful of the city government, so it was great to have a female social entrepreneur lead the project, supported by a local environmental NGO.

The Neighbourhood Green Plan was successful in other neighbourhoods, as well, and each of the

Anne-Mette van Lieshout
Project Landscape Architect

"It was not the municipality organizing something, it was us, enthusiastic women that Roerplein residents had seen around before. Because in these types of neighbourhoods, they'll automatically resist when they even hear the word municipality."



Jeroen Schenkels

10 funded neighbourhoods in Utrecht developed at least 10 initiatives based on resident proposals. One third of these projects are still managed by citizens, which has led to higher rates of success. Green spaces are less likely to be vandalised and more likely to be actively used when they are developed together with residents, so community management was very important to us.

This project created a bridge between the city and a neighbourhood that is often distrusting of local government, which in

turn has led to more social cohesion and citizen engagement. We were able to give a bit of power back to the people, which is always our goal. Then, of course, there are the other benefits like reduced urban heat stress and enhanced neighbourhood attractiveness.

One issue that we still have is encouraging long-term engagement. There's a lack of interest in volunteering for garden maintenance. We need to find a way to either promote volunteering or depend less on volunteers.





Christine Wamsler

Professor
Lund University

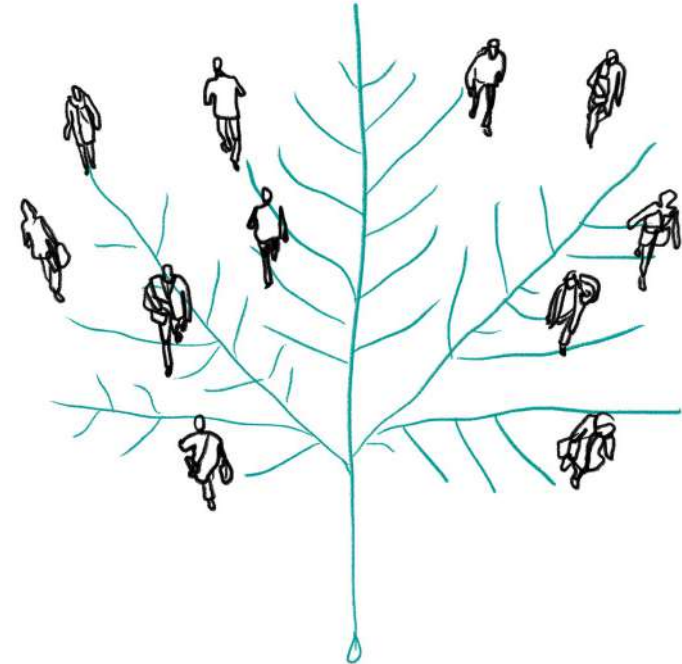
KNOWLEDGE BROKERAGE

Engaging with such a diverse group of project stakeholders and partners brought us face-to-face with a major communication and collaboration challenge. How could we best work across the network of professionals and local partnerships, consisting of municipal representatives, urban developers, conservation organizations, community groups, and local businesses? How could we, for instance, ensure that an ecologist could speak and engage in a meaningful way with a local government representative, or how could we best integrate a citizen groups' perspective into a complex tool like the Urban Nature Atlas?

To address such initial challenges, knowledge brokerage became one of our key tasks throughout the project. Knowledge brokers are intermediaries (organizations or a person). They aim to develop networks and relationships with, among, and between producers and users of knowledge by providing linkages, knowledge sources, or knowledge itself to members of the network. Knowledge brokerage is more than a simple question-and-answer game: it is a process of co-creating and re-framing knowledge. It involved creating new ways to communicate and fostering openness and flexibility to find creative ways of building bridges between the different communities of scholars and practitioners.

Luckily, both the project and the partnerships had been designed with transdisciplinarity in mind to integrate and bridge knowledge from various scientific and societal bodies of knowledge. However, in practice we faced a range of challenges at the beginning of the project. Based on the creation of a system for knowledge brokerage, the idea of transdisciplinarity was given increasing care, and we took several steps to facilitate related processes. This included amongst other things:

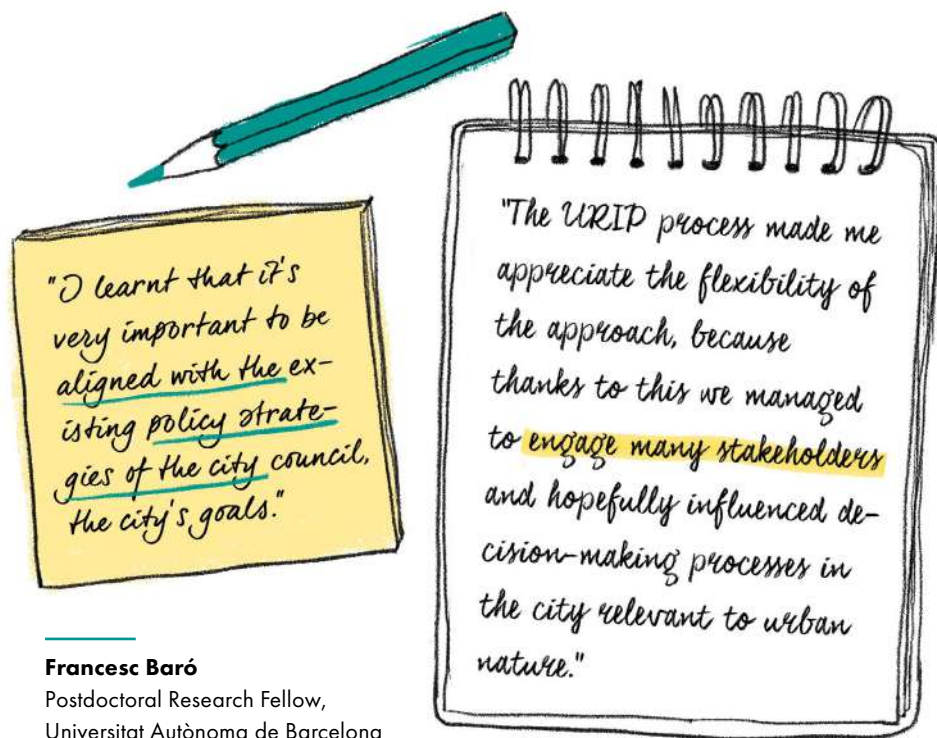
- Identifying and working with specialist Knowledge Brokers who could translate even the most complex scientific outputs into stakeholder-friendly language.
- Ensuring inclusive communication to foster the understanding that all perspectives are valuable.
- Allowing diverse communities to learn from each other through constant support, both in person and online.
- Being conscious about how we were articulating and framing issues such as they could speak to people's different motivations, allowing to work well across differences for a common purpose.



CHALLENGES AND LESSONS LEARNT

Bringing together stakeholders from multiple sectors to engage in long, difficult discussions over a period of four years was not a simple task. Each partner city was dealing with different issues, but there were common threads, such as competing interests, stakeholder fatigue, inadequate representation, and of course COVID-19, which were major challenges throughout the process.

The six local processes not only presented their fair share of challenges, but they also highlighted the vast potential and unique value of such partnerships, especially when it comes to developing innovative governance schemes and working beyond traditional organisational and knowledge boundaries.



Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma de Barcelona

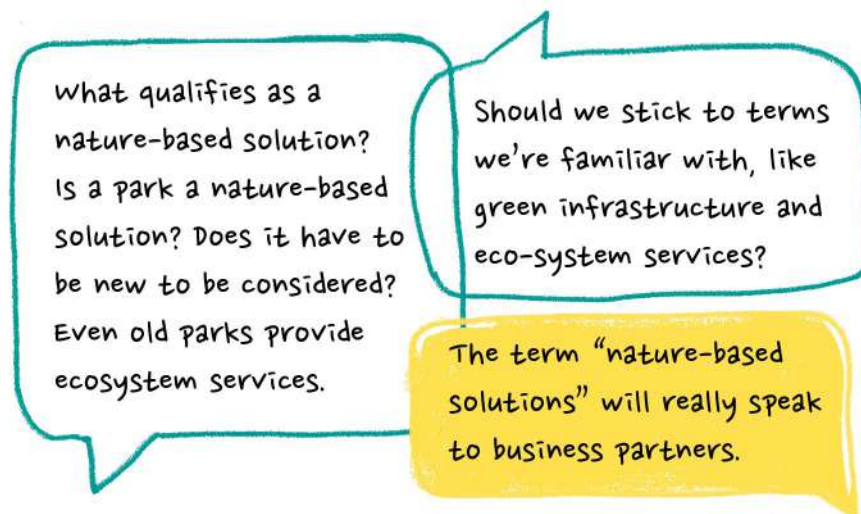
Sander van der Jagt

Postdoctoral Researcher, University of Utrecht

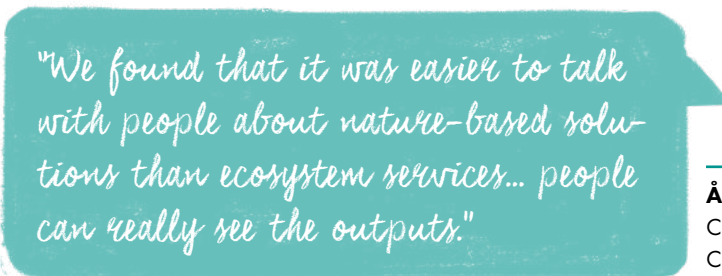
What is a "nature-based solution"? The debate over terminology

In 2016, when we first came together to talk about NATURVATION, the cities still had one critical question: What is a nature-based solution? All our participants seemed to be on a different page.

Practitioners were worried the term wasn't user-friendly and considered replacing it with language that would be more easily understood, such as "mimicking nature", "nature-like solutions", or "green/blue infrastructure".



Eventually, everyone came around to the idea that "nature-based solutions" is a useful umbrella term for all scales of green-blue solutions that improve our shared physical and social environment:



Åke Hesslekrans

City Planning Department,
City of Malmö

Nature-based solutions are spatial interventions that use the natural properties of ecosystems to deliver multiple benefits.

Engaging Stakeholders

For the innovation partnership process to produce inclusive results, there needed to be proper representation of stakeholders within each municipality. NGOs, grassroots organizations, members of local government, private industry, university partners, and many others were all invited to these discussions. However, the local meetings were not always evenly representative.

In Malmö, Utrecht, and Newcastle, the local government was actively involved in leading the process. However, in Barcelona, Leipzig, and Győr, the local government took a more distant role, which made it more difficult to directly impact the direction of municipal policymaking and to tailor the processes to the cities' priorities.

"Since our process was not directly supported by the city council, we couldn't set a specific mandate for the process. It was more a kind of knowledge platform to bring stakeholders together."

Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma de Barcelona

"We weren't able to involve the public company that maintains our green spaces and public spaces— a lot of functions related to NATURVATION. We always called them but they never came."

Mihály Lados

Senior Research Fellow,
KRTK (Centre for Economic and
Regional Studies)

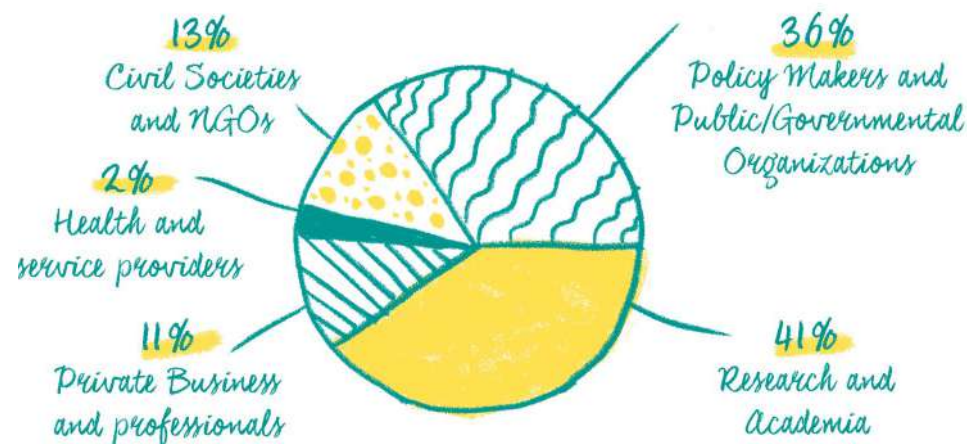
Creative solutions helped the local processes to overcome these issues. For instance, in the absence of the city of Leipzig, the neighbouring municipality of Grimma stepped in to take a leading role in discussions. In Győr, strong partnerships were built with the local private sector (e.g. Audi Hungaria). And in Barcelona, regular links with the Metropolitan Government were established.

From the outset, all six partner cities were concerned that stakeholder fatigue could affect attendance. Though many organisations were keen to take part, they were at times prevented from doing so from a lack of capacity, personnel changes, and other larger-scale emergencies, such as Brexit or COVID-19.

In large part thanks to the efforts of the local teams, over 100 stakeholders joined the process. In most municipalities, representatives from research and academia made up the largest portion, along with policymakers and governmental organisations. To encourage inclusive participation, co-organizers frequently broke meetings into small groups to encourage attendees to voice their opinions, a strategy that participants found effective.

"It was difficult to reach these civic organizations until the end. Stakeholders were more related to public authorities and agencies, academic partners, etc. It was really a challenge to involve these groups."

Francesc Baró



Focusing on Local Storylines

Each of the six cities involved faced different challenges and were embedded within a broad range of socio-economic, cultural and environmental contexts. This made it essential to design the local processes and meetings in a way that they responded to local needs.

The diversity of stakeholders engaging in the local processes made it all the more difficult to ensure that everyone benefited equally and found the discussions accessible, informative and actionable. Though the NATURVATION project as a whole had a strong academic component, the local partnerships were dominated by practitioners – they were technical staff, planners, policymakers, private sector professionals, and community organisations.



"When this kind of work is initiated by an academic project or research context, it's important to adapt to the local context, and make synergies with existing processes and initiatives."

Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma de
Barcelona

In responding to these challenges, we opted to focus on local storylines, empowering each partnership to explicitly explore their needs and desires, to identify their unique sustainability challenges, and to ultimately develop their own vision for mainstreaming nature-based solutions locally, as well as a roadmap for getting there. This also meant that we engaged in constant knowledge brokerage between the partnerships, and with the broader NATURVATION project to provide them with tailored and accessible information that would support them in achieving their local goals.

"Local actors can be very focused on their day to day challenges and have very practical concerns, and it can be frustrating that the academic world is unable to solve those problems. We're more about connecting dots and bringing knowledge."

Kes McCormick

Associate Professor, Lund University

"You really can't force cities to do something that is not on their agenda, in their priorities. You have to find that common denominator: what works for the project and for the city."

Bernadett Kiss

Research Associate,
Lund University

"To keep participants interested in remaining in the partnership, they need to see concrete benefits for themselves and their work."

Anja Werner

Research Associate, Leibniz
Institute for Regional Geography

"From the beginning, we planned for the municipalities to play a leading role. We tried to make outputs and tools that are really relevant to the real world, like the Urban Nature Atlas, which cities all over the world can use."

Kes McCormick

"We had our own questions that we wanted to tackle that motivated our partners more."

Åke Hesslekrans,

City Planning Department, City of Malmö

COVID-19

In March of 2020, the final year of the NATURVATION project, COVID-19 began to affect Europe. Inevitably, the virus had a major impact on the partnership process, effectively putting an end to large meetings and public events. Though each city was affected differently, all partner cities elected to postpone stakeholder meetings and reschedule final events.

However, the lockdowns that were implemented to control the pandemic also brought unexpected changes in the way people view cities. In some municipalities, such as Newcastle, the extreme effects of the pandemic have also changed emergency management strategies.

"It's also meant that when we've been developing the recovery strategy for COVID, I've been able to talk about the green agenda."

Helen Hinds

Head of Resilience Planning,
Newcastle City Council

Overall, the COVID-19 pandemic created a major hurdle for all six cities, impacting their community events and limiting their ability to share the lessons from NATURVATION with the broader population. However, the virus may have also created a window of opportunity to re-envision our cities to include more just and nature-based planning.

"COVID made the end of the process very...abrupt. You lose the opportunity to interact with colleagues and learn firsthand."

Helen Nilsson

Environment Department,
City of Malmö

"We realized during the lockdown that access to urban nature is really important, and not everyone has access to green space in Barcelona."

Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma
de Barcelona

MAJOR TAKEAWAYS

Over four years, stakeholders in six different European cities were brought together to discuss novel ways to integrate nature-based solutions locally. They faced and overcame challenges, forged new partnerships and paved the way for urban nature to bloom in their cities.

Though participants were initially unclear on the meaning of "nature-based solutions", the term eventually became a useful tool for describing ecosystem-based interventions. Other early struggles involved lack of representation of certain groups and a desire to focus more on local storylines.

The process convenors quickly adapted to structure meetings around the needs of participants, resulting in more productive sessions and a clearer connection to the local scale, though some stakeholders remained sceptical. Later in the project, COVID-19 presented a great challenge, forcing partners to reschedule or cancel meetings and events, while also drawing attention to the importance of public green space.

New partnerships formed as a result of the stakeholder groups, which brought together parties which had often never been in the same room together. Ultimately, many participants expressed that the most useful aspect of the local partnerships was the formation of these networks. The city of Newcastle became better connected to the national Environment Agency, collaborating on the Tyne Estuary project, and Leipzig representatives reported a promising new alliance with a local NGO.

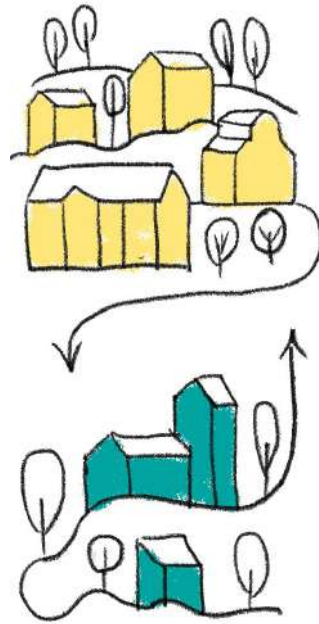
"It's been interesting to meet people from different backgrounds...not just academia, but the private sector, as well."

Helen Nilsson

Environment Department,
City of Malmö

A clear lesson from our four years of partnership is the importance of locally anchoring stakeholder processes, and to tailor them to the needs and specificities of local actors and their context. This meant, for instance, that new knowledge generated by the project had to be carefully translated and made accessible to the local groups.

A second core lesson is the centrality of cross-city knowledge exchange. During four years of the process, the partners from the six cities not only acted locally, but also engaged in ongoing peer learning. They were able to share examples of pioneer projects in their hometown and discuss potential cross-regional partnerships. Some cities saw similarities between themselves and other localities, leading to lively discussions about the implementation of nature-based solutions. This cross-pollination has led to long-term links and collaborations.



"That's one of the things that we've really learnt at ICLEI, working with the six URIPs; there's no one-size-fits-all, even when we're all working on the same topic. If you really want to make the outcomes stick, you need to tailor them to the local context... a successful process needs to be adapted to what is possible locally."

Matthew Bach

Coordinator – Governance and Social Innovation, ICLEI Europe

The work undertaken locally and among the six cities has helped to increase the capacity for more resilient and sustainable cities, fostering awareness of nature-based solutions and their potential to address pressing urban sustainability issues. Many local partners ended the project with plans for future interventions, and participants saw great value in communicating with local, subnational, and national authorities about the importance of nature-based solutions.

Examples of pioneer projects

LOCAL ACTORS

urban sustainability

ENGAGING WITH STAKEHOLDERS

awareness

NEW PARTNERSHIPS

cross-city knowledge exchange

PLANS

COMMUNICATION

interventions *local context*

cross-regional partnerships

"I think we met the goal of creating collaborative forums. Nature-based solutions, you can't just take it off a shelf and integrate it into a city seamlessly. It takes new types of investments, partners, and so on."

Kes McCormick

Associate Professor,
Lund University

LASTING IMPACTS

Overall, all partner cities agreed that the networks created and knowledge gained from taking part in NATURVATION will have lasting impacts on their city.

Some actors saw the opportunity to draw new knowledge of nature-based solutions into their everyday work.

Other actors emphasized their overall hope for greener and more sustainable cities.

"From a personal level, it's increased my knowledge. I'm now being consulted on climate change topics, bringing nature-based solutions into the city climate change agenda."

"We've been able to weave some of these ideas into wider policy within the organization and then hopefully across the city."

Helen Hinds

Head of Resilience Planning,
Newcastle City Council



"I also teach at the university in Győr. Now, I always mention the importance of green in the city—green areas, green walls, green rooftops. Now, it's always a part of my curriculum."

László Jona

Junior Research Fellow, KRTK (Centre for Economic and Regional Studies)

"What is really a positive outcome for us is that this close network was produced. The people got to know each other and know who to speak to in case they want to build another project. They know who to talk to, which is very important for the implementation on nature-based solutions."



Anja Werner

Research Associate,
Leibniz Institute for
Regional Geography

"This project really affected my personal life, not just my professional life. I became really much more sensitive to nature-based solutions and the whole green issues in the city. Now, I can see possibilities I couldn't see before."

"Now that we see the hope, maybe we can affect in some way the city thinking."

Mihály Lados

Senior Research Fellow,
KRTK (Centre for Economic and
Regional Studies)

NEW PARTNERSHIPS

According to participants, one of the greatest advantages of the partnership process was the opportunity to form new partnerships across sectors. Meetings guided by ICLEI offered a unique opportunity to exchange ideas with stakeholders who are rarely in the room together.

"In the NATUR-VATION project, it's about collaboration. Even though it may be difficult and messy at the beginning, you need to be flexible with the different people involved. There is no perfect way of partnership."

Helen Hinds

Head of Resilience Planning,
Newcastle City Council

For example, Newcastle expressed that the participation of the Environment Agency in discussions influenced the thought processes of the agency's lead officer, creating a greater connection between local and national government and shaping the Tyne Estuary project. Members of the Newcastle stakeholder group were therefore included in planning a project that would typically only consist of discussions within the national agency. A participant from Leipzig also commented, "Thanks to the project, a new partnership arose to protect our green areas together with a strong local NGO."

"As part of the URIP process, one of the stakeholders, the Barcelona regional council, also invited us to collaborate more closely with them on a guide on nature-based solutions for municipalities—helping to implement these solutions. That was also a good impact for us."

Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma de Barcelona

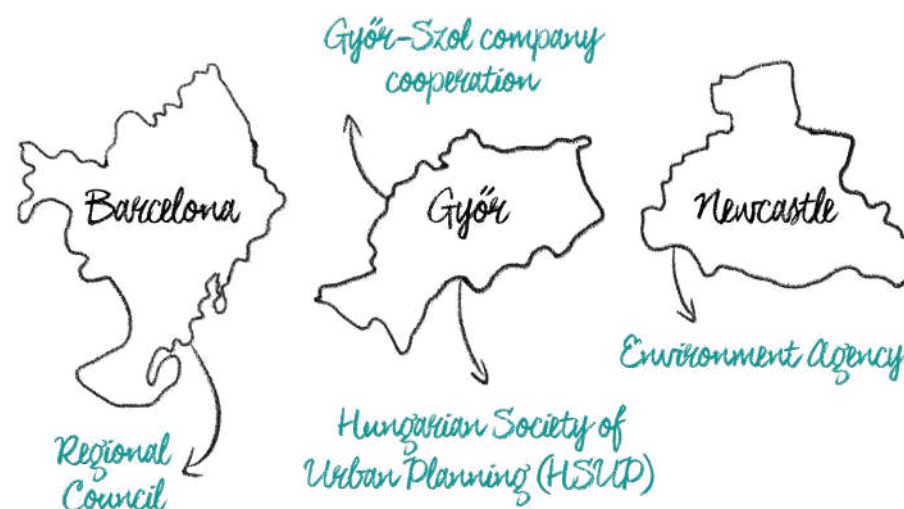
"There are plenty of opportunities to collaborate across departments horizontally. The way is challenging, but to foster collaborations, think outside the box; like the 'colorful cocktail' metaphor... do not make the same old cocktail party, but create new ones".

Bernadett Kiss

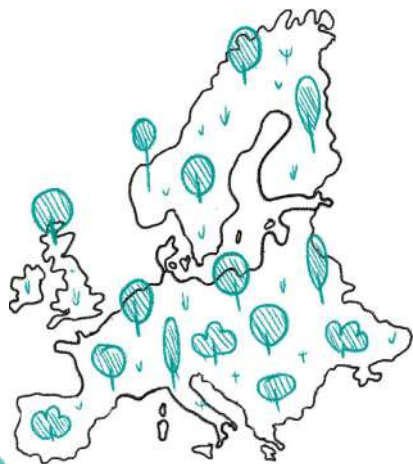
Research Associate, Lund University

New connections were not only made within localities, but also across Europe. Representatives from Newcastle, Barcelona, Malmö, Győr, Leipzig, and Utrecht took part in interactive web conferences, exchanging examples of their own nature-based solutions and discussing their experiences. After one conference, a participant from the Hungary shared that they found an intervention from Barcelona very relevant for planning in Győr, and other cities also showed interest in further comparisons across regions. Leipzig in particular was eager to create further partnerships with surrounding cities, stating, "The network between cities is key to continue making an impact on the value of urban nature."

Many of these partnerships will continue beyond the life of NATURVATION, creating new networks for nature-based change in European cities.



"The project also allowed us to get involved in networks, not only in Barcelona, but at the national level. For example, we were invited to participate in an expert group on nature-based solutions at the Spanish national level."



Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma
de Barcelona

"I believe ICLEI's role in the project contributed greatly to create, ensure and strengthen cities' partnerships through joint activities and peer learning to accelerate local sustainable development and make real change on the ground. Likewise, these new partnerships can become key subjects to develop future Local Green Deals aligned with the goals, priorities and principles of the European Green Deal and the New Leipzig Charter."

Intza Balenciaga

Officer – Governance and Social
Innovation, ICLEI Europe

WORKING FOR THE LONG TERM

Over four years, we brought together partnerships in Malmö, Utrecht, Győr, Leipzig, Barcelona and Newcastle. They exchanged knowledge, created lasting links, and helped their cities to see nature-based solutions as a key building block for sustainable cities.

Though work is only truly beginning to incorporate nature-based solutions into each municipality's policies and plans, they are among a growing movement of cities embracing the potential of nature-based solutions to address urban sustainability challenge. So, what comes next?

"I think that the work we have done is too important. I do not want to lose it... We have an obligation to get out what we have learned through research."

Helen Hinds

Involving Decision Makers

The involvement of policymakers is critical when it comes to cementing the outcomes of local processes. Many of the partnerships' stakeholders emphasised the importance of reaching key decision makers such as mayors and councillors. With this aim in mind, the six partnerships helped develop policy briefs, and looked at how they could support their local governments to bring nature-based solutions front and centre through such tools as guidelines, regulations, financing mechanisms and much more.

One idea, for instance, was to develop specific criteria for developers. As the Newcastle partnership pointed out, "You can put these things in the local politics, but it is very difficult to make the local developers comply... nature-based solutions get lost along the way."

"This is brilliant. It is a great resource. How can we get this into the daily work is the question... We have to solve in the next year how to disseminate things within the municipality."

Helen Nilsson

Involving Communities

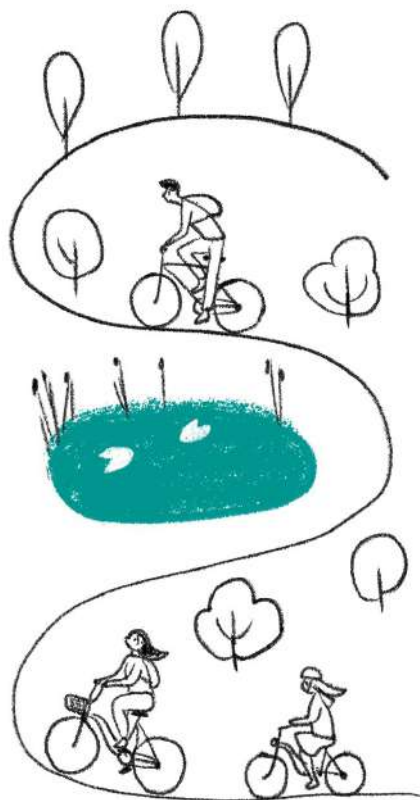
Other cities see their next steps more closely tied to their communities than to policymakers. The Barcelona partnership sees their immediate mission as strengthening the network that they have created, primarily through the involvement of local citizens, activists and community groups. Going forward, Barcelona is hoping to reach a broader group by integrating nature-based solutions with topics such as social inclusion and justice.

Creating innovative meeting formats also helps to involve local communities. A number of the partnerships made use of interactive tours to engage openly with their stakeholders. In Leipzig, this took the form of walking tours, while in Utrecht meetings frequently took the form of bike tours to learn about nature-based solutions in situ. Continuing to develop these unconventional formats is a way of making partnerships more inclusive and adapted to their stakeholders' needs.

"We need to make sure they are aware of all this work we have done so we can influence policy."

Francesc Baró

Postdoctoral Research Fellow,
Universitat Autònoma de Barcelona



"We know now that it's possible, so without NATURVATION we can continue that process... I believe we will have even more success."

Mihály Lados

Senior Research Fellow, KRTK (Centre for
Economic and Regional Studies)

KEY RESOURCES

To learn more about implementing nature-based solutions, visit the following project resources:

The Urban Nature Atlas/Explorer (the new version)

An online database containing 1000 examples of Nature-Based Solutions across 100 European cities.

<https://naturvation.eu/atlas>



The Urban Nature Navigator

A tool to evaluate nature-based solutions projects and identify how they contribute to sustainability goals.

<https://naturvation.eu/result/urban-nature-navigator>



Massive Open Online Course (MOOC)

An online course containing a collection of inspiring and educational films about the opportunities, challenges and future of nature-based solutions.

<https://naturvation.eu/learn>



Creating Green Cities Podcast

A podcast on urban nature-based solutions, explained through stories of inspiring innovators.

<https://naturvation.eu/learn>





Taking Action for Urban Nature - Governance Solutions

This research recognises that growing effective governance for nature-based solutions depends on strong roots – core principles that underpin the development and implementation of initiatives.

<https://naturvation.eu/result/taking-action-urban-nature-governance-solutions>



Nature-based Solutions in European and National Policy Frameworks

This review finds current policy offers only limited direction for their implementation and highlights the potential for new policy approaches.

<https://naturvation.eu/result/nature-based-solutions-european-and-national-policy-frameworks>



Taking Action for Urban Nature - Citizen Engagement

The handbook provides a valuable resource for organisations that are working with nature-based solutions at the grassroots level.

<https://naturvation.eu/result/taking-action-urban-nature-citizen-engagement>



Taking Action for Urban Nature - Business Models

This catalogue presents eight different business models for urban NBS. These were identified based on 54 in-depth case studies of urban NBS, both in- and outside of Europe.

<https://naturvation.eu/businessmodels>

Monetary Value of European Nature-based Solutions

This briefing note presents the results of value calculations, examples of select nature-based solutions and their economic and social value, methods and data sources, and conclusions.

<https://naturvation.eu/result/monetary-value-european-nature-based-solutions>



Valuing and Investing in Nature-based Solutions for Urban Sustainability

The project convened a small expert panel to exchange ideas and evidence on these fundamental challenges and potential pathways to mainstreaming urban nature-based solutions.

<https://naturvation.eu/result/valuing-and-investing-nature-based-solutions-urban-sustainability>



Taking Action for Urban Nature - Innovation Pathways

The “Innovation Pathways Directory” provides an entry point to explore and better understand innovation pathways for nature-based solutions.

<https://naturvation.eu/result/taking-action-urban-nature-innovation-pathways>



Mainstreaming Biodiversity Action through Nature-Based Solutions

This report articulates a framework for urban nature-based solutions and reviews actions that cities are already taking.

<https://naturvation.eu/result/mainstreaming-biodiversity-action-through-nature-based-solutions>



OTHER ICLEI RESOURCES:



proGReg

Productive green infrastructure for post-industrial urban regeneration.

<https://progireg.eu/>



CLEVER Cities

A project driving a new kind of nature-based urban transformation for sustainable and socially inclusive cities across Europe, South America, and China.

<https://clevercities.eu/>



Connecting Nature

A nature-based solutions consortium of 30 partners within 16 European countries, and hubs in Brazil, China, Korea & the Caucasus.

<https://connectingnature.eu/>



For other publications on nature-based solutions, visit the **Nature-Based Solutions Results Pack**, which showcases nine EU-funded projects that have developed important tools and expertise to address these challenges through nature-based solutions for building sustainable, resilient and prosperous societies.

<https://cordis.europa.eu/article/id/421853-nature-based-solutions>

ABOUT NATURVATION

Led by Durham University, NATURVATION involves 14 institutions across Europe working in fields as diverse as urban development, innovation studies, geography, ecology, environmental assessment and economics. Our partnership includes city governments, non-governmental organizations and business. Over the course of the project, we assessed what nature-based solutions can achieve in cities, examined how innovation is taking place, and worked with communities and stakeholders to develop the knowledge and tools required to realize the potential of nature-based solutions for meeting urban sustainability goals.

Six cities (Barcelona, Utrecht, Leipzig, Malmö, Győr and Newcastle) were partners in NATURVATION and convened urban-regional innovation partnerships with strategic urban government, business and civil society organizations. These partnerships provided insights into the variety of ways in which nature-based solutions are being used in different urban conditions.

In addition to the six European cities as partners, the NATURVATION project is conducting research on and study trips to cities around the world. Findings and insights are available from Melbourne, Athens, Tianjin, Sofia, Edinburgh, Mexico City, Boston, Cape Town, Athens, Dublin, Montpellier, and Winnipeg.



NATURVATION
cities – nature – innovation

ABOUT ICLEI EUROPE

ICLEI – Local Governments for Sustainability, founded in 1990 as the International Council for Local Environmental Initiatives, is the world's leading network of local and regional governments committed to sustainable development. ICLEI believes that local action drives global change and the leadership of local and regional governments can make a major difference in addressing complex environmental, economic and social challenges.

Being part of our global network ensures that through joint action, peer learning, and strong partnerships between civil society, business leaders and all levels of government we can accelerate local sustainable development and make real change on the ground.

Since 1992 the ICLEI European Secretariat has been closely working with ICLEI network cities in Europe, North Africa, the Middle East and West Asia, other European networks, the European Commission, the Committee of the Regions, and many others. The ICLEI European Secretariat works with its over 80 in-house sustainability and communications professionals from its offices in Freiburg (DE), Berlin (DE) and Brussels (BE).



IMPRINT

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*This book shares stories, insights
and cases from co-creative processes
for nature-based solutions in six
European cities. These processes took
place as part of the EU-funded
NATREUATION project and were
coordinated by ICL·EI Europe.*