

“Once people  
have a green  
space, they  
want to  
protect it.”

“Nature-based solutions  
are about solving many  
problems with one action.”

“Greening the  
city has multiple  
benefits. It also  
wins elections.”

# HOW CAN YOUR CITY BECOME... FUTURE-PROOF?



## IMPRINT

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## HOW CAN YOUR CITY BECOME... FUTURE-PROOF?

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## OPENING STATEMENTS

### Foreword from European Commission – DG ENV

#### Be inspired by the best of the best - European Green Capital Cities!

Two-thirds of Europeans live in towns and cities. Their health and well-being greatly depend on how well city authorities address environmental challenges. With the European Green Capital and European Green Leaf Awards, the European Commission is recognising the remarkable efforts of cities that are genuinely committed to becoming more liveable and more sustainable places.



Over the past decade, these awards have provided a platform for winning cities to engage with their citizens and visitors on environmental topics, creating momentum and a commitment for long-term sustainable urban development. At the same time, we have also had the pleasure of featuring the outstanding achievements by the award title winners, demonstrating that urban environmental challenges can be tackled in ways that benefit citizens and their environment. Creating opportunities for exchanges is also at the heart of the European Green Capital Network, the network of winners and finalists of the award.

Our pioneering award winners have shown year after year that **any city can go green and this is exactly the intention of this toolkit**, the first of a series of five. We want to help you kick-start your green city transition by showing how the European Green Capital Award Network cities 'did it'. What were the initiatives and interventions that generated a wealth of solutions to embrace the city's environmental goals? How did they create opportunities for exchange with their local stakeholders and citizens?

I hope other cities will want to learn from the European Green Capital Network cities' experiences and follow in their green footsteps!

#### Daniel Calleja

Director General for Environment  
European Commission

### Opening statement from Nijmegen

#### Welcome to the first toolkit from the European Green Capital Network!



In November 2018, just as Nijmegen was nearing the end of its year as European Green Capital, we had the pleasure of welcoming our fellow winners and finalists - the member cities of the European Green Capital Network - for an in-depth workshop around the theme of future-proof cities.

We shared Nijmegen's tireless efforts to prepare for tomorrow's challenges. The river Waal runs through the heart of the city, posing a very real flood risk. We have addressed this by building a new side-channel for the river and developing new districts around it - always in collaboration with our citizens.

Our flagship project represents one of the many ways in which European cities can adapt to a changing climate, while becoming more sustainable, healthy, and liveable. In this toolkit, you will discover the experiences of the Network's members, which we hope will inspire you to take ambitious action.

Nijmegen took the initiative in 2018 to launch a Call for Action for sustainable cities on behalf of the European Green Capital Network. With this toolkit the European Green Capital Network offers its support to other cities in preventing the effects of global warming, loss of biodiversity and depleting resources.

#### Hubert Bruls

Mayor of Nijmegen



## WHY IS NOW THE TIME TO ACT?

Reducing vulnerability, safeguarding freshwater supply and quality, protecting ecosystem services, and installing robust, sustainable urban infrastructures belong to the key tasks of any local government – as does keeping citizens happy and healthy.

**Now is the time to act: we only have until 2030 to cut our CO<sub>2</sub> emissions by half to avoid exceeding 1.5 degrees of warming, which would have catastrophic environmental effects.<sup>1</sup>**

### 3 key challenges for cities

1. The over-exploitation of natural resources degrades cities' environmental systems, which in turn threatens citizens' mental and physical health.
2. Vulnerable infrastructure can put an entire city on pause, whether through a flooded public transportation network or a disrupted energy supply.
3. Social cohesion is the glue that holds society together. If it dissolves, citizens become less resilient to disasters, and inclusion efforts can be derailed.

These are not abstract challenges – inaction has clear costs! Nijmegen, European Green Capital 2018, faced catastrophic flooding in the 1990s, which led to the evacuation of over 250,000 inhabitants. This provided an impetus for its flagship river side-channel project.

Climate change is also fuelling an increase in extreme weather episodes, which make flooding a challenge for all cities. The 2019 European Green Capital, Oslo, has been reopening urban waterways to manage stormwater.

The members of the European Green Capital Network have been successful in this regard by putting in place strategies to become resilient towards natural and manmade disasters and adapt to climate change and a rapidly changing world.

Many of these cities do so by using nature-based solutions, which are solutions that are “inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience.”<sup>2</sup> For instance, Hamburg uses green roofs to reduce heat stress, and Lahti uses plants to remove microplastics from stormwater.

If there is one common point to all efforts to make a city future-proof, it is that they embrace a partnership-oriented approach, one that includes and involves multiple sectors and types of actors in the city. Indeed, Essen was able to bring the Emscher river back to life through a regional partnership.

**Cities could lose up to 10.9% of their GDP by 2100 without green policies.<sup>3</sup>**

Specific solutions can be as small as a green roof, or as widespread as a sustainable urban drainage system. Crucially, however, technical interventions need to be nested within participatory processes that ensure citizens' trust and support, and leave no one behind.

Ultimately, a future-proof city is able to improve the quality of its citizens' lives, whether through improved preparedness for challenges large and small, or a more efficient use of natural resources. The European Green Capital Network hopes this toolkit will support you on this journey.

<sup>1</sup> International Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C, October 2018. Available online: [www.ipcc.ch/sr15](http://www.ipcc.ch/sr15)

<sup>2</sup> Estrada et al. (2017) A global economic assessment of city policies to reduce climate change impacts. *Nature Climate Change*, 7(6), 403. Available online: [www.nature.com/articles/nclimate3301](http://www.nature.com/articles/nclimate3301)

<sup>3</sup> <https://ec.europa.eu/research/environment/index.cfm?pg=nbs>

## TRANSFORMATION STORIES

### Stockholm: Measuring green



Developers of urban planning projects are often tempted to cut out green and blue spaces to maximise economic value. Stockholm tries to counteract this tendency by using the Green Space Index, a tool for calculating eco-efficient use of space, to assess the ecosystem services provided by public open spaces, green roofs and courtyards. The aim here is to foster good practice in the construction of new parks or housing areas by ensuring they contribute positively to their surrounding ecosystems, for example by increasing biodiversity and climate resilience. In practice, the index score is generated by dividing the eco-efficient area by the size of the total area. Simply put: the higher the index, the more quality greenery in the area. It has been applied numerous times in project planning and development, most importantly in the Stockholm Royal Seaport, Sweden's largest development project, where the builders are obliged to reach a specific index goal. Since 2017, the tool is mandatory for all new development built on city land.

### Lahti: Nature meets tech



Lahti designed a stormwater management approach that combines nature-based and technical solutions. It uses green spaces to hold rainwater in individual plots, connecting them with channels that collect excess runoff and lead to detention and infiltration pools. As Lahti is located on top of major groundwater reserves, the city is also exploring the potential of nature-based solutions to treat contaminants in the water, for example by using plants to remove microplastics present in stormwater.

### Umeå: Birches leading the way



Umeå has chosen to use nature-based solutions to make the city both more sustainable and resilient. In particular, the city has been building new parks connected by green corridors. Umeå found that urban greening needs to take local culture and ecosystems into account, and therefore used the birch tree - a symbolic part of its identity and history - as a key feature throughout the corridors to find a connection both to nature and its citizens.

### Barcelona: The cycle of water



BCASA, Barcelona's water management utility, is experimenting with sustainable urban drainage systems in the neighbourhood of La Marina del Prat Vermell. The main benefits include less rainwater ending up in the sewer, less drinking water needed for irrigation, a lower risk of flooding, and less pollutants entering the ecosystem.

### Essen: Reclaiming the river



The City of Essen and its regional partners are implementing one of the largest infrastructure projects in Europe, bringing a river back to life that, until recently, existed mostly as a wastewater channel. Not only are 80 kilometers of waterways being restored, but the city is also taking this as a historic opportunity to create a network of connected green areas and open spaces, combining environmental, social and economic benefits. The conversion project is an important climate adaptation milestone, which is also strengthening regional cohesion, creating new jobs and business opportunities, as well as increasing the quality of life for the inhabitants.

### Vitoria-Gasteiz: Greening as a restoration tool



Vitoria-Gasteiz's green belt is a group of peri-urban parks which are linked by green corridors. The project was initiated in the early 1990s with the aim of restoring these previously neglected areas. The parks provide both recreational and environmental value, and feature diverse biotopes, including woods, rivers, wetlands and meadows.

For more transformation stories visit the [EU Green Capital website](#).

## TRANSFORMATION PATHWAYS

### NIJMEGEN - ALL ABOARD THE GREEN CITY

The Waal, a branch of the river Rhine, flows through Nijmegen and is at times a difficult neighbour: In 1993 and 1995, the city suffered from widespread flooding. With €350 million in support from the national government, a major flood-risk reduction programme, *Room for the River*, was put into place. In the past decades, many projects aiming to make the city more resilient to climate change have followed. Since then, urban development processes have always included citizens instead of only using top-down approaches. **Together, in a common effort, with high levels of public participation, Nijmegen and its citizens set out to make their city “climate-proof by 2050.”**

One of the campaigns contributing to this goal was *Green Allure Inner City*, launched in 2007. This campaign aimed to make the city more attractive through urban greening. Key measures included, for instance, the creation of green roofs, and a pocket park, which is a micro-park generally replacing grey infrastructure, such as a parking lot.

In 2014, a new council coalition initiated the *Green Connects* campaign and many citizens and organisations took on small and large greening projects. The campaign led to more than 300 participatory projects, including the creation of twelve parks. These were seen as fostering social cohesion by bringing neighbours together in the pursuit of joint activities. Nijmegen not only asks its citizens for ideas and input, but it also enlists them in the maintenance of green spaces, which increases participation while also decreasing costs.

*“I’m convinced that cities make visible the ambitions and dreams its residents have helped to build. In the case of Nijmegen, these are unmistakably sustainable. Enthusiastic residents, knowledge institutions and companies have come together in a ‘green movement’, which proves that a smaller European city can still be ‘great’ when it comes to green measures and goals. In this way, we work together to shape a city that will be a beautiful place to live and work for the generations of Nijmegen residents yet to come.”*

**Harriët Tiemens**

Deputy Mayor of Nijmegen



Nijmegen, European Green Capital Winner 2018



Tree Planting Day at a primary school; start of the *Breaking the Stones* campaign

Image: Ton Verhoeven



During Nijmegen's Green Capital year in 2018, the city launched the campaign *Breaking the Stones* that aimed at removing hard surfaces such as pavement and tiles in private and public spaces to replace them with green surfaces. 32 primary schools participated in the launch on *Tree Planting Day* and more than 2,000 children planted 6,000 plants and trees. This campaign has now led to a network consisting of various people and organisations. **The main goal of *Breaking the Stones* is to make citizens and companies aware of the effects of climate change and show them what actions they themselves can take.** Already in its first year, the target to remove 100,000 tiles was exceeded by 90,000 tiles. Of the 190,000 tiles, 32,000 were in private gardens, 13,000 in school yards, and the rest in public spaces (two squares and a big part of the river quay). This campaign can be linked back to an older campaign from the early 2000s urging people to "be water conscious." Water art work in the city centre still tells the story of the campaign.

However, it hasn't only been plain sailing. Many factors - from a rich archeological layer beneath the city, to unrealistic or unaffordable ideas and conflicts and disagreements between citizens - have complicated Nijmegen's efforts to include its inhabitants in greening activities. These participatory processes have also highlighted the tendency for poorer and more marginalised groups to be under-represented, although the city is working hard to reach these groups through health and welfare organisations.

**Nijmegen's greening approach, therefore, has not unfolded overnight - it has been time-consuming due to extensive participatory processes and financial limitations.** The city always takes citizen participation as its starting point, especially for larger projects such as a park. The citizens are given opportunities to voice their opinions on the design and are brought



New flower beds through the *Breaking the Stones* campaign



Active citizens in the *Green Connects* Campaign

together in a citizens' meeting, followed by two or three workshop meetings, and finally an evening event to show the results. Only afterwards is ground broken on the new projects.

While measuring the success of these many participatory initiatives is difficult, city officials are confident that, ultimately, these processes have spurred broader awareness of the challenges faced by the city in adapting to a changing climate. By the end of its Green Capital year, Nijmegen increased its total green space to about 25%, which amounts to 92m<sup>2</sup> per citizen - an important step in making Nijmegen future-proof.

## TRANSFORMATION PATHWAYS

### HAMBURG - TURNING ROOFS GREEN

Green roofs are great for the climate, biodiversity and add green spaces to our crowded and ever-growing cities. So how do we take them from one-off projects to the next level and part of a citywide strategy? Hamburg has shown us just how, by becoming the first German city with a comprehensive green roofs strategy. The city needs green infrastructure to properly adapt to climate change, most notably increased flooding and a warmer city. However, Hamburg is growing and there is strong demand for new housing which puts pressure on the city's open green spaces. Therefore, green roofs have become a first step in addressing this problem.

The basic goal of the Green Roofs Strategy is to encourage the building of 100 additional hectares of green roofs in one decade. The strategy is based on four key elements, which can be made responsible for the success seen so far: communication and dialogue, funding, regulation, and scientific support. Each element strengthens the others, as shown in the case of scientific support provided by HafenCity University. The planning-oriented university in Hamburg uses the latest science to illustrate the benefits of green roofs and better communicate them to potential developers. **It is a lot easier to convince people to build green roofs when they see on paper how they will save money** on maintenance and stormwater charges, or enjoy the benefits of thermal insulation and shielding from the heat, and the resulting reduced energy costs.



A child playing on top of the Elbarkaden (Elbe Arcadia) in HafenCity

*"Hamburg is going green - even on the roof tops. Green roofs offer multiple benefits in the context of sustainable urban development. As a green space for business and leisure, as meeting place, playground or vegetable garden they make our city even more liveable."*

**Jens Kerstan**

Senator for Environment and Energy



Hamburg, European Green Capital Winner 2011

For example, research by HafenCity University<sup>4</sup> shows that a green roof in Hamburg can be about 30°C cooler than a conventional roof on a hot summer day. Researchers have also calculated that the higher costs for building green roofs would be offset within 20 years, presenting a financial incentive in the long run. **Overall, the city provides a lot of professional guidance for people interested in greening their roofs:** from the planning stage and calculating the amount of potential funding to the actual implementation and decisions on what plants to use. The strategy's website is very detailed and is directed at people who want to make their roofs a little greener - not at researchers or officials.

Another reason for the success of the strategy has been the extensive planning involved in creating the strategy itself. The city started by considering the overall picture and included stakeholders and made certain it had the necessary resources and commitments from the local government. **The working group with representatives from all relevant stakeholders, most notably the building sector, created the common goal of "100 hectares in 10 years."** The guiding question for their discussion was simple: what do we have to do to get more green roofs in the city? In the end, the strategy was adopted without much opposition, and with high hopes for a positive outcome. The €3 million funding for the project came from the Ministry for Environment and Energy in Hamburg.

<sup>4</sup> [www.hamburg.de/contentblob/12153692/10e26d1af7ebee6366cfc3902c31edcc/data/d-economic-evaluation.pdf](http://www.hamburg.de/contentblob/12153692/10e26d1af7ebee6366cfc3902c31edcc/data/d-economic-evaluation.pdf)



The city subsidises 30-60% of the costs of voluntary greening measures and up to €50,000. Additional subsidies are provided if the roof is located in the inner city, used for generating solar energy or available to multiple users for recreation and enjoying urban nature. For the newest housing developments, Hamburg requires green roofs in its legally binding land-use plans. However, these land-use plans affect only certain parts of the city, mostly in the outer areas. Therefore Hamburg tried to create a green roof act to make green roofs mandatory on all new buildings throughout the city. The act could not get approval due to the opposition of the construction industry. This demonstrates how vital the buy-in of all stakeholders is when it comes to the integration of adaptation measures into cities' institutional frameworks.

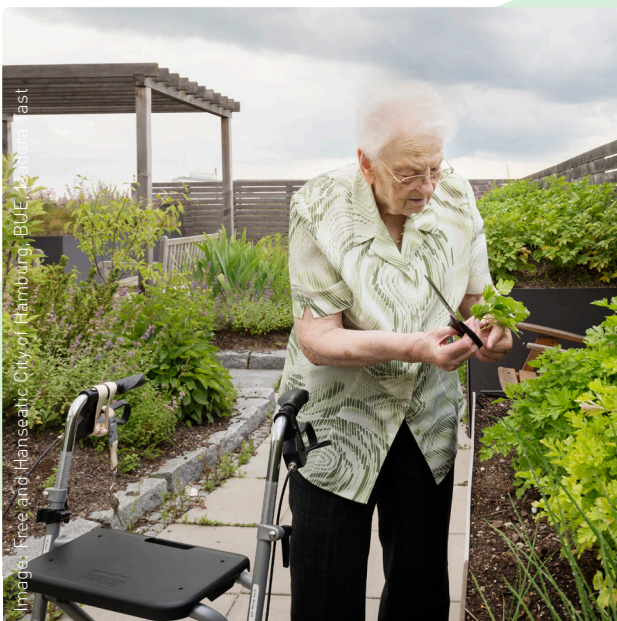
The area covered by green roofs has increased from 80 to 141 ha in the last 5 years, as indicated by reduced stormwater charges paid by green roof owners. By 2018, 118 grants were made for green roofs covering a total area of 4.5 hectares and a value of about €1 million. Applicants included both private building owners and businesses - to equal proportions. Given the costs that the city could otherwise face, these funds are definitely well spent. By way of example, one heavy rainfall in 2011 that lasted for about an hour, caused an estimated €40 million in damages in the district of Mühlenkamp. With such heavy rain events on the increase, green roofs, which are able to retain some of that rainwater and thus reduce the damages, are urgently needed in Hamburg - and everywhere else.

### Key elements of the strategy:

- Communication and dialogue
- Funding: €3 million incentive programme
- Regulation
- Scientific support

### Advantages of green roofs:

- Higher quality of life
- Recreational use and pleasure
- Higher durability than conventional roofs
- Climate resilience
- Rainwater retention
- Improved indoor temperature control
- Biodiversity protection
- Improved sound and temperature insulation



Senior citizen taking care of the dementia garden in a senior centre in Inselpark, Wilhelmsburg, Hamburg



Plants on the Agency for Environment and Energy's green roof in Wilhelmsburg, Hamburg



## TRANSFORMATION PATHWAYS

### LISBON - MORE AND BETTER GREEN

The end of the twentieth century was not an easy time for the City of Lisbon. It was suffering economically and had lost a third of its population. In 2007, the political landscape of the city changed and there was a desire to do things differently. During this time, Lisbon's Green Infrastructure Programme was born, above all, as a result of political will. Increasingly hot and dry summers posed a major threat to the citizens' daily fresh water supply while wet autumns and winters saw flooding more frequently. The city needed to address its vulnerability to heat waves, water scarcity and flash floods by finding a way to adapt to climate change.

Building on the political momentum, Lisbon developed the Green Infrastructure Programme, integrating it into the city's master plan and connecting it to the Biodiversity Action Plan. **The Programme takes as its lead objective the ambitious target of a 20% increase in green areas by 2020** (so far, a 10% increase has been achieved), and is structured around nine green corridors. The first was finished in 2012, connecting the main park of the city with the forest park on the outskirts. Since then, a further five have been opened.

Green corridors are particularly important, as they can help address a variety of environmental challenges. In an effort to provide extra shade and cooling on hot days, 80,000 trees will be added to Lisbon's green corridors by 2021. To prevent flash floods, rainwater retention areas are also being created in the city, the first one being scheduled for completion in 2019. Additionally Lisbon makes use of 'biodiversity meadows,' which are irrigated with rainwater and designed to replace standard lawns. They have the added benefit of increasing biodiversity, soil quality and the storage of carbon dioxide and nitrogen. Such measures could easily be replicated in other southern European cities.

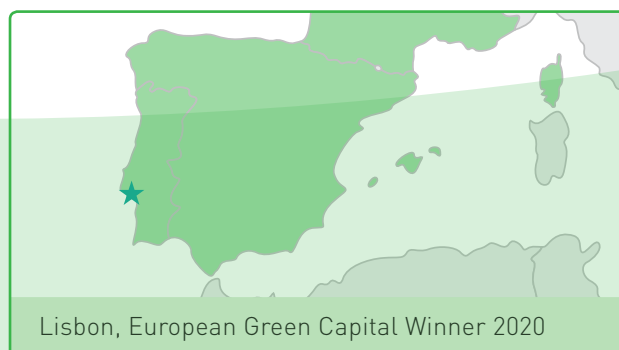


Quinta da Granja Green Park: Opening day of the first urban allotment garden in the city, 2011

*"Lisbon is a city that decided to invest in more green infrastructure, not only to provide additional recreational or pleasant spaces, but also as a very cost-effective tool to adapt to climate change effects such as heat waves, flash floods or water scarcity, and to provide a range of ecosystem services to citizens, including air pollution removal, social inclusion, sport or active mobility opportunities such as bicycle commuting."*

**José Sá Fernandes**

Councillor for Environment, Green Structure, Climate and Energy in Lisbon Municipality



Lisbon, European Green Capital Winner 2020

A crucial success factor here was getting citizens on board, as the city's approach was unusual to many. They needed to understand why the city was choosing these actions and what 'being green' actually means, even if it sometimes results in brown grass. This was done through educational material, workshops, videos, and campaigns, such as joint tree planting on Saturdays. **Winning the European Green Capital Award for 2020 has given Lisbon a bigger stage to further explain its actions to people and demonstrate the effectiveness of ecosystem services in adaptation.**

Urban agriculture has been a popular greening measure in the city for years. Lisbon has an urban allotment gardens programme with 650 plots spread over 20 parks. When different forms of adaptation come together and, for example, biodiversity meadows and urban allotment gardens are implemented in synergy with recreational areas and local parks, people strongly support it, which then leads to faster implementation.

Another important part of the Programme that is going well is the tree planting. Citizens can choose to adopt and plant their own trees, which has proven to be a successful approach. Overall, more than 60,000 trees have been planted so far (mostly consisting of roadside trees) and the goal is to reach 80,000 by 2021. A study<sup>5</sup> estimated that about 2,250 roadside trees in Lisbon provide services such as energy saving, cleaner air, CO<sub>2</sub> sequestration valued at about € 7.5 million annually and a reduction in traffic noise by up to 50%.

By the end of 2018 / early 2019, the city was starting with the second phase of the Programme, which will be more challenging because densely populated areas will be affected, pavements will be broken open, or other forms of grey infrastructure will have to be demolished. This could lead to conflicts with private interests and will require careful implementation. Nevertheless, success is already visible with over 200 new hectares of green created - halfway to the target set for 2020, when all 9 green corridors will be completed.



A biodiverse rainfed meadow installed as a response to water scarcity in a central green corridor



Lisbon has shown that a city can become more sustainable despite a financial crisis. City officials stress three points that should be kept in mind when implementing green infrastructure measures: People should be informed but also engaged in the actions, political support needs to be behind the actions, and funding needs to have been secured. **Lisbon's approach is simple: make it natural, cheap, and fast.** This way, greening the city is a 'political weapon' that can help win elections.

### 3 key elements of Lisbon's Green Infrastructure Programme:



- Green corridors
- Tree planting
- Urban agriculture

Because of the green infrastructure programme, not just the amount but also the quality of green spaces has increased in Lisbon. A lot of formerly isolated green areas are now connected through green corridors. The allotment gardens, bike friendly infrastructure, open gyms, and ecological corridors help encourage active modes of transport, decrease environmental impacts, and simply provide residents, workers, and tourists with a more attractive and liveable city, while enabling Lisbon to adapt to climate change and become future-proof.

<sup>5</sup> Soares A. L. et al. (2011) Benefits and costs of street trees in Lisbon, Portugal. Urban Forestry & Urban Greening 10: 2, pp. 69-78



## TRANSFORMATION PATHWAYS

### OSLO - LETTING WATER FLOW FREELY

Heavy rainfall is a major challenge for sewage systems. In Oslo, particularly its city centre, flooding linked to overloaded sewage systems is increasingly becoming a problem, threatening the water quality and posing risks to citizens' health. With climate change on the rise, this problem is only expected to worsen in the future. For this reason, the city of Oslo has decided to manage water in a different way, no longer simply putting it underground.

The initial impetus first came in 2010 from the Water and Wastewater Agency, which alerted the City Council to the need of a stormwater policy. This led to Oslo's Stormwater Management Strategy, which was developed by 2012, approved in 2014 and incorporated into the city's master plan. There was no real opposition to the strategy even though the city has always had problems with using its space. In particular, developers prefer to simply put water underground rather than letting it flow in a green and open manner. This has also been counteracted by providing clear guidelines as well as advice and knowledge on the issue.

**Based on the Strategy, an action plan was created in 2016 when memories were still fresh of unprecedented rainfall in 2014 and 2015.** The floodway and retention network laid out in the plan includes major areas reserved for heavy rainfall as well as minor floodways to bring the excess rainwater to the major floodways.

Although the action plan is an important aspect of the Stormwater Management Strategy, it hasn't yet been approved at a political level, which has delayed the

*"Stormwater management has to be a central part of city planning. The government must ensure that municipalities have the necessary resources and tools to fund green and open solutions in parks and green spaces and thereby also spare the sewage system."*

**Ola Elvestuen**

from 2015, then leader of the Committee for Energy and the Environment in the Norwegian Parliament (now Minister for the Environment)



Oslo, European Green Capital Winner 2019

implementation of some of its measures. It is difficult to pinpoint a single cause for this delay, but two contributing issues can be highlighted. Firstly, the full approval of



Open retention basin in new development Ensjø

Image: Tharan Fergus



this Action Plan requires cooperation between different agencies and departments, which is challenging and time consuming. Secondly, while the political support exists in theory, the momentum has now shifted to other sustainability efforts such as mobility. This has proven a hindrance for effective implementation. **While an overarching strategy is essential, the Action Plan would ensure the Strategy's realisation and a common approach across all departments.**

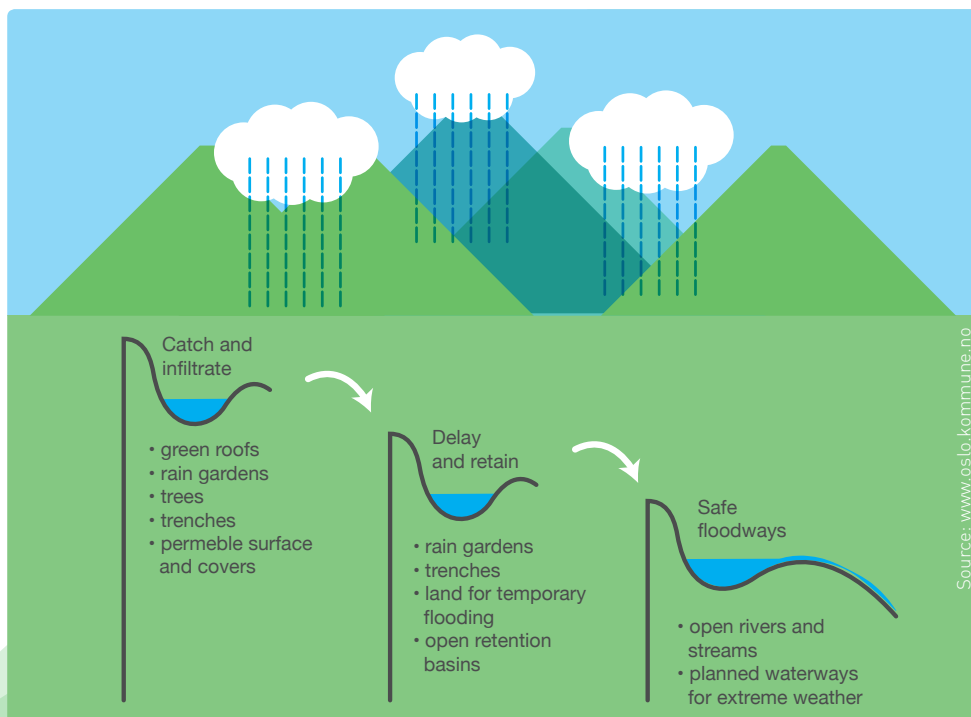
That does not mean, however, that the stormwater strategy hasn't been a visible success. New buildings must now incorporate solutions such as green roofs. Knowledge on the issue among developers, planners, and regulators has increased noticeably as a result of courses offered by the city, and an extensive information-sharing effort is underway alongside 30 factsheets that describe specific measures in detail. Planners and developers also have access to a stormwater management guideline and at least two large meetings have been taking place per year to share information on how to take stormwater management regulations into account.

**An important part of the strategy is the rivers and streams re-opening programme.** Oslo has 10 main waterways flowing through its urban areas. In the past years, starting even before the strategy was adopted, nearly 3 km of waterways (of a total of 24 km of closed waterways) were re-opened. These efforts often unfold as part of broader re-development projects.



Open retention basin for stormwater in the student city of Bjølsen

An important takeaway is the presence of an overarching strategy that has political support. Stormwater Management Strategies should be incorporated into a city's master plan which would make it mandatory for developers and others to take it fully into account. A city has to have clear regulation, but also needs to offer advice and support to developers, which has been part of Oslo's approach from the beginning and has led to many successful actions.



Oslo's three-step strategy approach to stormwater management as laid out in the Action Plan

## LEARNING FROM THE BEST

The aim of this toolkit is to share with you the key lessons that the EU Green Capital winners and finalists have collected over the years, as well as to give you a feeling of being part of a growing community of changemakers, one that is willing to share both successes and failures.

There is no single recipe for building future-proof cities. There are many questions that remain open, tensions and trade-offs that need careful consideration, surprises that will inevitably appear along the way. And while no one can tell you what is best for your city, there is plenty that can be learned from the experiences of others.

### Local governments are neither all-powerful nor all-knowing. So why not admit it?

The City of Nijmegen recalled the importance of stepping down from the institutional pedestal while discussing the future of the city with citizens. Talking with citizens instead of talking at them makes people invested in your projects and builds the trust needed for a deep transformation. Public consultations are not about making promises you cannot keep; it is vital to agree on shared values, taking the needs, hopes and fears of

concerned citizens seriously. Sometimes it even takes some extra effort to hear the voices of those who don't usually speak up.

### Don't sing your own praises, let others do it

The City of Umeå shared their recommendations on how to build trust between a local authority and citizens. What worked best for them was reaching out to ambassadors, people who are known and respected in the community: local business owners, sports celebrities or activists, and letting them talk about the importance and impact of local sustainability policies.

### There is so much we can still learn – both people and nature are so smart

The City of Lahti is coordinating a project experimenting with natural solutions to improve the management and quality of rainwater. One of the ideas currently being tested is using plants to bind microplastics ending up in the city's stormwater, a very promising solution both in terms of environmental impact and future business opportunities.

### Why are we greening the city?

"Greening the city has multiple benefits. It also wins elections."

"Nature-based solutions are about solving many problems with one action."



### How to engage with citizens?

"A responsible government acts on the power that already exists within the community."

"Once people have a green space, they want to protect it."

"Everyone likes trees... except in front of their windows."

"When you need to have difficult conversations, don't contract them out to external people."

### How to deal with uncertainty?

"No one can give good projections of what will happen in 2100."

"If we wanted to be 100% safe from flooding, we would have moved to a different country."

"We needed to rethink how we deal with stormwater, we can't just keep building bigger sewers."

### What if letting nature take over means brown lawns instead of shiny green ones?

Setting up complex irrigation systems to keep the lawns green in the dry southern European summer is anything but a nature-based solution and yet it is still what many people expect.

### And what if national legislation stands in your way?

In their quest to address challenges, many cities face legal obstacles, and often it's that experience that leads to necessary legal changes.

### How can you maintain high environmental standards while leaving room for innovation?

The rules are always one step behind the reality but they are needed to make sure we don't lock ourselves into unsustainable solutions.

### What if co-creating new green spaces and other sustainable solutions only exacerbates existing social inequalities?

It is well educated, middle class people that are overrepresented in public participation processes, yet it is often in poorer neighbourhoods where the green spaces are lacking and existing infrastructure is failing.



## IT'S YOUR TURN

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### **S**top fearing the worst, start planning for it and it might never happen

Many stories of change feature a breakthrough moment, a moment when what was previously unthinkable suddenly became possible. Unfortunately, it often takes a catastrophe for the transformation to unfold, as was the case with the Fukushima nuclear disaster that accelerated the nuclear power phase-out in Germany. Nobody wishes for a disaster to strike but we have a moral duty to learn as much as we can from the past ones. We should also look carefully for the cracks in the system, anticipating any future threats or openings, and getting ourselves ready to step in when necessary.

### **H**aving the right data helps to target your resources

While we share many common challenges, every city has its unique combination of risks and opportunities. Taking the time to understand your starting point in granular detail and the different pathways through which the situation might change, will help you prioritise interventions and identify the most cost-effective routes. This is where collaborating with researchers really pays off, for instance by developing heat stress maps or flooding simulations - but do not underestimate the potential of citizen science either!

### **P**olitical will plants trees, institutions keep them alive

Breakthroughs need political will. However, politics changes and sustaining momentum requires a different set of skills. Hence the importance of building institutions, creating habits, embedding change in administrative procedures - the everyday grind of making change happen, which is where local government staff excels. This is a key step in future-proofing your city and the more allies your policies win, the more difficult they become to reverse (and don't forget that the best way to win allies is to share your successes).

### **S**et a robust framework, but keep it flexible

Shared visions need to be translated into long-term goals. Time-bound commitments are great to galvanise local ambitions but, especially in fast-changing circumstances, being too prescriptive about actions needed to reach them can backfire. Make sure the community agrees on the destination and be open to figuring out next the steps together. Keep learning from small-scale experiments and adjust your plans as you move along. Adaptive capacity is a muscle that gets stronger as you exercise it, even if combining rules and flexibility is not an easy feat.

### **I**f you want a resilient community, start making your city more resilient together

This is a virtuous circle where acting as a community to build a resilient city makes the community more resilient in turn. Greening the city provides an excellent opportunity to take the first step, whether planting trees or growing vegetables with neighbours. Such projects make it easy for people to see the results quickly, empowering them to take on more ambitious projects. What makes the virtuous circle spin even faster is sharing the success stories and celebrating even the smallest wins.

## **B**est environmental projects are social projects too

Upgrading public spaces to increase their resilience offers a unique opportunity to create spaces that people can enjoy. It is important to recognise citizens as experts in deciding the future of their neighbourhoods, learning to seriously consider their needs and share responsibility for the outcomes. Environmental projects can benefit greatly from stronger involvement of municipal departments or civil society organisations representing the social domain, whether in terms of reaching beyond usual suspects or mobilising additional funding.

## **F**uture-proof infrastructure is green, decentralised and close to the people

Centralised systems lack the agility needed to quickly adapt to changing circumstances. Decentralised solutions, such as sustainable urban drainage systems, offer greater flexibility and redundancy, meaning that the breakdown of one element does not necessarily bring down the entire system. Evidence shows that making people aware of how urban infrastructure works, including the advantages and drawbacks of different solutions, is a good investment, allowing them to make more informed choices and facilitating future maintenance.

## **N**ature connects across administrative boundaries and so should we

To reap full benefits of nature-based solutions, it is not enough to scatter single green projects here and there. Just like grey infrastructure, such as roads or water pipes, green infrastructure crosses administrative boundaries, both demanding and improving collaboration, whether across a city administration or an entire region. The earlier this collaboration starts, the better, to enable joint planning and make the most of existing resources. Cities are not islands and their future is closely linked to that of their regions, countries and beyond.

## **D**on't forget to measure how good you are

Working for a local authority keeps you busy. There is always another project on the horizon or another challenge that urgently needs addressing. Often, there is too little time to understand the impact of your efforts so far, and yet this is time really well invested. Make sure you include impact evaluation in the design of your projects to help you learn from your mistakes but also to demonstrate how your efforts are making a difference, whether in terms of financial savings, community well-being or positive environmental impact.



## THIS IS NOT THE END

Ready to act? There are a number of additional resources available to support you in your efforts and help you move faster.

### Green City Tool

The European Commission Green City Tool is both a simple self-assessment and benchmarking tool for cities, and a source of information and advice for anyone wanting to learn more about how we can make cities greener and more sustainable. Cities can use the tool anonymously or, if they wish, register themselves officially. This means putting themselves on the Green City map to show others that they are committed to becoming more sustainable, and to communicating what they are planning to do next. It includes a range of topics to help your city become more future-proof, such as nature and biodiversity, climate change adaptation, water and governance.

<https://webgate.ec.europa.eu/greencitytool/home>

### Urban Adaptation Support Tool

The Urban Adaptation Support Tool has been developed by the EEA-Climate Adapt. The Urban Adaptation Support Tool aims to assist cities, towns and other local authorities in developing, implementing and monitoring climate change adaptation plans. UAST was developed as a practical guidance for urban areas, in recognition of their importance in the European economy. The Urban Adaptation Support Tool outlines all the steps needed to develop and implement an adaptation strategy and makes references to valuable guidance materials and tools. The tool offers valuable support to both the cities that are just starting on adaptation planning and to those more advanced in the adaptation process.

<https://climate-adapt.eea.europa.eu/knowledge/tools/urban-ast/step-0-0>

### Urban Nature Atlas

The Urban Nature Atlas, created as part of the NATURVATION project, is the most comprehensive database of nature-based solutions (NBS) for cities created to date. The Urban Nature Atlas has been produced as the result of a systematic survey of NBS interventions in 100 European cities and provides the basis for the analysis of socio-economic and innovation patterns associated with urban NBS in Europe. It currently contains almost 1000 examples, searchable by the challenge addressed, urban setting or project costs.

<https://naturvation.eu/atlas>

### European Resilience Management Guideline

The European Resilience Management Guideline, developed by the Smart Mature Resilience project, provides guidance to cities and local governments in assessing and strengthening their local resilience status. This is achieved through setting measurable targets together with local stakeholders and co-creating a city resilience strategy making use of the five tools to build local resilience, including a risk assessment questionnaire, a scenario simulation tool and a repository of successful resilience building policies.

[www.smr-project.eu/guideline](http://www.smr-project.eu/guideline)

### GreenSurge

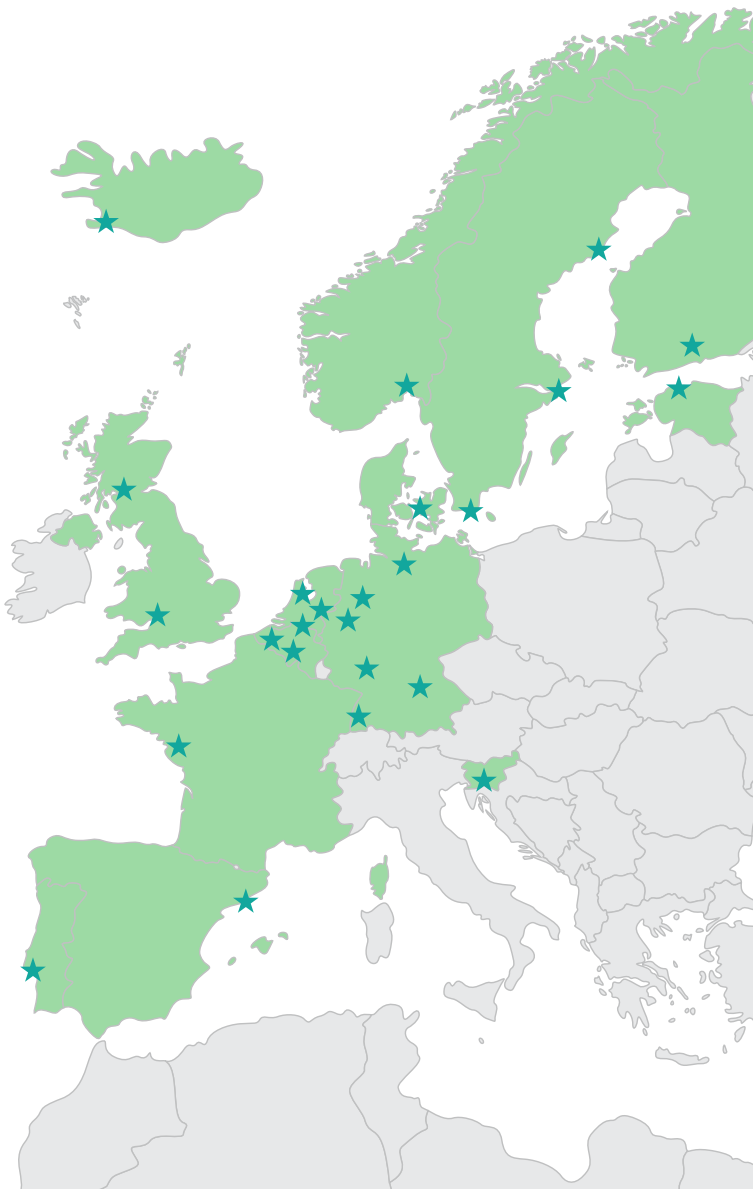
The GreenSurge project has published an urban green infrastructure planning guide for practitioners. The guide is based on a new, integrated approach to strategically planning green spaces. It offers expertise on green infrastructure planning and implementation in Europe, as well as guidance and inspiration for cities, not just in Europe but all over the world.

[www.greensurge.eu/products/planning-governance/UGI\\_Planning\\_Guide\\_Sep\\_2017\\_web.pdf](http://www.greensurge.eu/products/planning-governance/UGI_Planning_Guide_Sep_2017_web.pdf)

## THE EUROPEAN GREEN CAPITAL NETWORK: INFORM. EXCHANGE. GROW.

The European Green Capital Network is a network of former European Green Capital Award winners and finalists. Founded by the city of Copenhagen during its own award-winning year in 2014, the Network's main role is to:

- ★ share best practice, discuss challenges and create solutions for impactful sustainable urban development in Europe, and
- ★ serve as a platform for change, representing European cities in relevant European and global political processes.



### Toolkits for cities

The European Green Capital Network encourages other European cities on their paths towards a more sustainable future by providing guidance and support. During 2018-2020, the Network is holding expert workshops to develop toolkits based on four thematic vision clusters for European sustainable cities. The toolkits will provide recommendations and strategies for cities both inside and outside of the network.

The vision clusters are:

#### 100% renewable

Climate change mitigation and transitioning to fossil fuel-free cities

#### Zero waste

Sustainable waste management, circular economies and responsible consumption

#### Human scale

Integrated urban planning and sustainable mobility, green spaces, inclusive communities

#### Future-proof

Climate change adaptation, resilience, sustainable water sources and eco-systems

### Network Members

Stockholm, Hamburg, Vitoria-Gasteiz, Nantes, Copenhagen, Bristol, Ljubljana, Essen, Nijmegen, Oslo, Lisbon, Amsterdam, Freiburg, Münster, Barcelona, Malmö, Nuremberg, Reykjavik, Frankfurt, Brussels, Glasgow, Umeå, 's-Hertogenbosch, Ghent, Lahti and Tallinn



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Contact the Network secretariat at:  
[network@europeangreencapital.eu](mailto:network@europeangreencapital.eu)



This toolkit covers the following indicator areas for the European Green Capital Award:

Climate Change: Mitigation  
**Climate Change: Adaptation**

Sustainable Urban Mobility

**Sustainable Land Use**

**Nature and Biodiversity**

Air Quality

Noise

Waste

**Water**

Green Growth and Eco-innovation

Energy Performance

**Governance**

*“Combating and adapting to climate change is the greatest challenge of our time and it can’t be left to someone else, at another time, in another place.”*

**Raymond Johansen**

Governing Mayor of Oslo

*“It is surprisingly important that people dare to think about and implement things in a new way.”*

**Saara Vaurama**

Environmental Director, City of Lahti

*“The environment is the future, it is quality of life, it is sustainability and it is about doing more with less.”*

**Javier Maroto**

Former Mayor of Vitoria-Gasteiz