

Climate-resilient industrial and business parks

An implementation guide



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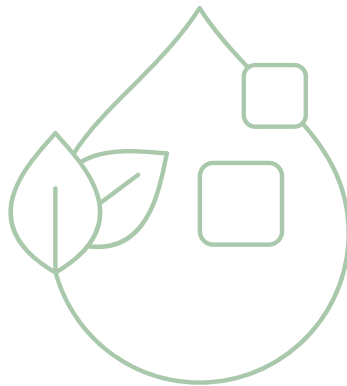
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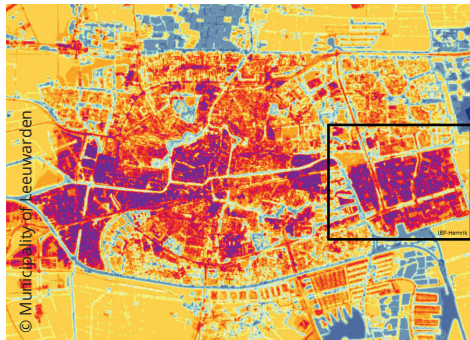


Need → for
adaptation in
business parks

1.



Already, climate change is impacting our everyday lives and working conditions. In the future, strong thunderstorms, heavy rainfall and flooding events are expected to become even more intense, as well as more frequent. Periods with extreme heat will increase, as well as the number of days with temperatures above 25 degrees Celsius.¹



Industrial and business parks, areas where a large number of people work and live, are vulnerable to certain risks related to the impacts of climate change. Due to their high degree of surface sealing with stones and pavement, they are prone to **heat stress and urban heat islands**. This means that heat waves are felt more intensely in business parks by employees and residents. Heat waves also contribute to the overheating of urban areas close to business parks.



Business parks are also susceptible to flooding and heavy rainfall: The high percentage of sealed surfaces prevents water being absorbed into the ground, disrupting the water cycle. The water simply runs off and accumulates in certain areas, which can lead to flooding and overloading of the sewer system.

"It is important to not only focus on consequences of climate change such as heat or storm water, but to zoom in directly on employees' health or on consequences for the production process."

Hans van Ammers, Municipality of Arnhem



While these **effects of climate change** pose a threat to the people living and working in business parks, it also means that there is a **big potential to transform business parks** in a way that makes them more **climate-resilient** and **more comfortable** places to spend time.

1.2

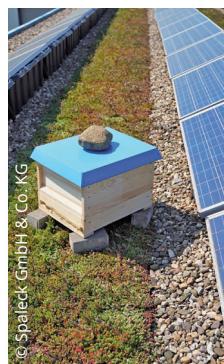
Green-blue infrastructure for municipalities and companies

Luckily, entrepreneurs and municipalities are not helpless when it comes to facing climate risks in business parks! A number of measures and activities already exist for reducing the effects of climate change in industrial and business parks:²



Façade greening

Protects the building substance, for example from the effects of heavy storms or hail. Has a cooling effect on the building due to the plants' evaporation and provides shading as well as wind and insulation protection.



Green roofs

Retain rainwater, which provides relief for the sewage system during heavy rainfall, and reduce heat loss in winter, which can save energy costs. In combination, green roofs can increase the efficiency of photovoltaic systems.

Permeable or semi-permeable parking lots and unsealing

Reduce the risk of flooding by retaining more rainwater in the soil. Decrease the need to water vegetation. Space can be gained to enhance the outside area, for example by planting trees.



Infiltration swales/water retention in open spaces

Can help to hold back unpolluted rainwater and lead it back to the water cycle. Depending on the design, can serve as a recreation area for employees.



Green outdoor areas

Greenery not only reduces noise emissions, but also absorbs air pollutants, improving the air quality.

Green-blue infrastructure at a glance

1.3

What is green-blue infrastructure?

Green-blue infrastructure is a strategically planned network of green and blue spaces. **Green infrastructure** refers to green roofs and façades, trees and other plant elements. **Blue infrastructure** includes infiltration swales or water management systems, as well as areas or spaces for water retention. Besides reducing the impacts of climate change and promoting biodiversity, green-blue infrastructure has a positive effect on the health of citizens.³

Advantages of green-blue infrastructure for residents and employees in a business park:

- ✓ (lunch) breaks in a green outdoor area
- ✓ keeps offices and buildings colder (in summer) and warmer (in winter)
- ✓ reduces heat stress and energy costs
- ✓ improves air quality
- ✓ reduces noise in offices and residential units
- ✓ protects against flooding and heavy rainfall
- ✓ creates an environment with more comfort and a higher quality of life



1.4

The project IB-Green

Interreg



Co-funded by
the European Union

North-West Europe

IB-Green

Green-blue infrastructure for healthier working environments and improved living conditions

From 2023 to 2027, the European project IB-Green (Interreg North-West Europe) transformed existing industrial and business parks to become more climate-resilient with green-blue infrastructure. The aim of IB-Green was to benefit residents and employees by implementing green-blue infrastructure in business parks, but also to mitigate negative impacts of climate change for enterprises and municipalities.

Eleven partner organisations join forces

Within IB-Green, eleven partner organisations from Netherlands, Germany, Belgium, France, Luxemburg and Ireland joined forces transnationally and explored how to make existing business parks fit for the future.



In addition to implementing green-blue infrastructure, IB-Green project partners also focused on mobilising and consulting companies on adaptation measures for their premises, as well as promoting the topic of climate adaptation among municipalities and further stakeholders.

Be inspired by IB-Green!

This brochure bundles the experiences and lessons learnt from all IB-Green partner organisations. If you are a municipality or any other stakeholder interested in planning and implementing adaptation measures, you will find detailed technical information in the IB-Green Toolbox.

scan ↓



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère du Logement et de
l'Aménagement du territoire



WILA
Wissenschaftsladen Bonn



IB-Green partnership

1.5

What is the best part about transforming business parks?
The right partners make all the difference.



1.6

Business parks in North-West Europe

As part of IB-Green, green-blue infrastructure was implemented in seven industrial and business parks (IBPs) across North-West Europe: in Germany, France, Belgium, Netherlands and Ireland.

IBP Researchpark Zellik (Belgium)

Located in Zellik near Brussels, this industrial park from the 1980s is undergoing a major transformation. Since 2019, the Vrije Universiteit Brussel (Free University of Brussels) and UZ Brussel (Brussels University Hospital) have launched a research hub to collaborate on innovative and sustainable solutions to the challenges faced by the industrial park and the entire community. Situated between two Natura 2000 areas, the aim is to turn the IBP into an ecological corridor for biodiversity by connecting the two natural reserves.

IBP Singen (Germany)

This industrial park dates back to the 1950s and hosts traditional manufacturing companies as well as small and medium enterprises. The business park is located within the city of Singen (Hohentwiel), taking up a big part of the core city area. Since the IBP is predominantly sealed, it contributes to the urban heat island effect. In Singen, the challenge consisted of implementing greening measures despite the complex needs and functions of the business park: for example, the requirements of heavy load traffic on roads or the number of parking spaces necessary for clients.

IBP Seclin (France)

The business park Seclin was established in 1967 and is located south of Lille in the municipalities of Seclin and Noyelles-lès-Seclin. It covers 178 ha with a total of 250 organisations and 8,000 employees overall. Its particularity is that it is located over a water table which is a drinking water source for the population of Lille metropolis. The objective is therefore to make public surfaces more permeable, which will improve rainwater infiltration, while coping with environmental restrictions to protect the quality of groundwater from pollution.

IBP Ravesnes-les-Francis (France)

Built in 1991 in the north-west of Lille, the IBP is located in a very densely populated area between the cities of Tourcoing, Bondues and Mouvaux. Heat stress is a major challenge due to the lack of green spaces. The business park covers 71 ha and hosts 82 organisations with around 1,500 employees. Due to its location in the proximity of residential areas, neighbouring inhabitants cross the business park on a daily basis. Lille Metropolis and the mayors of these municipalities aim to transform the business park into a flagship for how an IBP can be modernised according to social, ecological and economic aspects.

IBP Sandyford Business District (Ireland)

Located near Dublin, Sandyford Business District comprises four business parks with a total of 1,000 companies, 26,000 employees and over 6,000 residents. A major challenge the business park faces is to consider social aspects of the residents, while undertaking activities to tackle heat stress. In the district, 0.8 ha of land will be transformed into a park for residents, workers and visitors to profit from and enjoy spending their time.

IBP Hemrik (Netherlands)

Built and developed between 1970 and 1990, in the business park Hemrik in Leeuwarden 77 % of the surface is made of stone. This makes the IBP – with its 400 companies and 4,000 employees – vulnerable to heat stress as well as flooding after heavy rainfall. In order to transform the business park, pavement will be removed to create green space and a wadi (water infiltration and drainage pasture) constructed. Since 80 % of Hemrik's surface is privately owned and only 20 % by the municipality, private stakeholders need to be engaged towards greening and unsealing the park.

IBP IJsseloord 1 (Netherlands)

Developed in the 1950s, IJsseloord 1 is a business park with residential and industrial use, with companies from different sectors. Challenges faced in Arnhem are the high temperatures in the business park and the extremely limited public space available for greening measures. Moreover, underground space – which planted trees would need for their roots – is also limited due to existing sewage pipes and cables. As a result, the city has to be creative and innovative for concepts on how to plant and maintain trees, but also in motivating businesses to green their lots to compensate the few public spaces.

Practical **green-blue** solutions → for business parks

2.



Overcoming challenges during implementation

2.1

Despite the benefits of green-blue infrastructure, municipalities and companies face different challenges when planning and implementing these measures in business parks.

Compared to climate mitigation, adaptation measures are often less prioritised and therefore **lacking in funds**. Even where local greening strategies exist, they rarely specifically address business parks. Finally, transforming existing industrial areas is **complex** since it involves multiple stakeholders with different priorities, e. g. public authorities, entrepreneurs or park operators.

“Even though we have very wide streets in Singen (Hohentwiel), it was difficult to identify a suitable location because of underground infrastructure such as pipelines and cables, as well as due to heavy traffic and high demand for parking. Individual solutions are necessary, even when a space or area might look promising at first.”

Alena Hayer, Climate adaptation manager,
municipality of Singen (Hohentwiel)

“A challenge is finding the right balance between competing needs and expectations in designing practical green-blue solutions in a multi-use business park.”

Grainne McDermott
Dún Laoghaire-Rathdown County Council

Within IB-Green, project partners faced several specific barriers:

- **A lack of reliable data and monitoring tools** to assess urban heat islands in business parks and to examine the quantifiable benefits of implemented green-blue infrastructure.
- **Technical constraints**, for example dense networks of underground cables or pipelines.
- **Regulations for environmental protection**, e. g. proximity to sources of drinking water, which can require different actions than those, which would be useful from a climate adaptation perspective.
- Finally, business parks are typically **multi-functional**, with **different requirements and needs** for logistics, parking/mobility activities and for residents.



Find out how the IB-Green pilot business parks Researchpark Zellik, Singen (Hohentwiel), Seclin and Sandyford Business District manoeuvred these challenges and what their key takeaways were.

2.2

Lack of data for monitoring green-blue infrastructure

Researchpark Zellik (Belgium)

When planning green-blue infrastructure, it is important to think about how to monitor and evaluate the impact of these adaptation measures. Unfortunately, there is no universal monitoring approach or a single metric available. Especially within the time and budget constraints of a project, it can be demanding to evaluate the impact of a measure. To address this challenge, **Green Energy Park** collaborated with the Free University of Brussels to implement a monitoring and evaluation strategy for heat stress, which combined sensor data and feedback from stakeholders.

Simultaneously, Green Energy Park carried out an employee survey. Participants were questioned on the use of outdoor space as well as how they estimate the impact of a green environment on their productivity and well-being. The responses revealed that 80 % of participants admitted that a green environment had a positive impact on their productivity at work and even 94 % declared that a green environment affected their well-being positively. By combining quantitative data with qualitative insights, Green Energy Park gained a more complete understanding of heat stress. This provided a stronger basis for targeted and effective prevention measures.



For this purpose, two weather stations and two heat stress trackers were installed: one pair in an area prone to heat stress and another pair in a green area with shade. Sensors transmitted real-time data to quantify heat stress indicators and produce a heat map of the business park. This monitoring network was set up because data on urban areas is still limited, particularly on research parks. The network will allow long-term monitoring beyond the project duration of IB-Green.



greening measures, permeable roads and permeable parking spaces. There will also be a seating area for employees and a parking space for bicycles covered by a green roof.

In addition to monitoring activities, green-blue infrastructure was implemented in the research park: Green Energy Park installed an ecological corridor, which will connect two nature parks close to the business park. So far, eight trees, 588 shrubs and hedges have been planted, as well as a native flower meadow (total area 1,302 m²). Additionally, a parking lot will be redeveloped with

Dealing with functional complexity: Pipes and wires in the underground

2.3

Business park Singen Hohentwiel (Germany)

In Singen, there was a pressing need for transforming the business park: The existing streets are very wide, originally designed in a car-centric way for a large number of employees commuting to Singen. Another reason was to accommodate trucks that need to queue. This design has consequences for employees and residents in the business park: There are few green spaces, which could have a cooling effect and the buildings act as barriers to cooling airflows. As a result, the business park records some of the highest temperatures in the city of Singen.

A main challenge in transforming the business park was the functional complexity of the underground infrastructure, combined with the high demand for parking. The subsurface is densely occupied by pipes and cables, which limits the possibility of planting trees. Relocating existing cables and sewer lines is technically feasible, but not viable due to the high costs. Moreover, in streets with heavy traffic and high parking demand, it is difficult to convince stakeholders of the benefits of redesign measures.

As an initial step in Singen, all streets without underground infrastructure constraints

were identified. After this pre-selection, a task force was established comprising the road construction department, economic development agency, mobility management, greening department, urban planning office and climate department. The perspectives of multiple stakeholders were vital in choosing a suitable location accepted by everyone. Ultimately, a site was selected that offered a high potential for surface unsealing and was characterised by the presence of logistic companies, where the parking demands are typically lower compared to other sectors.

As a result of these efforts, the **municipality of Singen (Hohentwiel)** implemented measures in two different locations. One site is the Gottlieb-Daimler-Street, where 550 m² of pavement were

removed and twelve trees were planted. The planting used the approach of the “Stockholm model”: An underground tree pit was excavated and filled with coarse gravel. This loosely compacted material provides space for root growth while allowing water infiltration. Deeper layers were enriched with a nutrient-rich biochar substrate so that the roots grow downward, reducing the risk of damage to the pavement. Further, an inlet directs rainwater into the tree pit during the summer and reduces the need for irrigation. In winter, the inlet will be closed to protect the trees from de-icing salts.



2.4

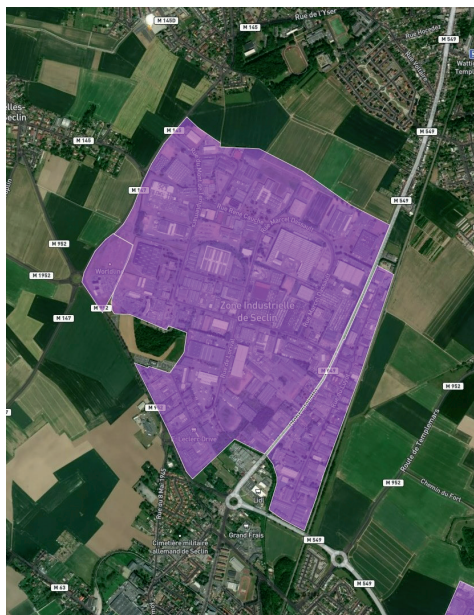
Climate adaptation vs. environmental regulations: Rainwater infiltration above drinking water source

Business park Seclin (France)

Lille European Metropolis is facing a particular challenge in Seclin: The business park is located over a water table, which is an important source of drinking water for the municipality's population. This means that there are regulations concerning groundwater protection that the business park must comply with, making it more difficult to plan and implement green-blue infrastructure. In the example of Seclin, sealed surfaces in fact help protect the groundwater, e. g. in case hazardous substances were to leak. Further, they make it easier to filter the water in an appropriate drainage system, instead of just infiltrating into the ground and reaching the ground water.

Nonetheless, the business park in Seclin is also vulnerable to climate risks due to lack of green-blue infrastructure: The sealed surfaces, combined with dense, dark red bricks, make the business park prone to urban heat islands and increase the intensity of heat waves as well as the risk of flooding. For this reason, Lille Metropolis is implementing measures in one of the business park's streets (Marcel Paul Street). In general, the aim is to make surfaces more permeable and reduce the risk of flooding without endangering the groundwater.

More specifically, Lille Metropolis aims to implement swales and unseal areas, but also to plant shrubs and trees where possible. Given the water table constraints described above, the expertise of colleagues in charge of drinking water management will be mobilised. They will be supported by an external project management assistant specialized in water infiltration. Further, particular attention will be paid to the types of tree and shrub species chosen. The project will also limit water runoff by infiltrating the rainwater as close as possible to its point of impact. The aim is to avoid contamination by hydrocarbons and various pollutants (e.g. leaking vehicles or tire abrasion), which is more likely to occur if rainwater travels a longer distance.



Multifunctional spaces instead of single-purpose industrial areas

2.5

Sandyford Civic Park (Ireland)

In the surroundings of Dublin, **Sandyford Business District** and **Dún Laoghaire-Rathdown County Council** are joining forces to create a civic park in the centre of one of the most densely urbanised areas in Ireland. More than 6,000 people live within a ten-minute walk from the area. Further, new residential developments are being planned close to the business park. With Sandyford Business District's Civic Park, the goal is to move towards a multifunctional use of business parks, which combines work, leisure, housing and sustainability and away from traditional, single-purpose industrial areas.

The civic park aims to be a space for residents, workers and visitors to enjoy. To understand the perspectives and needs of priority user groups, the Irish IB-Green project partners are actively involving the community and key stakeholders in the design of the new civic park. For example, focus sessions were held to gather insights from major local stakeholders such as with staff from the Beacon Hospital, the district's largest employer, followed by a session with

residents, property owners and residential management companies. To involve the wider community further, an open public consultation was organised.

Specifically, the extensive public engagement highlighted the range of growing demands that come with the increase of the residential population in Sandyford Business District. The list of requests and suggestions that came back through the consultation ranged from sports facilities to greening measures. Answering to these proposals, the civic park will include features that will cater to a wide range of users and a large spectrum of age groups within the limit of the relatively small area available (0.8 ha). The concept of the park has been designed to facilitate sport and active interventions in one area, but also places where people can sit down or rest.



Getting → all
stakeholders
on board

3.

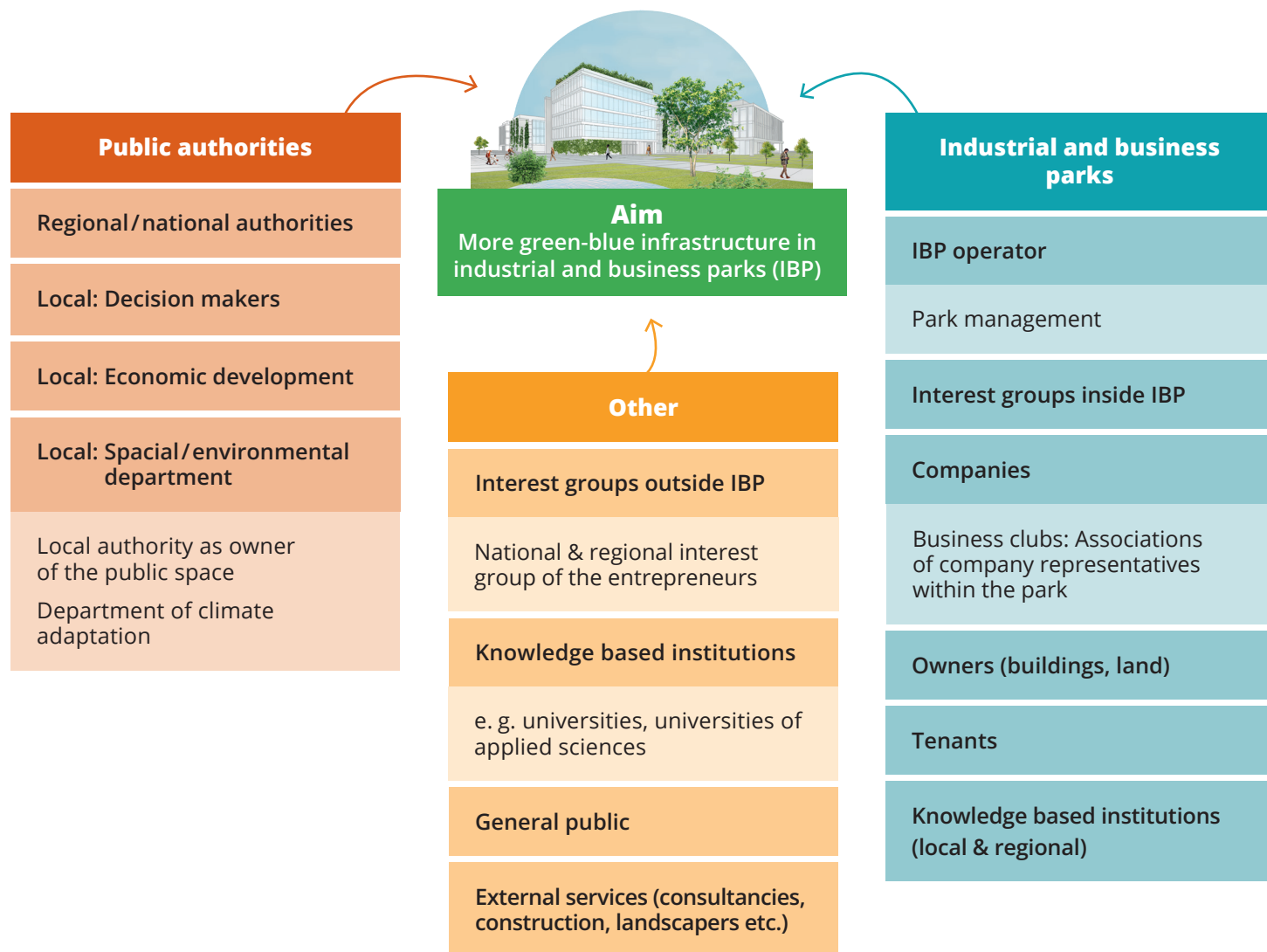


Stakeholder mapping and a common vision

3.1

In industrial and business parks, a large number of stakeholders need to be involved in the planning and implementation of green-blue infrastructure, each with their own timeframes, responsibilities and interests.

In municipalities, this is also the case with different departments that might not yet have any experiences with green-blue infrastructure.



3.1

When cooperation is improved and there is a mutual understanding between different stakeholders, there is a chance of developing a more integrated approach for business parks that goes beyond stand-alone adaptation measures. To formulate a common vision between the stakeholders of a business park, targeted **strategies** and **action plans** are useful.



However, it takes more than strategies and action plans to engage stakeholders. IB-Green project partners mobilised companies and local authorities with different approaches: From **exchanging knowledge**, developing **public-private partnerships**, launching an **award for companies** or using a **digital twin** for visualisation.

"Really make it a common challenge. Show what you are doing, ensure stakeholders can contribute and definitely highlight successes."

Niek Smits, Climate adaptation manager,
municipality of Leeuwarden

"Transformation takes time and a lot of talking; find the right people to talk to. Do not spend your time with people who do not want to be convinced. Go on with people who are willing to change something. The rest will follow at a later stage."

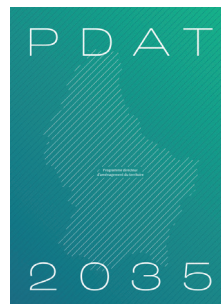
Anna-Christine Sander
Hessian Agency for Nature Conservation,
Environment and Geology



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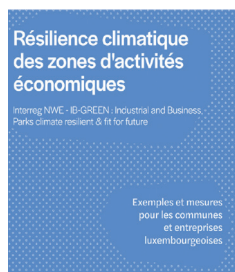


Highlighting the benefits of green-blue infrastructure

3.2

One obstacle to the widespread implementation of green-blue infrastructure in existing business parks is that stakeholders often do not have enough information or best-practice examples. Another struggle can be lack of personnel: Municipalities who want to invest in green-blue infrastructure sometimes struggle to find skilled service providers for implementation.⁴

IB-Green partner organisations developed different approaches to share knowledge and demonstrate the advantages of green-blue infrastructure: from brochures to public walks and simulation workshops. Take a look!



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Modelling effects of climate adaptation measures

The **Ministry for Housing and Spatial Planning in Luxembourg** carried out simulations on two pilot sites and provided municipalities with an average of the daily maximum ground temperatures for their urban planning and development. Depending on the location, the maximum ground temperature ranged from 11.9 to 42.6 degrees Celsius.

Further, additional simulations were performed to assess the impact of climate adaptation measures, e. g. replacing a dark surface with a light-coloured one, planting trees with wide canopies in residential spaces or installing carports equipped with photovoltaic panels. Tree canopies can reduce ground temperatures by 5 to 10 degrees Celsius, while installing carports lowers ground temperatures between 10 and 15 degrees Celsius. These results were summarised in a brochure and presented to local authorities and their technical employees.

3.2

Network of Hessian municipalities and excursions in business parks

The Hessian Agency for Nature Conservation, Environment and Geology (HLNUG) organised public walks in business parks, for which the agency targeted city administrators, local businesses, citizens and the local press. The aim was to highlight key areas in the pilot sites and use them to explain planned green-blue infrastructure measures.

To inform their target groups, HLNUG contacted their existing network of Hessian municipalities (Klima-Kommunen Hessen) via newsletter, website and during different events. Further, the municipalities used their own networks to reach out to local entrepreneurs. In order to plan an engaging field trip, there was a search for industrial estates and companies in Hesse where green-blue infrastructure was already implemented or where it is planned. To this end, the Hessian agency also sought recommendations from the network partners, resulting in a full-day itinerary featuring a variety of locations.



Feedback on the excursion was very positive. One of the main reasons for the success was the broad network of municipalities, local entrepreneurs, chamber of commerce, industry actors and others, which HLNUG has been able to establish over the last few years.



Changing perspectives in a simulation workshop

Bonn Science Shop (WILA) used a moderated simulation workshop as a method to deepen participants' understanding of green-blue infrastructure in industrial and business parks. In the simulation workshop, which took place at the **Hessian Agency for Nature Conservation, Environment and Geology**, participants were challenged to adopt new perspectives by slipping into the role of four different groups: municipalities, economic development actors, companies and local residents. With this technique, the workshop offered Hessian municipalities an opportunity to identify success factors and areas of conflict on the pathway to a climate-resilient commercial area.



© Bonn Science Shop (WILA)



© Bonn Science Shop (WILA)

The simulation workshops can be held as an on-site workshop (3 to 4 hours), or a webinar (split over two days, with a duration of 1.5 to 2 hours per day). It is recommended to have at least eight and a maximum of twenty participants. First, an impulse presentation on green-blue infrastructure in business parks is held and each participant receives a role and instructions. Afterwards, there is a plenary session, in which each group presents their position on the initial scenario of a business park. Then, in a group session, the different actors form coalitions and propose solutions, which they present in a second plenary session. Finally, there is room for discussion and then voting on the proposed solutions and compromises which were found.

3.3

Collaborating with public-private partnerships

Public space in industrial and business parks is often limited to streets and parking lots, while companies are responsible for their grounds. Nonetheless, green-blue infrastructure is more frequently funded by the public sector. Thus, involving private actors is essential for unfolding the full potential of green-blue infrastructure in business parks.

"Do not be shy! Talk about costs (and benefits), specifically short-term and long-term costs."

Juliane Kuckuk, Hessian Agency for
Nature Conservation, Environment and Geology

Additionally, IB-Green project partners have found out that **how** entrepreneurs are addressed, by whom and **with which message** makes a big difference.

"Let us talk about return on investment/finance to convince companies."

Ilse Van den Borre,
Green Energy Park

"It is important to 'speak the language of the entrepreneurs' and find the right organisation who can do this; this might not be the municipality."

Hans van Ammers, Municipality of Arnhem

"Make a proposal attractive and accessible for entrepreneurs by focusing on feasible measures (the 'low-hanging fruits') that align well with available subsidies."

Bauke Zuidema, Municipality of Leeuwarden



© Municipality of Leeuwarden



One approach to achieving this is through **public-private partnerships**. This form of collaboration – applied in IB-Green by the Dutch cities of Arnhem and Leeuwarden – can make it possible for municipalities and companies to gain each other's trust while sharing a common vision.



Public-private partnerships for implementing green-blue infrastructure

In Arnhem and Leeuwarden, public-private partnerships are seen as key to accelerating green-blue infrastructure in Dutch business parks. Both municipalities signed **Green Deals**: collective agreements between the municipality and companies of a business park, aiming to work together towards a greener and climate-resilient working environment. Green Deals, which are becoming more frequent in the Netherlands, can also focus on further sustainability topics such as the energy transition, clean mobility or circularity. In order to turn their aims from the Green Deal into specific actions, companies can use available national funding options, as well as supporting schemes offered by the Dutch cities.

The city of Arnhem signed Green Deals with three business parks. For the business park IJsseloord 1, the focus was primarily on taking first steps towards sustainability and fostering a sense of ownership among business owners regarding the sustainability of the park and its management. The Green Deal had an implementation period of two years (2025–2026) with the park manager responsible for leading the implementation.

In the city of Leeuwarden, four **green coaches** were hired by the municipality to provide free climate scans to the companies of the business park. These green coaches are external professionals such as gardeners and landscape architects with practical expertise in greening and climate adaptation measures.

Helped by a catalogue of green-blue infrastructure and further measures developed for this occasion, the green coaches supported the companies in identifying relevant greening measures tailored to their respective needs and situations. As a result, a green plan was developed for the company. In many cases, the green coaches were also available as potential contractors to implement the recommended measures.



To increase the chances of the consultation advice being implemented, Leeuwarden has set up a Green Deal with a local bank and the local business association, which includes a financial subsidy for small-medium enterprises who want to make their premises more climate-resilient.

3.4

Engaging stakeholders with a digital twin

Through simulations, stakeholders can dive into different views and experience new perspectives. In the context of climate adaptation, they help to visualise how business parks could be transformed with green-blue infrastructure. Specifically, IB-Green project partner Sandyford Business District used a digital twin to model the existing infrastructure, but also to simulate how the business park will look in the future.

Digital twin of Sandyford Business District

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Sandyford Business District's digital twin makes it possible to experience the business park in a 3D virtual reality. This makes urban planning information visible and accessible not just for technical staff, but for the public. Try out the user experience of Sandyford's digital twin: → www.youtube.com/watch?v=CVgdU12W1Mw

The digital twin is based on environmental data and real-time simulations. Its main goal is to identify the best strategies for transforming a civic park in Sandyford Business District by integrating green-blue infrastructure. It helps simulate planning scenarios, enabling Sandyford Business District to make more data-driven decisions for the design and implementation of adaptation measures. Besides demonstrating the benefits of new measures, the digital twin also helps to obtain feedback from stakeholders.

Three different scenarios were simulated in the digital twin, each designed to assess the impact of specific green-blue infrastructure measures, e. g. on temperature reduction and overall sustainability. This included analyses of the tree density and potential urban heat islands. Sandyford Business District owns the detailed model and can modify it.



"Municipalities should start with clear goals for what they want the digital twin to help with, like sustainable urban planning, flood protection or climate planning. They need good, reliable data and staff who know how to use it. Working closely with private partners and other departments is important so everyone uses the same information. They should also plan from the start how the system will be maintained and how data will be managed safely over time."

**Ger Corbett, Chief Executive Officer
Sandyford Business District**

Launching an award to feature companies

3.5

There is a strong need for frontrunner companies who are able to share their experiences in implementing green roofs, façades or permeable parking spaces. Developing a public award can be an instrument for municipalities and other organisations to motivate more businesses to follow the example of pioneer companies.



IB-Green Award

IB-Green project partner Bonn Science Shop (WILA) developed an award scheme: The IB-Green Award recognised measures promoting green-blue infrastructure, which have already been implemented on company premises or where the process of implementation was ongoing.

The award recognised climate adaptation measures in five categories: creating green infrastructure, creating blue infrastructure, reducing/adapting grey infrastructure, interlinkage of green-blue infrastructure and enhancing workforce well-being/involvement. To receive an award, companies had to implement at least three measures in two different fields of action. Depending on how many activities were carried out in different categories, companies could receive the titles “GBI Starter”, “GBI Innovator” or “GBI Leader”.

To apply, interested companies had to register on a GDPR-compliant platform. On this platform, they completed a questionnaire and uploaded pictures as well as planning documents before the application was reviewed by Bonn Science Shop (WILA).

“When you set up an award (...) you might receive applications by companies who do not meet the criteria. It is important to think of incentives you can offer these businesses (...). We decided to offer free short consultations and webinars to anyone who applied and not only companies that were eligible for an award. This helped us connect with companies that are just starting their greening journey.”

Franziska Böhm,
Bonn Science Shop (WILA)



Examples of green-blue infrastructure from companies⁵ featured with the IB-Green Award:

IB-Green Award winner **Astakus GmbH** redesigned their parking lot with permeable materials, implemented a green fence with edible plants and installed a large swimming pond that functions as a retention basin, but also as a recreational space for employees.



LEAR Corporation planted over thirty trees on their premises in cooperation with the local municipality. A covered outdoor seating area for employees was created, which is now used for joint activities or simply to relax during breaks.



The company **Volkswagen Group Original Teile Logistik | Vertrieb & Services GmbH** removed ten parking spaces to improve the insufficient water supply for oak trees planted on the premises.



IB-Green Award winner **GEFÄSSERIE** installed a green façade on the office building which covers 100 % of the wall and an extensive green roof with rain-water retention of 20 litres per m².



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