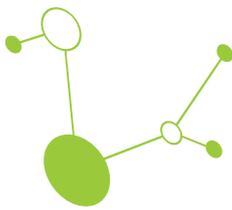


# D 2.1.2 "4 Implementation Plans The City of Wroclaw Implementation Plan"



30/10/2025





## City concerned: Municipality of Wrocław

### Pilot-testing Background

Please describe here the background of your testing pilot in terms of current biodiversity problems, preliminary actions, plans defined earlier and methods already chosen, etc. Some of the aspects you can tell about are as follows:

- Evaluate the current state of biodiversity, green spaces, and urban blue-green infrastructure.
- Which species will you target and why?
- Are there preliminary works that the project is based on? What are they?
- What is the knowledge base behind the project (studies, methods, statistical data etc.)?
- What methods will you / do you plan to use (to motivate stakeholders, to involve main users, to develop ICT infrastructure, to communicate online etc.)?

Greenery and water as an important element of urban tissue, not only creates its skeleton, but also plays an important role in shaping its landscape. Actions shaping the green tissue of the Municipality of Wrocław are mainly: greening the city through plantings, introducing blue-green infrastructure, taking care of vegetation and protecting biodiversity.

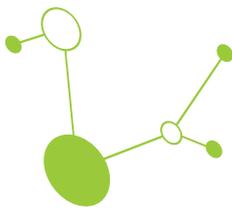
The construction and development of blue-green infrastructure is one of the key elements for increasing the area of green space in Wrocław. Since 2019, more than 200 blue-green infrastructures have been built in the Municipality of Wrocław, including Wrocławianki Square. This is an example of an NBS, where thanks to unsealing the paved area and planting new greenery, a beautiful green space of more than 6,000 square metres has been created in the city centre in the place of a car park. The aim is to mitigate climate change, offset the urban heat island effect and manage rainwater. The network of blue-green infrastructure is being expanded, re-evaluated and revitalized as a part of the work of the Municipal Greenery Management, Municipal Resources Management, Wrocław Housing Management and Wrocław Investments Management. New green areas are also being created as a part of Wrocław Civic Budget.

In 2017, as a part of the international GrowGreen project (Horizon 2020), demonstration projects were created in Wrocław, including blue-green courtyards and green streets, composed of nature-based solutions. Among other things, rain gardens were implemented, green walls, trees were planted, or a street was greened by implementing parquet floors and unsealed sidewalks.

In the city, trees are successively being placed under legal protection as nature monuments, and nature inventories are being carried out for such areas as: the Pracki Park, the Kuźnicki Park and Stabłowicki Park, which determine recommendations for the preservation and improvement of the state of species and habitats.

Forms of nature protection in Wrocław:

- **Landscape park**- “Dolina Baryczy” Landscape Park
- **Natura 2000 Area**- “Widawy Valley”, “Pilczycki Forest”, “Water-Meadow on the Oder River”, “The Oder River Valley Forests”, “The Oder Riverine Forests”, “Kumaki Dobrej”
- **Ecological use**- “Oporowicki Forest”, “Pracki Forest”, “Kuźniki in Slezky Valley”, an area in the within Nowa Karczma, two water reservoirs with the surrounding forest area in the Janówek area
- **Nature monument**- in the Municipality of Wrocław there are 117 nature monuments



The Municipality of Wrocław is cooperating in the area of biodiversity research on the demonstrator (the Langiewicz Park) with Wrocław University of Environmental and Life Sciences (WUELS). The results of the research will be presented during the course of the project.

## Imagining the change

*Please describe how would you like to make a change, you can also use results of world coffee workshop, field research, surveys etc.:*

- What would you like to change in the short term (1-3 years) regarding biodiversity in your city?
- What would you like to change in the medium term (3-5 years) regarding biodiversity in your city?
- What will be the challenges when implementing the change?
- Define specific, measurable, attainable, relevant, and time-bound (SMART) goals for biodiversity enhancement and community benefits.

The goal of the Municipality of Wrocław is to increase biodiversity in the city in both the short and long term. The increase in the level of biodiversity will be based on the measures that will be taken, which includes the replacement of park lighting luminaires and the adjustment of light distribution and its color (orange-yellow color).

The biggest challenge during the implementation of the change is the acceptance of the local community for the undertaken actions. The Wrocław pilot is based on reducing artificial light pollution in green areas to increase biodiversity and improve comfort for people (residents). The society usually associates a reduction in lighting of areas, with a reduction of security. This pilot focuses on adapting appropriate lighting for biodiversity and people, while maintaining safety standards to ensure that the needs of residents and nature are respected.

A research of the impact on biodiversity of the implemented changes on the Wrocław demonstrator being conducted by the WUELS. The research will be based on comparing the level of biodiversity before and after the changes. The impact of changes on society will be measured through the survey which will be based on comparing the results of surveys before and after the changes.

## Stakeholders

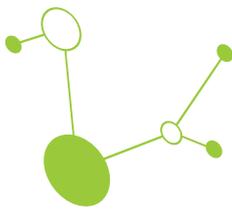
*Who will be key groups involved and how:*

- Who are end-users of intervention?
- Who are other stakeholders?
- Who and how will help you?
- Who might be against the intervention?

The end-users of intervention are:

- Residents of the Municipality of Wrocław,
- Residents of the district,
- Visitors of the city,
- Children,
- The elderly.

Other stakeholders that are engage in a Wrocław pilot:



- Universities,
- Urban planners,
- Landscape architects,
- Municipality of Wrocław,
- Municipal units- Urban Greenery Management,
- Citizens,
- Ecologists
- Experts involved in reducing pollution of green spaces by artificial light.

The aforementioned group of stakeholders will support the Municipality of Wrocław as a part of BIOCENTUM node. Stakeholders will share their experiences, ideas and solutions that can be useful for shaping activities on the Wrocław pilot. Each stakeholder representative is important and can have a significant impact on the creation of the Wrocław demonstrator.

The group of stakeholders who may have the biggest concerns about the implemented activities are residents of the district where the Wrocław pilot is located. Therefore, it is crucial to present pilot activities, emphasizing that the changes implemented will not reduce the safety standards of the green area, which is Wrocław pilot.

## Action plan

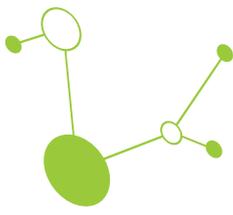
Please describe steps and activities to be taken:

- Identify and describe potential pilot site (concrete location) - you can add photos
- What are key activities (steps) to prepare intervention?
- What is the timing?
- What material and works are needed for implementation?
- What are potential risks and mitigation strategy?
- Please add also text from public procurement of the intervention

The Municipality of Wrocław, in cooperation with the municipal entity, Urban Greenery Management, has selected a demonstrator on which the project's activities are being carried out. The pilot site is located in the Langiewicz Park in Wrocław (formerly known as Park Gajowicki). It is a small area of inner-city greenery with an area of about 1.5 ha, delimited in 1958. It is located in Wrocław's Grabiszyn district, in the Gajowice housing estate. The green area is bounded by Bernarda Pretficza street to the north, Gajowicka street to the east, Sztabowa street to the mid-east and Wrobla street to the west. Significantly, until the end of the 1950s, the park area was a cemetery established in 1815. The park is a 24-hour accessible, unfenced area.

The previous park lighting has been in place since 2014; previously the area was devoid of lighting infrastructure and, due to the surrounding streets, was only illuminated indirectly - marginal through the light of the lamps of the neighbouring streets. In connection with the revitalisation of the park, between 2013-2014 design documentation was drawn up and lighting was released in the area of the Langiewicz Park. The investor of the lighting infrastructure was a municipal entity, the Urban Greenery Management in Wrocław.

In addition to its recreational and communication - pedestrian function, the park is equipped with a playground and an outdoor gym. In the north-western corner of the park there is a small kiosk serving as a 'vegetable store'.



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A key activity for preparation of the interventions was the creation of a document called “Diagnosis and inventory of the lighting system in the area of the Langiewicz Park in Wrocław, including its surroundings, together with a technical and economic expert opinion on the possibility of implementing smart lighting in this area” (diagnosis). The diagnosis commissioned by the Municipality of Wrocław in the form of a public tender was carried out by the external contractor in November 2024. The activity aimed at assessing the state of existing lighting system in the above-mentioned park and propose potential solutions to reduce harmful (excessive or undesirable) light emissions from outdoor lighting infrastructure equipment in terms of biodiversity in the area.

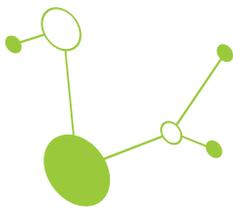
The document includes, among other things, the potential impact of environmental biodiversity and the natural night landscape, an assessment of light distribution and light colour, upstream emission and light pollution phenomena, economic aspects of the park’s lighting, and an analysis of the impact of surrounding lights.

The contractor conducted a comprehensive diagnosis and inventory of the lighting system in Langiewicz Park in Wrocław. This work involved a thorough assessment of the park’s existing lighting infrastructure, including a detailed inventory of the technical condition of all park lamps. The inventory provided complete information on the current luminaires, light sources, and the geometric parameters of the lighting installations. The evaluation extended beyond technical aspects to include an assessment of the quality of the park’s lighting in terms of environmental, social, and economic sustainability.

A detailed analysis was also performed to determine the current colour temperature of the light emitted by the park’s luminaires, as well as the actual range and dispersion of light within the park and adjacent areas, such as nearby streets. Special attention was paid to the amount of light emitted upward, which can contribute to light pollution. The contractor further examined the technical and economic potential for reducing electricity consumption and maintenance costs, alongside exploring the feasibility of integrating intelligent energy solutions such as solar-powered systems, automated lighting controls, and smart lighting management infrastructure.

Based on these investigations, the contractor prepared a diagnosis for the modernisation of the park’s lighting system. This included recommendations for adjusting the colour temperature, light distribution, and intensity of illumination, as well as proposals to improve the geometry and design of luminaires, poles, and the broader lighting infrastructure.

As part of an external lighting quality audit, the contractor identified zones within the park that were particularly sensitive to light pollution and developed three modernisation scenarios, taking into account economic efficiency, lighting quality, and ecological impact. The diagnostic phase revealed several key issues: the colour temperature of the current lighting was excessively high; there were stark contrasts in illumination levels; glare presented a risk to park users; and light was being cast directly onto vegetation.



Complementary research carried out by the Wrocław University of Environmental and Life Sciences (WUELS) examined how lighting modernisation could affect plants, animals, and humans. This research also evaluated how new lighting solutions could support biodiversity by aligning artificial illumination with the natural rhythms of local wildlife and human activity.

The findings from both the contractor's diagnosis and the WUELS study were incorporated into the technical documentation prepared by the Municipality of Wrocław. This documentation served as the basis for a public procurement procedure aimed at selecting a contractor to implement the lighting modernisation. The Municipality also consulted with the Urban Greenery Management, a municipal entity and considered feedback from residents, gathered during a workshop focused on the effects of light pollution on biodiversity and human well-being. Additional funding was secured from the Urban Greenery Management to ensure the project's goals could be fully realised.

In parallel, WUELS conducted baseline research to assess the park's biodiversity prior to the planned interventions.

The subsequent stage involved the preparation by the Municipality of Wrocław of the public procurement procedure titled "Modernisation of lighting in Langiewicz Park as part of the international URBIO BAUHAUS project", which aimed to select a contractor responsible for developing a visualisation of the new lighting design and executing the installation.

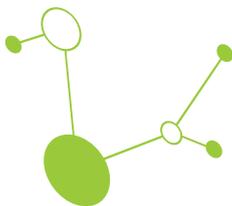
The implementation of the new lighting system was divided into two phases. Phase I involved the preparation of visualisation and selection of new luminaires, to be completed by 15 September 2025. During this stage, 27 new luminaires were to be selected and delivered for installation, with specific requirements ensuring that their size, shape, and colour matched the existing fixtures. The luminaires were designed to fit the existing poles and feature a warm light colour temperature between 2200 K and 2700 K, providing an orange-yellow hue that reduces glare and limits light spill onto surrounding vegetation. The light distribution was to be symmetrical and directed primarily along park alleys and pathways. Each luminaire would include an automatic control system integrated into a smart lighting network.

The lighting control system was required to enable direct communication between individual controllers and the central server, eliminating intermediary devices. It was designed for automatic configuration and transmission of luminaire data, including geolocation, to the system server. Remote monitoring and management were to be conducted via an online graphical interface accessible from any internet-connected device. The system would allow automated dimming of individual or grouped luminaires based on programmed schedules, remote activation or deactivation, manual adjustments, and the generation of electricity consumption reports. Additional functionalities included fault detection, communication error alerts, and monitoring of power usage levels.

Phase II, scheduled for completion by 15 October 2025, involved the dismantling of the 27 existing luminaires, carried out with particular care to ensure they could be reused. These dismantled fixtures were to be transported to a location designated by the Municipality of Wrocław. The new luminaires, along with the control system, would then be installed in their place, marking the completion of the park's lighting modernisation.

Through this integrated approach—combining technical assessment, ecological analysis, community input, and advanced technology—the Municipality of Wrocław sought to create a modern, energy-efficient, and environmentally responsible lighting system for Langiewicz Park, enhancing both the ecological balance and the comfort of park users.

As part of the Phase I, the contractor submitted a request for approval of the material, which contained specifications for the lighting fixtures to be installed on the demonstrator. This document included a description of the functionality of the fixtures, their parameters, characteristics covering general, electrical and lighting information, housing, finish, dimensions and installation. The contractor also attached a declaration of conformity of the luminaires with the relevant Union harmonisation



legislation and the licence to use the European Mark issued to lighting manufacturer for the lighting complying with the European standards. The new luminaires also meet high aesthetic requirements. The Municipality wanted the lighting change to not only meet safety requirements for residents and minimally interfere with the nocturnal life of fauna and flora, but also promote aesthetic lighting solutions for the park through minimalist designs.

The approval granted by the International Dark-Sky Association to lighting manufacturer for achieving certification of the lighting fixture as a dark-sky friendly product.

Another activity is research conducted by WUELS to determine the level of biodiversity after implementation of the changes.

### Schedule for action plan

	Task name	Completion date
1	Document of the diagnosis of lighting in the Langiewicz Park	November 2024
2	Research on the possibility of how to modernise the lighting in the Langiewicz Park	March 2025
3	Research on the level of biodiversity in Langiewicz Park before the implementation of changes- Wrocław University of Environmental and Life Sciences	June 2025
4	Public procurement for replacement of luminaries in Langiewicz Park	May 2025
5	Activities on the demonstrator-implementation of a new lighting luminaires	June 2025 - October 2025
6	A research on the level of biodiversity in Langiewicz Park after the implementation of changes - Wrocław University of Environmental and Life Sciences	November 2025 - November 2026

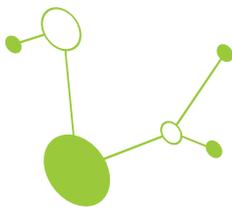
## Technical documentation

*Please add technical documents, permissions, feasibility and other preparatory studies needed for the realisation of the intervention*

- Document of the diagnosis of lighting in the park (before implementation of changes)
- The Ownership Act regarding the land on which the investment will be made (demonstrator)
- Technical documentation for control system of lighting

## New European Bauhaus aspects

*How will the intervention improve New Bauhaus principles? Please assess the impact of the*



*intervention on 3 main principles of New European Bauhaus (NEB)!*

- What will be impact of the intervention on participative aspect of NEB ?
- What will be impact of the intervention on sustainability aspect of NEB ?
- What will be impact of the intervention on aesthetic aspect of NEB ?

**Impact of the intervention on participative aspect of NEB**

The participatory aspect in the Wroclaw pilot is based on involvement of various stakeholder groups in the process of co-creating the demonstrator. The co-creation process is based on meetings with the BIOCENTUM nodes and meetings with residents about planned activities and artificial light pollution in green areas. The residents of the neighbourhood where the demonstrator is located are active, interested in the planned activities and positive in their attitudes.

**Impact of the intervention on sustainability aspect of NEB**

The sustainability aspect of Wroclaw pilot will include an integration of the needs of residents and the environment. Activities in Langiewicz Park will focus on increasing the level of biodiversity and improving the living comfort and well-being of residents. The actions will be based on reducing artificial light pollution in the park by adjusting park lighting luminaires. In terms of economics, the measures that have been taken to adapt park lighting will also be replicable in other green spaces.

**Impact of the intervention on aesthetic aspect on NEB**

Green areas are a place of relaxation and recreation for residents. Langiewicz Park also plays such a role, as it has a playground and a gym. It is important for users of the park that it is designed aesthetically and in neutral colour. Therefore, planned changes on the demonstrator in Wroclaw will be based on measures that will result in higher acceptance of regulation of artificial light more acceptable by adapting its distribution and colour, and will not have a negative impact of the design of the park.