



EUROPEAN UNION



EU MISSIONS

ADAPTATION TO CLIMATE CHANGE



September 2024

Natural playgrounds and schoolyards adapting to the effects of climate change

Creating a climate-resilient city by greening educational spaces in Poznań, Poland

By implementing Nature-based Solutions, Poznań is transforming concrete jungles into vibrant green communities and is creating a citywide network of small-scale green spaces, like natural playgrounds and green schoolyards.

Key Learnings

- **Education on Nature-based Solutions:** Educating citizens and decision-makers on Nature-based Solutions is crucial and should accompany financial investments in the solutions. Examples of good, local practices help to promote upscaling Nature-based Solutions. Still, adapting designs to the specific context of each site is key to success.
- **Co-production with partners:** Co-creation and implementation of Nature-based Solutions enhance the engagement and responsibility of the project partners instead of only seeking funds. Even unexpected delays can present opportunities for deeper co-creation. Unlocking the full potential of innovative solutions often requires collaboration across different departments within the city government.
- **Financing:** To find the most adequate financing source the project team should analyse different benefits of a specific Nature-based Solution. Integrating the educational value of natural playgrounds and schoolyards can serve as a strong incentive to receive funding from civic budgets and corporate responsibility programmes.

About the region

Poznań, the capital of Wielkopolska region in west-central Poland, is located on the Warta River near its confluence with the Cybina. With a population of around 540,000 inhabitants Poznań is the fifth largest city in Poland. Founded in the 10th century, Poznań boasts a long and rich history, evident in its architecture and cultural heritage. The city has often topped rankings for very high quality of education and a very high standard of living.

Climate Hazards

Extreme Temperatures, Droughts, Storms, Flooding

Sector

Urban, Buildings, ICT, Health

Key system

Ecosystems and Nature Based Solutions

Health and Wellbeing



Climate Threats

During the last few years, Poznań has experienced hotter summers, with rising average temperatures and more frequent heatwaves. Heatwaves pose a particular risk to vulnerable groups like children. In addition, the high rate of soil sealing, and real estate developments impede ventilation and cooling of the city and result in urban heat islands.

Simultaneously, the city has suffered from progressive droughts, resulting in significant surface water reductions and decreased groundwater retention. Heavy, torrential rain occurs more often, but it only minimally replenishes groundwater. Even though the rain events provide a large amount of rainwater quickly, the water mostly flows off the impermeable urban surfaces instead of infiltrating into groundwater. Furthermore, heavy rain events can cause flash floods and significantly damage urban infrastructure.

Redistributing Green Spaces

Despite Poznań having several green spaces, they are not equally distributed throughout the city. They are particularly scarce in the historic districts in the city centre, which qualify as Highly Urbanised Zones. Almost 100 years ago, city planners introduced a highly effective Nature-based Solution known as the “green wedges and rings”. The city's existing river valleys, including preserved wildlife areas, were shaped into wedges extending from south to north and west to east. Meanwhile, green rings were established closer to the city centre, following the footprint of the former 19th-century Prussian fortifications known as “Festung Posen”. These designs were inspired by natural landforms and rivers, which provided ventilation, reduced heat, and created ecosystem corridors. Unfortunately, urban fragmentation and real estate developments have increasingly pressured these green and blue spaces.

One way of tackling climate threats is to repair the “green wedges and rings” and introduce small-scale Nature-based Solutions across the city to establish a green and blue infrastructure network. It is crucial to choose Nature-based Solutions that fit into small spaces and effectively improve water retention, cool and clean the air, provide easy access to quality green spaces, and support biodiversity for urban flora and fauna. To take advantage of the benefits Nature-based Solutions provide, the city began to create a network of natural playgrounds and green schoolyards in 2018. Playgrounds and schoolyards can sometimes be the only public green spaces in the neighbourhoods, yet they are often characterised by concrete and little greenery. This reduces water retention and increases the city's heat. Therefore, the city council has decided to turn these spaces into “green oases” free from concrete. The goal is to develop spaces that benefit both people and nature.



Figure 1: Natural elements with living huts and tunnels made of willow in the playground at one of the kindergartens in Poznań. Image Credit: City of Poznań.

Improving the quality of playgrounds and schoolyards

When adapting kindergarten playgrounds and schoolyards to climate change, landscape architects and contractors integrate natural materials in playing and learning facilities and replace artificial surfaces with natural, water-absorbing surfaces. Native plant species enhance biodiversity and natural water retention, provide shade, and reduce noise and pollution.

Such spaces are also great for outdoor education. Children and teachers have daily access to nature, which positively influences their physical and mental health and overall well-being. In the urban environment, playgrounds create valuable “green spots” that complement the “green wedges system” and bring nature closer to schools and neighbourhoods.



Figure 2: Logs and tree trunks as play elements, for sensory exercises and relaxation as well as for nature observation. Image Credit: City of Poznań.

The primary funding source for the measures is the city budget, while regional funds support financing the educational-ecological actions. EU funds, such as Integrated Territorial Investments, serve as an additional funding source for incorporating local climate change adaptation measures in projects.

The measures can also have positive economic effects. For example, permeable surfaces, rain gardens, and flowerbeds reduce the pressure on the sewage system as their sponge function can absorb excess water. This saves costs for the schools as overflowing sewage systems are less likely and there is no need to pay the council for repairs or associated issues. As natural schoolyards become more popular, there's an increasing demand for contractors with specialized skills in Nature-based Solutions. This has led to local businesses broadening their expertise and services, as they adapt to meeting the growing demand for sustainable, climate-resilient solutions. Essentially, the push for Nature-based Solutions creates new business opportunities, encouraging contractors to diversify their services and acquire skills increasingly relevant in today's market for climate adaptation.



Figure 4: Seating for children made of tree trunks. In the background simple instruments for observing atmospheric phenomena. Image Credit: City of Poznań.



Figure 3: Willow hut with wooden platform as a natural element in the kindergarten garden in Poznań. Image Credit: City of Poznań.

Summary

Urbanisation and soil sealing have aggravated the impact of climate change in Poznań as buildings have replaced greenery with concrete. To combat this, the city has made it a priority to restore and develop one of its most important urban planning assets: the “green wedges and rings system” that cools the city. Nature-based Solutions are being implemented to overcome the current fragmented distribution of green wedges and rings. Nature-based Solutions in kindergarten and school gardens support ventilation and cooling in the city as well as contribute to climate change adaptation. Many schools and kindergartens are in the wedge area, which is why their nature-oriented transformation complements and supports this green wedges and rings system. The process requires education and collaboration between stakeholders, such as public authorities, NGOs, citizens and private companies. It is necessary to analyse the legal and financial framework of the cooperation to avoid engagement in greenwashing.

Further information

The work presented in this adaptation story is part of the [Invest4Nature](#) project.

This project has been co-funded by the European Union under grant agreement 101061083.

- https://networknature.eu/sites/default/files/uploads/Infographics%20-%20Poznan_revGG.pdf (example)

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Funded by
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