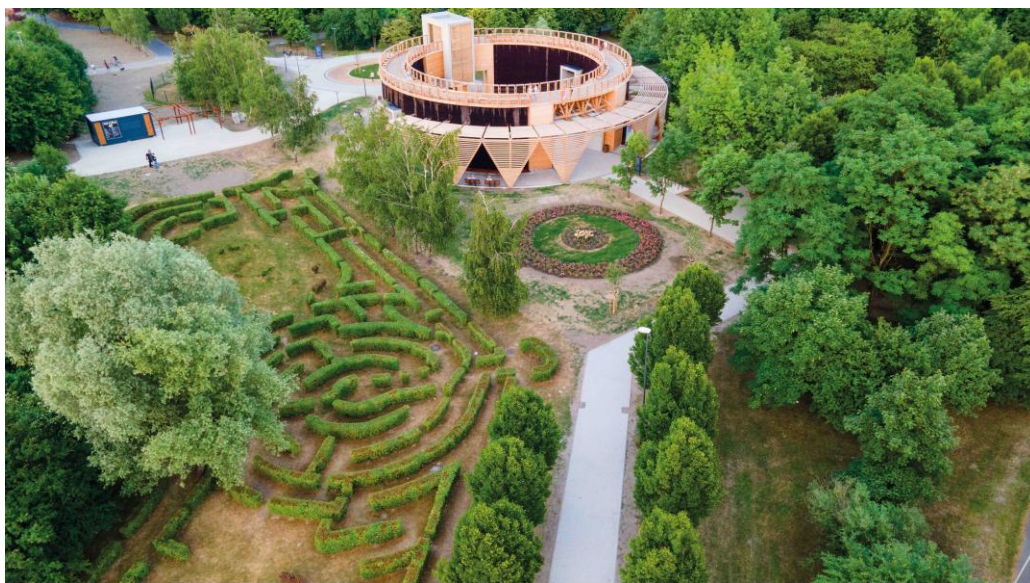


ENVIRONMENTALLY SOUND PRACTICES

Cities with a Past, a Future for Cities. Proposals for the implementation of Green and Blue projects in the Silesian Province



Thermal modernisation of a historic building in Tychy, source: Municipal Residential Building Management Authority in Tychy



Salt graduation tower in Żory, source: Municipal Office in Żory

Silesian Province – a region ready for the Green Transition

The Silesian Province through its tradition, culture, and development based on fossil fuels is one of the most distinct regions in Poland. It has been connected to heavy industry, especially coal mining, for centuries, but today it undergoes a dynamic transformation towards low-carbon economy, going for renewable energy sources and sustainable development. Silesia, with its rich history and strong industry roots, proves that it can be a leader of green change, at the same time remaining true to its traditions.

Industrial heritage and cultural roots

The Silesian Province is a place where industrial history is visible at every turn. Mines, steelworks, manufacturing plants – for decades, these were the heart of the region. This is where the working-class culture and the specific lifestyle that shaped the identity of the inhabitants originates. The Silesians are known for their diligence, attachment to tradition, as well as a strong sense of community. You can still come across old industrial plants which, despite ceasing production, remain a symbol of the region’s industrial glory.

But in the face of climate and economic challenges, change is necessary, and the province shows that it is possible to walk this path wisely, with respect to one’s past.

Green Transition – from coal to Renewable Energy Sources

For years, the Silesian Province has been considered to be the “Poland’s coal heart”. Today,

however, there is an increasing focus on renewable energy sources such as wind and solar power, as well as the development of hydrogen technologies. Silesia is an example of how to gradually but effectively phase out fossil fuels by focusing on new solutions that support environmental protection and reduce CO₂ emissions.

The region sees modern photovoltaic farms and geothermal installations emerging, which support local economy and create new jobs. Programs that support thermal modernisation of buildings and increasing their thermal efficiency are also a key element of the Silesian transition.

Adapting Post-Industrial Building – New Life of Old Buildings

The process of economic transformation in the Silesian Province is not just technological changes, but also new functions of many post-industrial buildings that got a new life as cultural, educational or business facilities. One example is the Culture Zone in Katowice where such icons as the Silesian Museum and the International Congress Centre were created in the area of an old mine. This place attracts both city residents and tourists, offering a space for cultural events, concerts, exhibitions, and festivals.

Other buildings in the province are adapted similarly – old factories or plants become art galleries, co-working spaces, or residential estates. Such activities not only protect the architectural heritage, but also contribute to the social and economic revival of the region, attracting new residents and investors.

Green and Blue investments at a glance

- ❖ PHOTOVOLTAIC PANELS
- ❖ WIND TECHNOLOGY
- ❖ GREEN PEDESTRIAN, TRAM AND ROAD ROUTES
- ❖ GREEN AND BLUE INFRASTRUCTURE IN THE CITY
- ❖ ART IN THE SERVICE OF THE ENVIRONMENT
- ❖ GREEN ROOFS AND WALLS
- ❖ SUSTAINABLE CONSTRUCTION
- ❖ *GREEN CITY IDEA*
- ❖ BENEFITS OF IMPLEMENTING RES IN CITIES



The former Orzegów coking plant, source: Ruda Śląska Town Hall

Modern Silesia – Change Leader

Silesia shows that a region with long industrial history can transform responsibly and sustainably. New investment in renewable energy, modernisation of buildings and breathing life into post-industrial places not only improve the quality of life of the residents, but also decrease the adverse effects on the environment.

The future of the Silesian Province is a green and innovative future that is full of respect to the identity and culture at the same time. The Silesian Province has a chance to become an example for other industrial regions by showing that it is possible to combine history with modernity, and caring for the future with respecting the past.

Silesian cities – from medieval roots to the green future

Cities of the Silesian Province have a rich, centuries-old history, traces of which are visible in their urban fabric. Many of them have medieval roots and the dynamic growth brought by the 19th century and the beginning of 20th century left a lasting mark on their architecture.

It is worth noting that even then, attention was already being paid to environmental protection issues, as exemplified by

the first biological sewage treatment plant was built in Bytom, in what was then the German Empire. A waste incineration plant based on the Doerr furnace system was also built at that time. Also, at the beginning of the 20th century, when railways were being dismantled, old routes were often transformed into green zones, which today could be described as woonerfs or linear parks. Their primary purpose was to increase recreational space for residents.

Today, in the face of global climate challenges, Silesian cities, drawing on the richness of their past, are changing, becoming leaders in eco-friendly activities and pioneers of sustainable development.

Local governments and organisations are taking steps to minimise the impact of human activity on the environment, with an emphasis on renewable energy sources, green technologies and solutions that support climate neutrality.

One of the key elements of this transformation is the restoration of historic buildings and their adaptation to new functions, while using modern technologies that promote environmental protection.



Education Centre in Góra Siewierska, source: Psary Municipal Office

RENEWABLE ENERGY SOURCES AS THE KEY TO A SUSTAINABLE CITY

The key to achieving a sustainable city, including one with historical value, is to use solutions that improve the quality of life of residents, taking into account greenery and other environmentally friendly measures. Hence the need to focus on strengthening urban biodiversity through, for example: **protection of existing nature** (including responsible tree stand maintenance),

- ❖ **increasing green areas** by removing concrete from wide streets and pavements,
- ❖ **implementation of blue-green infrastructure** (this allows cities and residents to better withstand heat waves, torrential rains, flash floods and droughts),
- ❖ **reducing lawn mowing** to two/three times a year,
- ❖ **establishing flower meadows** (they can be a home to more than 600 species),
- ❖ **introducing bug hotels.**

Renewable energy sources (RES) are energy sources that are inexhaustible in terms of time of use, and their acquisition and processing does not lead to a permanent depletion of natural resources. Renewable energy sources cover, for example

- ❖ solar energy,
- ❖ wind energy,
- ❖ geothermal energy,
- ❖ biomass energy,
- ❖ hydroenergy.



Transfer Hub in Gliwice, source: Gliwice City Hall



Photovoltaic installation in Świerklaniec, source: Świerklaniec Municipal Office

Unlike fossil fuels, renewable energy sources are a sustainable choice because their use does not involve the emission of carbon dioxide, which is the main greenhouse gas contributing to climate change.

Implementing renewable energy sources in cities with historic buildings requires a mindful approach in order to preserve the original character of the buildings while using modern, environmentally friendly solutions.

Photovoltaic panels

Photovoltaic panels (polycrystalline panels) can power, for example, **parking metres, ad lightning, bus stops, electronic information boards, road signs.** Monocrystalline panels, on the other hand, will work better for a **bicycle rental company.**

They are characterised by high energy conversion efficiency in strong sunlight conditions, i.e. in harsh light. It is worth mentioning that miniaturised photovoltaic cells also power the **on-board computers of bicycles and scooters from self-service rental companies.** Furthermore, combining panels with micro wind turbines **will prove effective in street lamps.** In the case of photovoltaics on municipal



Cycling along the Iron Trail in Godów, source: Godów Municipal Office



Municipal Centre for Tourism, Sport and Recreation in Gorzyce, source: Gorzyce Municipal Office



Photovoltaic installation for the Municipal Sewage Treatment Plant and education facilities, source: Kalety City

equipment, it is also worth mentioning that it is possible to use second-generation panels, which utilise materials other than silicon. These have lower efficiency, but are cheaper and more flexible, making them easier to use, for example, on vehicle roofs.

The installation of solar panels is one of the most common ways of implementing renewable energy sources in cities.

In the case of **historic buildings**, photovoltaic panels can be installed on roofs in a discreet manner that does not compromise the historic value of the building. Tenement houses are most often characterised by roofing felt or ceramic tiles. In the case of roof tiles, they were most often laid on the front façade of tenement houses, while only roofing felt was used on the rear façade and in outbuildings. Thus, the roof area offers great opportunities for installing photovoltaic panels and introducing green roofs. However, the key issue is the load-bearing capacity of the roof. In the case of investments that place a load on the structure, it is always necessary to consider whether the equipment or infrastructure that we plan to use will cause damage to external and internal materials.

Modern technologies make it possible to use **panels of different colours and shapes** to integrate them with historic façades or roofs. An example of this is one of the world’s greatest historical monuments – Pompeii. In fact, the roof tiles used on the roofs are not period pieces, but a design created in 2018 by the Italian company Dyaqua. “Invisible solar” can take the form of any building material (e.g. roof tile, piece of stone or wood). It is therefore possible to use photovoltaic roof tiles that look like traditional ones but function like solar panels.

Furthermore, a recent achievement by a research team at the University of Michigan is very interesting. They have developed **transparent photovoltaic panels** that can be installed in mobile phones and windows. This means that all the energy used to power the building can come from the sun.

In addition to photovoltaic panels, **solar collectors** can also be used, but it is worth remembering that in our climate zone, the sunniest months are from April to the end of September, and this is when collectors work best, allowing you to even give up other sources of hot water heating.

Each time, it is also necessary to consider whether, as part of a specific investment, to additionally purchase **energy storage unit**, i.e. equipment that allows surplus energy to be sold to the electricity grid.

Heated glass is becoming an increasingly popular technology. All you need to do is connect it to a 230 VAC power supply and set the desired temperature.

Manufacturers of this technology assure that it allows to completely give up radiators, and therefore reduce carbon footprint. At the same time, this type of glass can be connected to a photovoltaic system, thus saving on electricity consumption.

Photovoltaics are also successfully used in correlation with **artistic activities**. French designer Mathieu Lehanneur presented a prototype of a new street accessory at the Paris Climate Summit: **a combination of a lamppost and a bench** called “**Clover**”.

At the top, there are not only lamps that shine precisely downwards so as not to pollute the street with light.

There is also a solar panel at the top, which allows the lamp to be lit for three hours. In addition, pedestrians can charge their phones here.

Another aspect is combining renewable energy sources with design, as exemplified by the introduction of photovoltaic benches in Polish cities, which enable users to charge their devices (e.g. smartphones, laptops, tablets). They may also feature displays and audio messages. Such benches can be found in Warsaw, Tarnobrzeg, Gostynin, Białystok, Zielona Góra, and Szczecin.

Wind technology

Although wind turbines are mainly associated with big farms, there are also smaller units that can be installed in cities. In case of historic places, such turbines can be used on roofs of buildings near historic zones, so that they do not disturb the visual character of the surroundings. Therefore, micro-installations integrated into the space can be used, as is the case with the AGH Energy Centre building. When using this type of technology, it is essential to choose the right location. Thanks to the Bernoulli effect, the air accelerates further as it passes through narrow passages, such as between two blocks of flats or houses, which is another advantage for the location of small wind turbines. It is also important to choose the right height to install the turbine.

In terms of interesting turbine designs, we can name the spiral “Helix Wind” or ball-shaped “Energy Ball”.

An interesting example of using art with renewable energy sources, with the simultaneous increase of aesthetic values of urban spaces, are “wind trees” by the French designer Jérôme’a Michaud-Larivière. Wind Tree, whose role is to produce energy, has 72 micro-turbines hidden in artificial, quite distinctly twisted leaves. It is therefore a wind turbine that does not use strong air currents at high altitudes, but rather small eddies created between buildings. So, it can work around 280 days a year. The prototype was placed in Paris on the Place de la Concorde. According to Jérôme Michaud-Larivière’s calculations, its power is 3.1 kW.

Engineers from the Brunel University in London carry out similar activities. They constructed the “Energy Tree” moved by the wind and generating energy. In case of a 5-metre unit, it can generate three times more energy than an average family uses in a year.

It operates using a giant photovoltaic panel connected to a wind turbine. The more sunny and windy the day is, the more energy it generates. Energy produced by the tree can be transported by underground cables directly into buildings. And the surpluses can be stored in batteries and sold to the grid.



Wind farm in Racibórz, source: Racibórz Municipal Office



Wind farm in Pietrowice Wielkie, source: VCB press releases

Green pedestrian, tram and road routes

Rational location of green areas is also a material aspect from the perspective of a sustainable city. One aspect of this is green tram tracks. This is due to growing environmental awareness and the fact that tram tracks cover as much as 5% of urban areas. These measures contribute to reducing the negative impact of trams on the environment by reducing noise, thereby also increasing the biologically active area and enhancing aesthetic values. Currently, green tram tracks can be found in, for example, Kraków, Łódź, Warsaw, and Poznań, with Kraków leading the way with 25 km, which accounts for approximately 12.9% of the single track in that city.

These trends are further reinforced by planting plants **along the roads** and **between buildings**, including the **creation of rain gardens** based on hydrophytic plants, which play an important role in water retention and phytoremediation, absorbing up to 40% more water than a regular lawn.

An alternative or supplement to these measures is **planting hedges along busy roads**, which trap smog and exhaust fumes and reduce street noise, while their roots also stabilise the soil, helping to limit the side effects of vibrations caused by traffic. In cities, it is also important to develop an appropriate rainwater management system through the **use of retention trenches, absorption wells, drainage systems, underground reservoirs and permeable surfaces**. A positive example of such urban policy is Podkowa Leśna, based on the concept of a garden city.

One concept that could be successfully implemented in the Silesian Province is **woonerfs**, i.e. redesigning existing streets to

focus on increasing safety, calming traffic, making the space more attractive, and emphasising pedestrian and bicycle traffic concentration. This space is also “de-concreted”, characterised by tall plants and street furniture that encourage socialisation among residents.

Meanwhile, in pedestrian areas, the use of so-called green concrete is gaining popularity. These are anti-smog pavements designed to reduce NOx – it is estimated that catalytic concrete reduces these harmful substances in the air by as much as 30% (NOx comes mainly from transport emissions).

Spatial changes also include the **elimination of old modes of transport** in favour of new ones, e.g. the elimination of railways and the construction of subways. In such places, creative adaptive solutions and the ability to promote local integration are particularly needed. Nowadays, parks are designed on former flyovers in London, Washington and Seoul. Green transport stops covered with extensive green roofs and shaded on the sides and rear by climbing plants are also becoming increasingly popular.

The removal of concrete surfaces in cities in favour of green areas is a trend that is observed in many European cities. **Vienna is certainly an example worth following**. Not only does it have nearly 1,000 parks, but it also transforms streets and creates green areas or small parks. Kraków deserves praise in this regard, having recently created 24 pocket parks.



Development of the Czarna Przemsza river boulevards in Będzin, source: Będzin Town Hall

Green and blue infrastructure in the city

❖ Caring for trees

It is hard to imagine our cities without trees. Over a year, more than 1,300 trees are capable of purifying the air of around 440 kg harmful substances, produce 50 tonnes of oxygen, as well as absorb and store 20 tonnes of carbon dioxide from the air.

❖ Flower meadows

According to research, a flower meadow can be a home to more than 600 species.

❖ Bug hotels

It is not a great achievement to build (or buy) a bug hotel and put it on grass. It is an achievement to put it where insects will have good conditions to live. Therefore, it should be a place with higher and lower plants, also melliferous ones.

❖ Rainwater management system

In the are of climate change, it is essential to use rainwater properly. To this end, cities should invest in: **retention trenches, absorption wells, drainage systems, underground reservoirs, drainage boxes and permeable surfaces.** Podkowa Leśna – a town created according to the idea of a garden city, which resembles part of the nearby forest on satellite photos, is an example of a town whose development has been focused on this type of investment.

❖ Revitalisation of parks, squares

Pocket parks, places of a small area (300-1,000 m²), are a solution for the city area.

In other countries, these green areas can be as large as 5,000 m², but at that size, they have little in common with the term “small”. Pocket parks are public green areas between buildings in city centres, in quarters and in neighbourhoods. They are places for rest and recreation. They have been established, for example, in Kraków, Warsaw, Łódź, and Bytom (in an urban area listed in the register of monuments, on the site of a demolished 19th-century tenement building).

They are often created on a small, single, and undeveloped plot or on small part of a plot of an irregular shape between building plots. They can also be created as part of a property within bigger development project based on requirements of a local spatial development plan.

However, when it is impossible to create free space in the city, following the example of New York, a park located on the river may be an alternative. A tree-covered area called “Pier55” will have its own structure based on 300 concrete columns.

Meanwhile, in the city centre of Singapore, there are “Supertrees”, that is, a reinforced concrete structure 25 to 50 metres high, which has become the main attraction of the most beautiful green areas in the large metropolis.

The forms of enormous trees are vertical gardens for nearly 200,000 exotic plants from around the world. They serve as scaffolding and, thanks to photovoltaic cells, also generate energy that is used to illuminate nearby areas. Equally important, they also collect rainwater, which irrigates vegetation and gushes from nearby fountains. After dark, they glow with colour.

Modern cities with medieval origins are very effectively adapted to contemporary standards, but this requires commitment and many years of planning. One of the elements that do not require large investments and are already used routinely are RES micro-installations.



Pocket park in Bytom, source: Bytom City Hall

GOOD PRACTICES ABROAD

Norway - Ensjø in Oslo

70% of rainwater in an open stream

In 2007, the City Council adopted two strategic documents, one concerning public spaces and the other concerning rainwater management, with the aim of minimising damage caused by floods and rainwater.

The municipality encouraged developers to plan open solutions for rainwater. At the same time, it developed visual pilot projects as an inspiration. Some sections of the Hovin stream are uncovered and others are reconstructed like a natural stream.

First, the “dirty” rainwater is treated using natural processes. In Ensjø, there is a facility with three treatment ponds (Norwegian Teglværksdammen), a brook and plant-based filtration zones.

Ponds are three-metres deep at some places, which gives fish a place to hide and prevents overgrowth. There are also a few places with riffles, where the current locally speeds up and the water becomes aerated. While the shallow, covered with reeds zones connected to the stream help to filter the water.

SUSTAINABLE CONSTRUCTION

A measure that should be mentioned in the context of building renovations and adaptations is the issue of sustainable construction, i.e. construction that is environmentally friendly. It assumes using construction, insulation and finishing materials that base on natural materials. They include **stone, wood, straw, bamboo, mineral wool, wood wool and recycled metals** (hempcrete, which can be used to form various architectural details, and whose role is to absorb harmful substances from the air, is an interesting alternative). The main goal of sustainable construction is to reduce the use of energy and natural resources, as well as to reduce waste. There is a great emphasis on using renewable energy sources.

A green building, or more precisely – a sustainable building, is a building that is economical, comfortable, and created with respect to nature.

Key features of sustainable buildings are:

- ❖ effective use of resources, especially non-renewable energy and water,
- ❖ ensuring a healthy and comfortable environment for building users,
- ❖ responsibility in terms of the surroundings and location of the building,
- ❖ flexibility and the possibility of re-adapting the building and its installations and equipment as a means of conserving resources and saving money,
- ❖ using building management systems that monitor and control equipment and installations to minimise the consumption of energy and other resources,
- ❖ minimising the amount of waste produced and recycling,
- ❖ using environmentally friendly materials for construction, i.e. materials that meet at least one of the following criteria:
 - made from recycled materials, agricultural waste,
 - no natural resources are extracted for their production,
 - the negative impact on the environment during their manufacture, destruction or repair is minimised,
 - their manufacture saves energy and water,
 - they contribute to a healthy and safe indoor environment,
 - they are manufactured locally,
- ❖ avoiding toxic and other harmful emissions.

Art in the service of the environment



Anti-smog mural in Zabrze, source: Zabrze City Hall

Anti-smog murals on walls of historic and modern buildings

Another interesting solution that is gaining popularity in Silesian cities is anti-smog murals. These innovative murals not only decorate the streets, but also have air-purifying properties. They are made using photocatalytic paints, which break down air pollutants when exposed to light, absorbing around 1.5 tonnes of pollutants per year, and the painted surface purifies 1m³ of air in 45 seconds. These murals not only serve an artistic purpose, but also make a real contribution to the health of residents.

Green city idea

GREEN CITY IS AN IDEA FOCUSED ON CONVERTING THE URBAN SPACE INTO A MORE ENVIRONMENTALLY FRIENDLY ONE USING GREEN AREAS. THIS IDEA ENTAILS IMPROVING THE QUALITY OF LIFE FOR RESIDENTS AND HAS AN ECOLOGICAL ASPECT RELATED TO REDUCING POLLUTION. MOREOVER, IT HAS AN IMPACT ON DESIGNING AND REVITALISING THE SPACE TO INCLUDE GREENERY, BUT ALSO ECO-FRIENDLY SOLUTIONS. IT ALSO INVOLVES CREATING A SUSTAINABLE CITY THAT COMBINES AND OPTIMISES ENVIRONMENTALLY FRIENDLY ACTIVITIES.

Green walls and roofs also in historic buildings

Sustainable construction also assumes the maximum use of biologically active surfaces.

Local spatial development plans increasingly include provisions that effectively force investors to design green roofs in new buildings.

But the problem is with buildings that already exist, because local laws often say you have to keep the existing shape, ridge, and roofing material. These provisions are certainly relevant in the case of buildings with dormers, attics or tiles, but in the case of, for example, outbuildings with flat roofs, they do not have a positive impact on the shaping of space.

Introducing **green roofs and external walls** contributes to improving the aesthetics of the urban fabric, while allowing for an increase in biologically active zones. The durability of nonwovens and drainage materials is usually estimated at a minimum of 50 years, which seems to be a satisfactory period in the context of high costs. While the plastics from which they are made are mostly recycled.

One of the advantages of this type of construction is certainly its recreational value.

Green roofs also dampen noise well, prevent greater heat loss in winter, and protect against excessive heating of buildings in summer. They also have a long service life, filter pollutants from the air and produce oxygen, help reduce the occurrence of “urban heat islands”, reduce the problem of rainwater storage, and increase water evaporation to 0.5 litres per sqm. Their disadvantages include high construction costs, significant weight on the structure, and the need for maintenance.

It should be emphasised that such projects are divided into **extensive** ones, i.e. non-usable ones planted with self-sufficient plant species resistant to extreme weather conditions and requiring no maintenance, and **intensive** ones resembling above-ground gardens, where lawns, shrubs, perennials, flowers, herbs and even trees can be planted. The second type is certainly more interesting for users, and in addition to green areas, bug hotels can also be located here. The most popular example of this kind is the roof of the University Library in Warsaw, although such designs also appear on historic buildings, including registered ones.

In cities, including historic ones, the biologically active area is also increased by introducing green walls and vertical gardens.

The first variant is used especially in the case of gable walls without façade openings, where the entire surface can be covered with plant compositions. Another equally popular solution that can be used on any wall is climbing plants. Plants of this type dry out foundations and, by protecting walls from UV radiation, rain, wind and frost, contribute to improving the durability of external wall surfaces. However, where there are cracks, strong climbing plants can cause further damage.

Another example is the use of **free-standing green walls**. One example is the project by German start-up Green City Solutions – “City Tree”, a free-standing wall made of 1,682 plants arranged in squares. It is 2 metres high and can be made of concrete or wood and filled with moss, which provides a substrate for other plants. It is important to note that moss also filters polluted city air. The tree has its own irrigation system, based on rainwater. The wall also functions as an information board. Square pots act as pixels and can be arranged in the form of logos or even QR codes. In this way, “City Tree” becomes an advertisement.



The green wall of the railway station in Wodzisław Śląski, source: Municipal Office in Wodzisław Śląski

PROS AND CONS OF GREEN WALLS

The main pros of using green walls are:

- ❖ **Air purification** – 1 m² of green wall absorbs 2.3 kg of CO₂ from the air annually and produces 1.7 kg of oxygen.
- ❖ “Catching dust.
- ❖ **Lowering the temperature of the environment** – it is possible to lower the temperature in urban areas by 3°C and protect against heat loss in winter.
- ❖ **Reduction of noise levels in the surrounding area, both outside and inside** – absorbs 41% more sound than a traditional façade. Noise reduction reaches 8 dB, which means it is reduced by half.
- ❖ **Creation of a fire-resistant layer** – plants naturally have a high moisture content.
- ❖ **Extending the façade’s useful life** – a green wall protects the façade from external factors such as sun, rain, wind and temperature fluctuations.
- ❖ **Increased biodiversity** – plants growing on green walls provide an ideal shelter for birds, butterflies and other insects. This is particularly important in urban areas, where concrete and asphalt are the main materials used.
- ❖ **Rainwater harvesting** – this delays the drainage of rainwater into the sewage system and purifies the rainwater; the water also evaporates through plants. All this contributes to stabilising the groundwater level, reduces peak loads on the sewage system and lowers the risk of flooding.
- ❖ It has been confirmed that an aesthetically pleasing environment reduces stress in people and increases their work efficiency.
- ❖ Increasing the value of the property.
- ❖ Drying the ground around the building

The main cons of using green walls are:

- ❖ Insects and animals living in vines may be troublesome for some people
- ❖ If climbing plants grow on walls that have already been damaged, they can grow into the cracks and cause even greater damage
- ❖ If we use clamps during installation, marks may remain on the wall after they are removed.
- ❖ They require preparation by a specialised employee or paid service.

Green Cities Award

This award aims to promote urban spaces which, executed with the help of innovative solutions, contribute to improving the quality of life of residents, reducing greenhouse gas emissions, increasing green urban spaces and creating eco-friendly and people-friendly cities.

Promoting the projects submitted to the competition is an opportunity to raise the profile of the city, the designer and the investor, but also to emphasise the importance of environmental protection and sustainable development. Furthermore, participation in the competition also proved that Polish investments are at a very high European level, as evidenced by Czyżyny Park from Kraków taking second place in last year’s edition of the competition.



Czyżyny Park Kraków, source: Kraków City Hall

Benefits of implementing renewable energy sources and sustainable construction in cities

Investment in renewable energy sources and other environmentally friendly measures, also in historic cities, are of great importance to the environment, but also to the residents themselves. The main benefits include:

- ❖ **air quality improvement** – thanks to the reduced need for fossil fuels, emissions of exhaust fumes and dust decreases.
- ❖ **financial savings** – even though initial costs of installation may be high, cities and residents save on energy costs in the long run.
- ❖ **protection of the climate and nature** – reinforcing biodiversity.
- ❖ **improving the quality of life for residents** – green, sustainable cities equipped with infrastructure tailored to the needs of residents also affect the economics of local governments.
- ❖ **implementing RES in historic cities makes it possible to harmoniously combine tradition and innovation, allowing to keep the cultural heritage and care for the environment.**



Connecting buildings to district heating sources and thermal modernisation in Piekary Śląskie, source: Town Hall in Piekary Śląskie

Good environmental practices – exchange of experiences and effective measures

This brochure is the first part of the publication series entitled: *Good environmental practices*, published as part of measure C.6. Regional System of Eco-Information, LIFE integrated project “*Silesia. Blue Sky Restored.*” *Comprehensive implementation of the Air Protection Programme in Silesian Province.*

The publication series will refer to the process of changes in the Silesian Province, the transformation process that has already begun, and the broad context of investments and pro-environmental activities carried out in your municipalities. Its main objective is to promote and share a wide range of good environmental practices.

We hope that this publication will inspire you to take even more effective action to protect the environment.



Projekt zintegrowany LIFE „Śląskie. Przywracamy błękit”. Kompleksowa realizacja Programu ochrony powietrza dla województwa śląskiego.

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In the next issue:

Environmental education in municipalities of the Silesian Province

- examples of good practices in terms of environmental action,
- municipal educational institutions,
- pro-environmental associations and foundations,
- activities of eco-advisors for the project “Silesia. Blue Sky Restored.”



The Environmental Education Centre building in Wisła, source: Website of the Environmental Education Centre building in Wisła



Opening of the Environmental Information Centre – “Ekosfera”, source: Orontowice Municipal Portal