

FACTSHEET RISK REDUCTION MEASURES

Good Practice Catalogue - the Rules for Sustainable Management of Rainwater from Road Surface

Where was it implemented?

Lower Silesia, Poland

Fields of action

- Settlement area

Related to measure from the catalogue of measures

- Blue and green infrastructure (no 61)

Area characterisation

- **Area type:** urban / semi urban
- **Landscape type:** lowland (also for hilly area)

Problem

Past floods, that happened in Wrocław after heavy rain events, contributed to numerous damages in the city. After these events, it can be seen that a functioning of the city systems like e.g. transport or communication has been disturbed and numerous material losses have occurred.



Source: Lejcuś K. et al.: Katalog dobrych praktyk zasady zrównoważonego gospodarowania wodami opadowymi pochodzącymi z nawierzchni pasów drogowych. Wrocław 2017
[<https://www.wroclaw.pl/srodowisko/files/dokumenty/8811/Katalog%20Dobrych%20Praktyk%20-%20drogi.pdf>]

Description and aim

After past heavy rain events, the municipality needs to find possible solutions for the effective intake and collection rainwater from the road surface and the adjacent areas (e.g. pavements, squares, bicycle paths). A high percentage of sealed (impermeable) surfaces means that only a small part of rainwater and melt water seeps freely into the ground. Especially in cities the share of sealed surfaces is often high.

Researchers from the University of Environmental and Life Sciences have focused on finding solutions for local management of rainwater and snowmelt. The Good Practice Catalogue contains 19 measures aimed at increasing the retention of these waters (e.g. swale, water absorbing geocomposite, rain garden, curb extension, stormwater tree trenches, green roofs, pervious pavements, hydrophyte pond, infiltration basin, openwork plate, filter-bed channel, etc.). It also contains criteria for the selection of an appropriate measure: retention, costs, maintenance, water purification and additional indicators. A list of the most suitable plant species is also provided for each measure. The proposed measures help to minimise the negative impact of urban development on the environment (low impact development), for example through sustainable urban drainage. The possibilities for using a specific solution depends on the size and shape of the land available for the investment as well as soil and water conditions as well as the kind and size of the water receiver (located nearby). It should be remembered that regular maintenance is a condition for the efficient functioning of the proposed measure. The use of new, more environmentally friendly solutions can bring financial, social and ecological benefits. Some solutions increase the proportion of vegetation, which positively affects the well-being of residents and the microclimate.

In summary, the implementation of these measures in a city helps to improve the quality of life of residents and reduces the risk of losses after heavy rainfall.

Effect of measure	
Prevention and protection by capturing rainwater (including heavy rainfall). Some solutions contribute to water purification.	
Description of implementation	
Effect horizon: short-term to long-term	Involved stakeholders: authorities, spatial planners, designers and engineers
Implementation: October 2017 / ongoing	Initiator / responsible Wroclaw City Hall (Urząd Miejski Wrocławia) [catalogue created by Wrocław University of Environmental and Life Sciences (Uniwersytet Przyrodniczy we Wrocławiu)]
Lessons-learned	
Main success factor: Information of residents about the advantages of these solutions (e.g. the possibility of retaining rainwater in-situ) and the positive impacts on the quality of their life. In addition, risk of losses caused by heavy rainfall are mitigated.	Main challenge: Authorities approach: instead of recommending the use of a given solution, an obligation to use one of the solutions should be introduced in the case of new investments. Simplification of documentation to support the implementation of the solution.
Synergies / beneficial aspects: Use of new, more environmentally friendly solutions (shown in The Good Practice Catalogue) can bring financial, social and ecological benefits. Some solutions increase the proportion of vegetation. This positively affects the well-being of residents and the microclimate.	Conflicts / Constraints: Costs (solutions generate an additional cost by building or rebuilding infrastructures like roads, pavements, squares). The location (dense buildings in the city) limits the feasibility of the solutions. There are places where only some of the solutions are suitable.
Key message to others starting with a similar task	
“The challenge is to convince designers, authorities, investors to implement one of the proposed measures. Public acceptance of the measures is high due to damages caused by past flood events and the benefits of the measures as well as visual value.”	
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