EDUCATION FOR SUSTAINABLE DEVELOPMENT: TRANSFERRING V4 COUNTRIES' EXPERIENCE FOR UKRAINE'S RECOVERY

Seminar: Water scarcity and water supply in conditions of water shortage.

21 December, 2023

Visegrad Fund

voda pre klímu

UIMID
Ústav pro interpretaci místního dědictví ČR
Czech Institute for Heritage Interpretation

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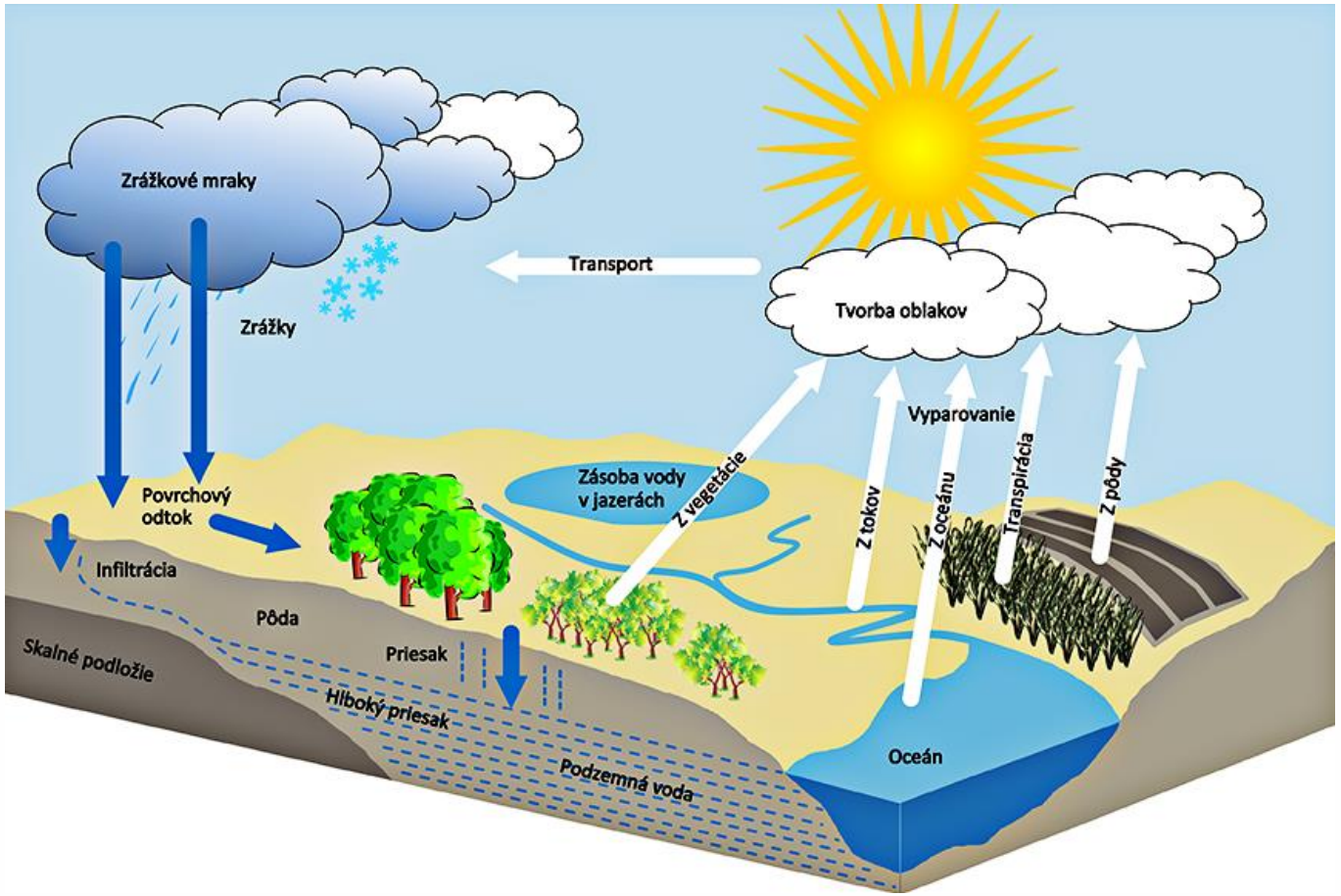
Small water cycle and changes in runoff ratios



Source: Kravčík, Pokorný, Kohutiar, Kováč, Tóth: New Water paradigm, ISBN: 978-80-969766-5-2, 96 srt.

Small water cycle and how to measure it:

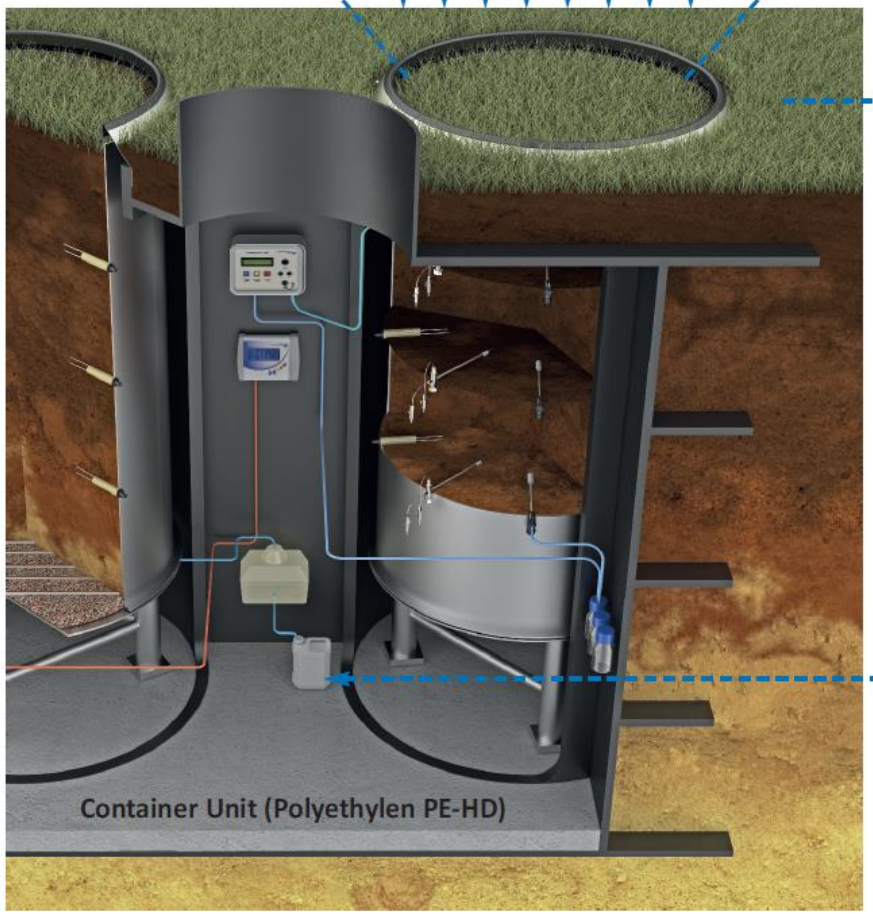
Waterbalance:

$\Delta W(t) = P(t) - ET(t) - S(t) - R(t)$

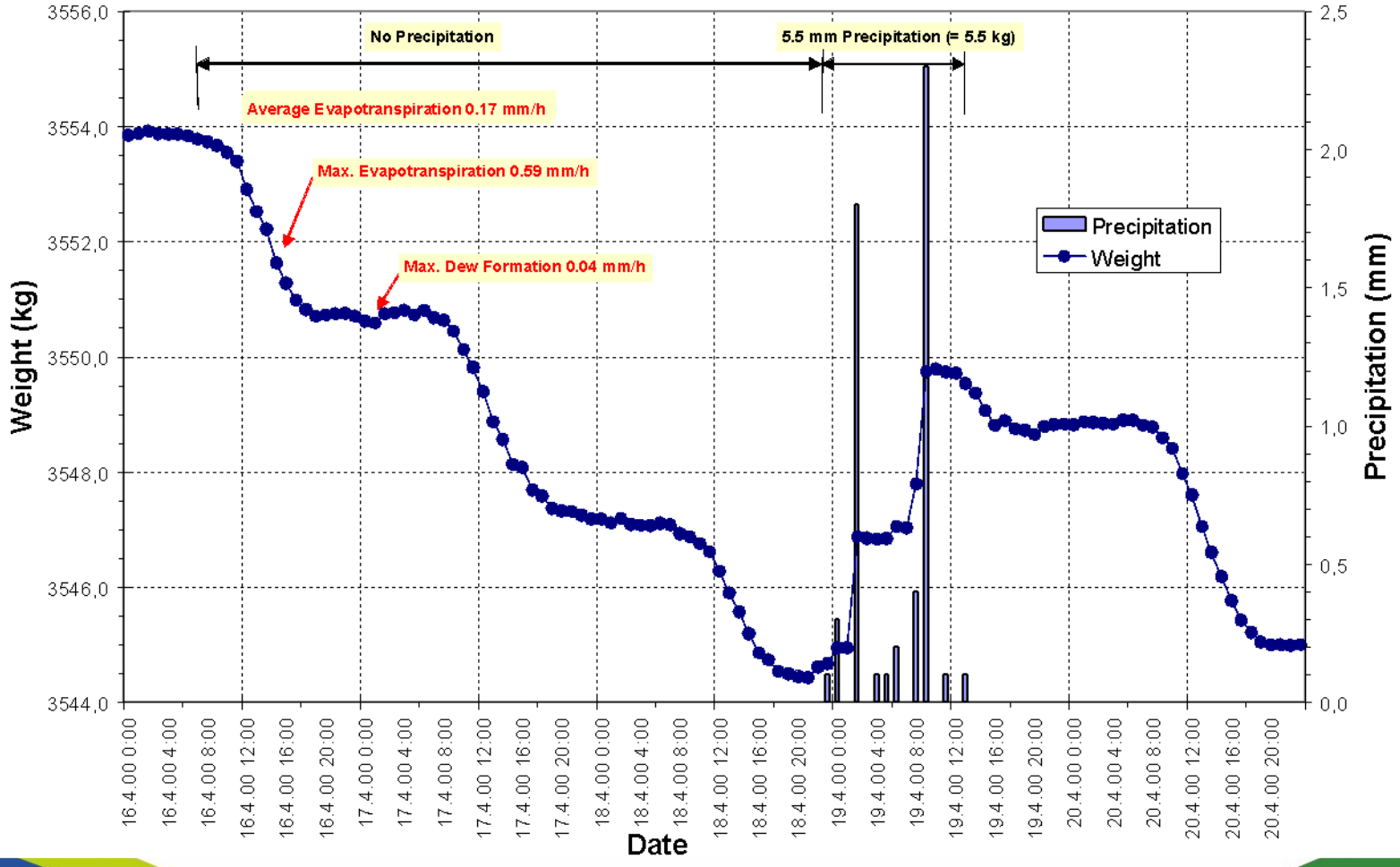
Lysimeter collar

Data logger

Weighing monitor



Small water cycle and how to measure it:



How can we increase water reserves in the environment :

Think globally - act locally. It's not just a phrase.

Retaining water in the country is really the solution.

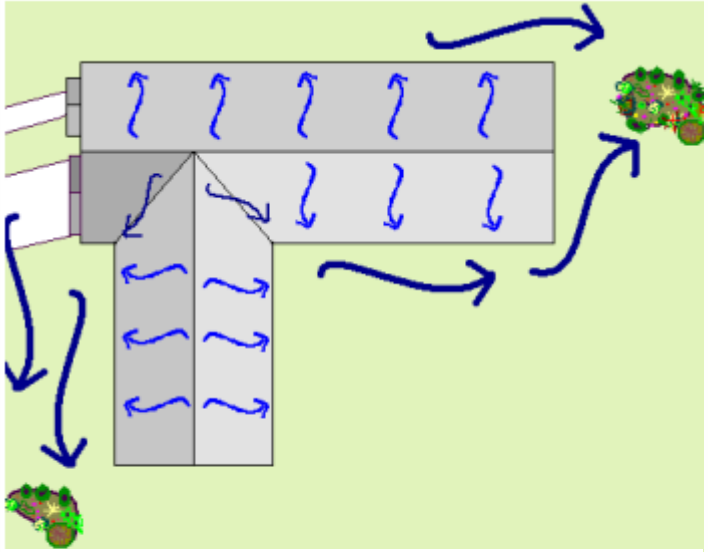
Principle: let rainwater stay where it falls.
This principle should be our goal.

Next : some example of implementation

Rain garden – a depression with a vegetation surface (naturally or man-made) designed to collect rainwater from paved impermeable surfaces such as roofs, pavements, parking lots or roads of any category; Rainwater subsequently infiltrates the subsoil (into groundwater), or part of it is received by the root system of local plants, which then release it into the air as water vapor in the process of transpiration

Measures feasible in the built-up area			
Rain Garden	reducing the volume of water run-off, filtering foreign matter, replenishing groundwater reserves, improving the microclimate of the environment, promoting biodiversity, increasing the value of the landscape		

Rain Garden

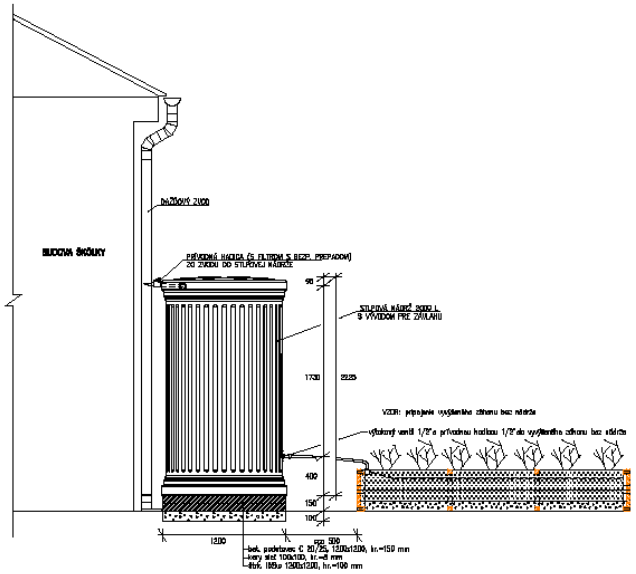


Schematic representation of the division of the rain garden depending on the size of the paved areas (roof of the building and access road)

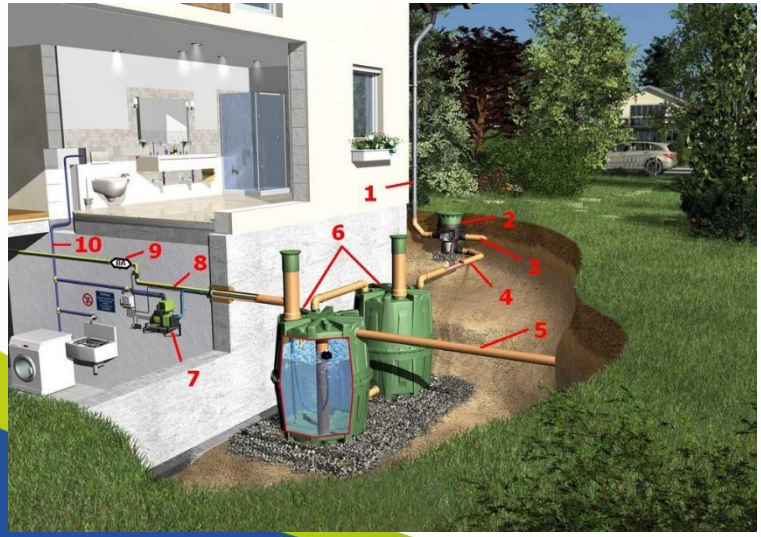
Reconstruction of a concrete pool for an ornamental rain pond in Cinobaňa Primary School

Storage overhead storage tanks

- They complement each other well with raised flower beds

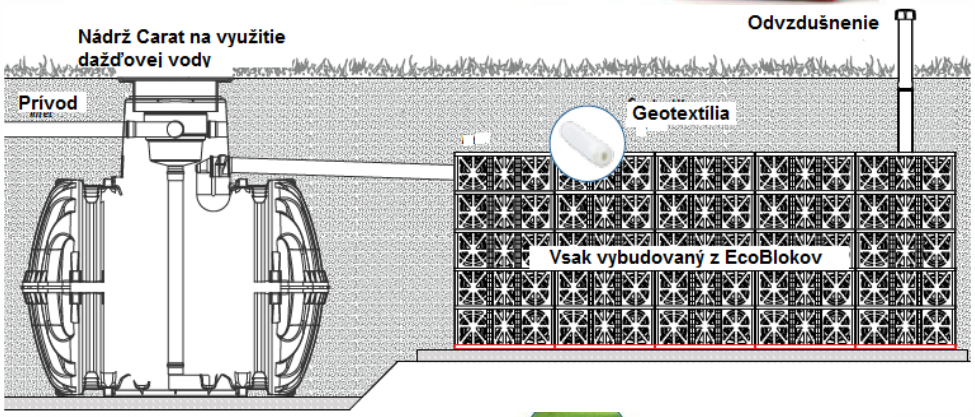


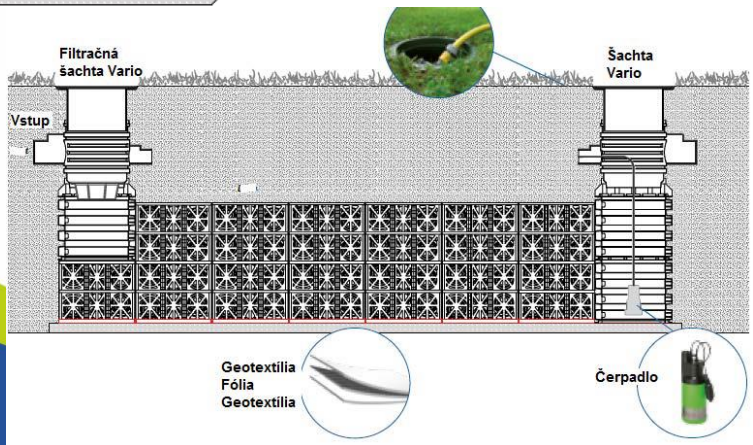
Underground storage tanks

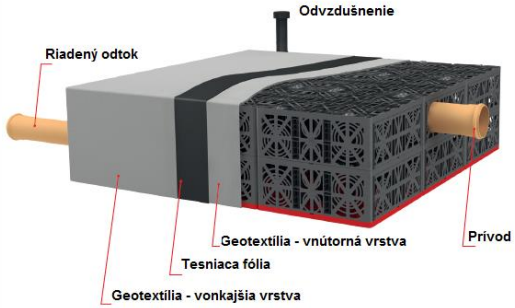


Infiltration underground storage tanks

- Sensitive to the geological composition of the subsoil



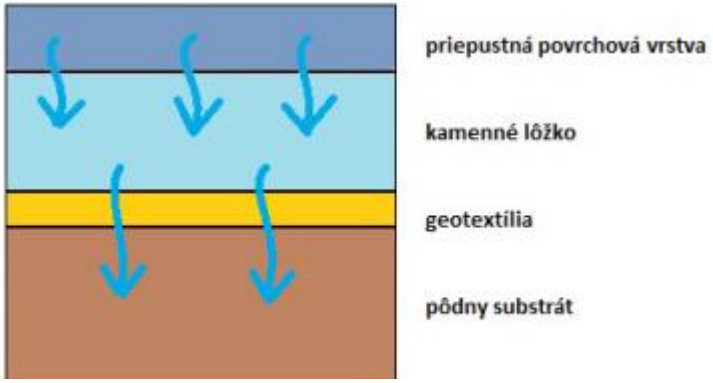




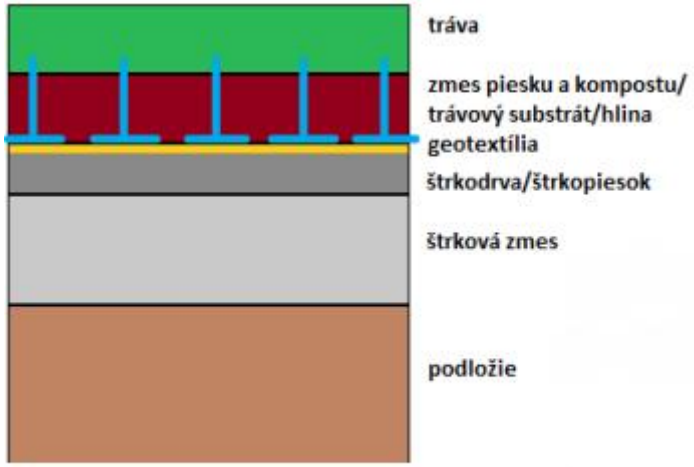
Vegetation walls

- Shielding, cooling, evaporation, noise and dust reduction, creating an optical barrier,
- habitat for insects

Grass paving



Penetration of rainwater through the surface of the permeable layer into the permeable bed



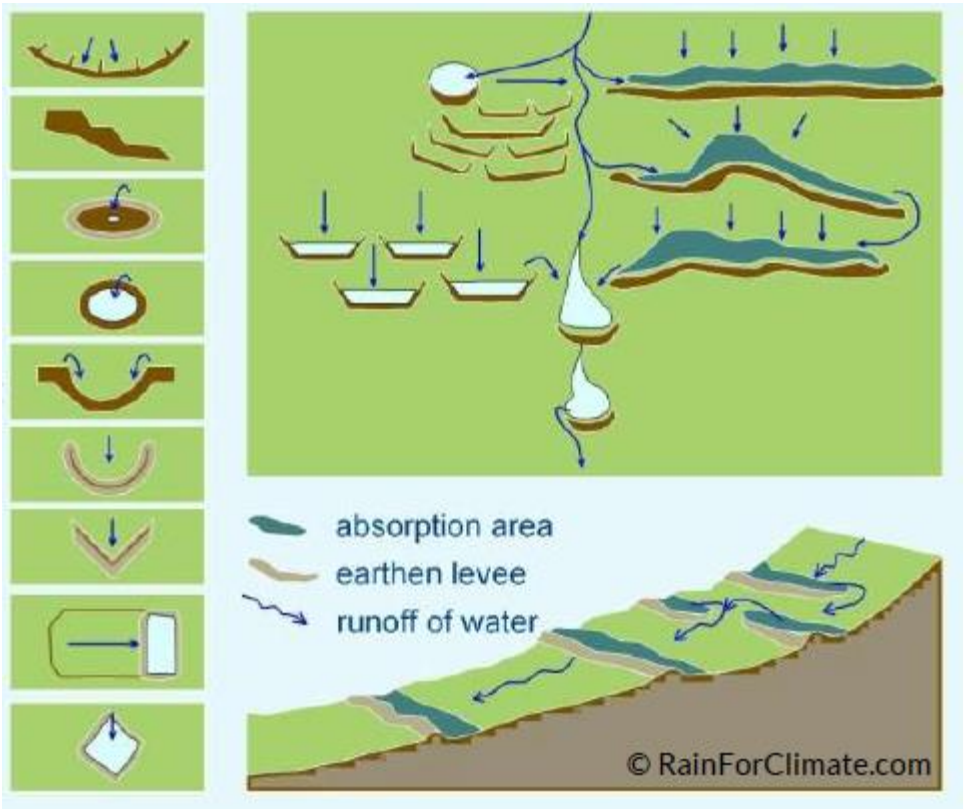
vertical profile with grass paving (profile of sub-layers)

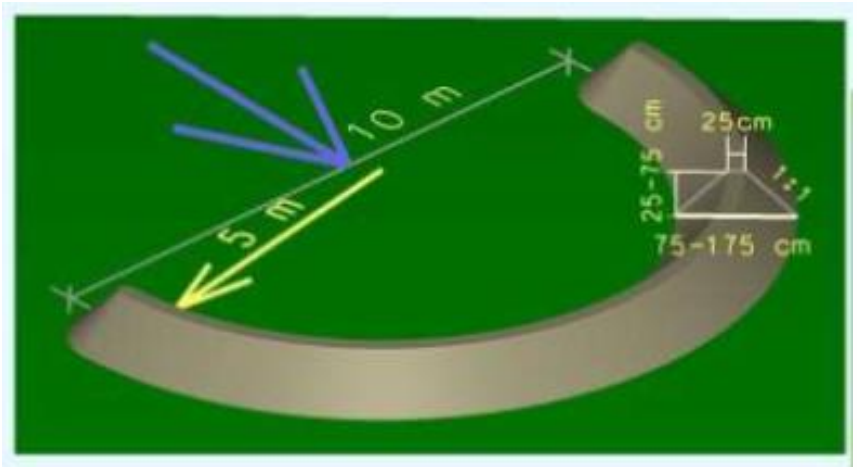
Grass pavement in the driveway to the family house

Permeable surfaces

- Reduction of surface overheating (e.g. parking lots, sidewalks, sports fields, recreational zones...)
- Ensuring cooling with vegetation and evaporation

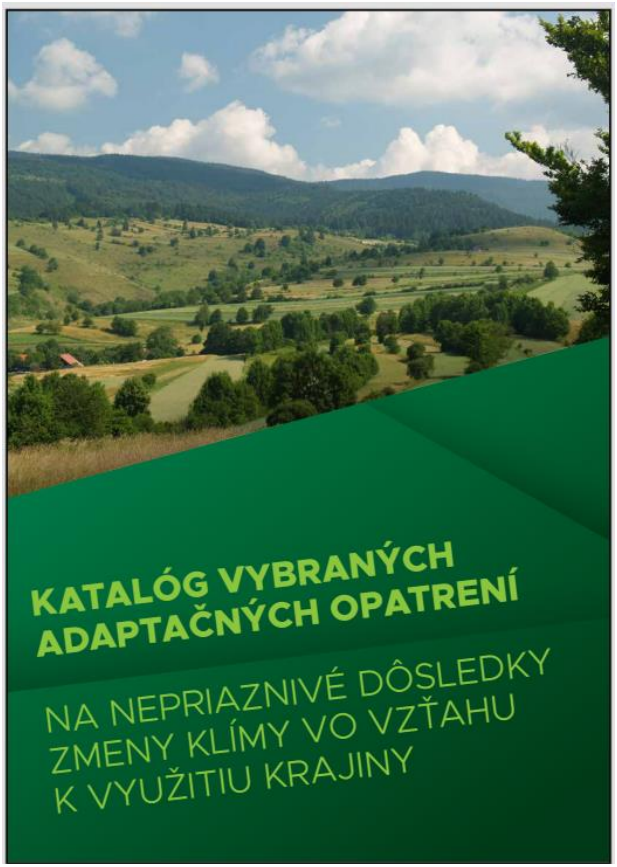
Water retention landscaping measures



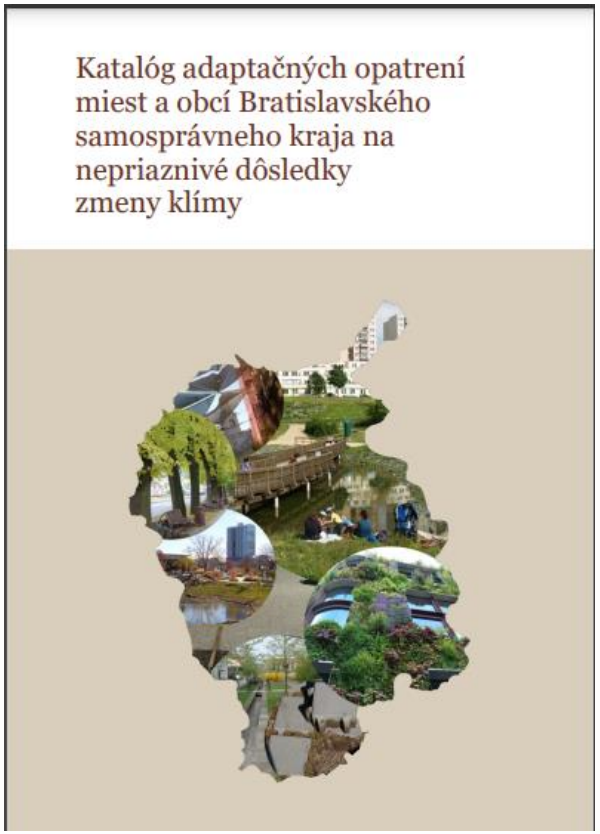


Water retention landscaping measures

How to support the municipality, owners, etc.



Catalogue of selected adaptation measures to adverse climate changes in relation to the use of cayenne



Water retention measures in the world and their results – Australia, Portugal

Water retention measures in the world and their results - India

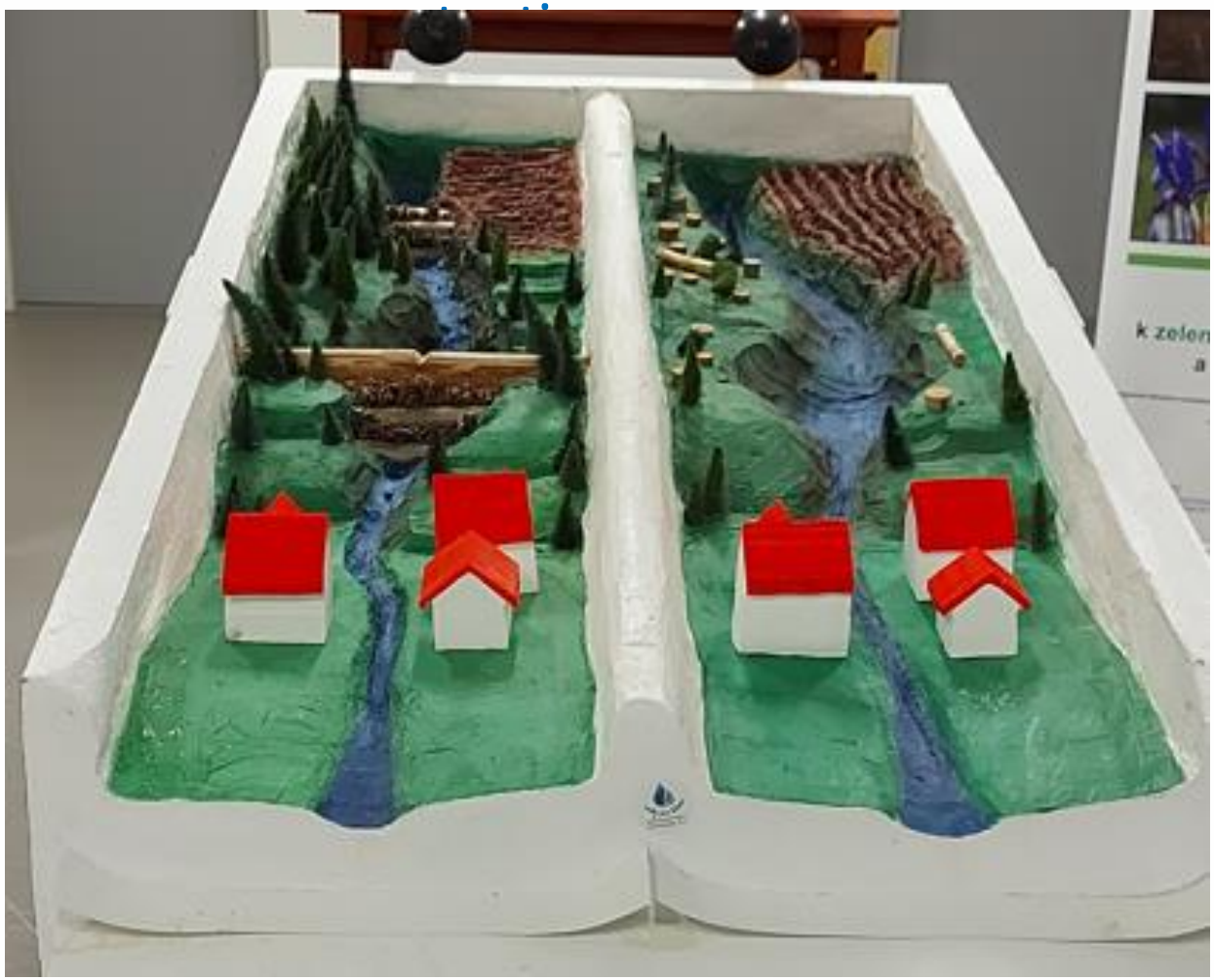
One example of the gardening settlement in Slovakia:
Area of gardening settlement: 7.31 ha
If 1 mm of precipitation falls on it, It is equal to 73.01 m3 of water.
If this measure captures 10% more water through seepage, we supply 7.31 m3 of water to groundwater.
The annual precipitation (Leopoldov/Hlohovec) ranges from 505 to 600 mm. This means that about 40,155.5 m3 of water falls on the area of the settlement per year.
Thus, we have a chance to capture and supply groundwater with at least 40,155.5 m3 of water per year.

How to effectively educate about the issue of water retention measures

It is better to try once than to see or hear twice

Video:

How to effectively educate about the issue of water



Video:

Ďakujem za pozornosť!

RNDr. Ivan Matušek

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