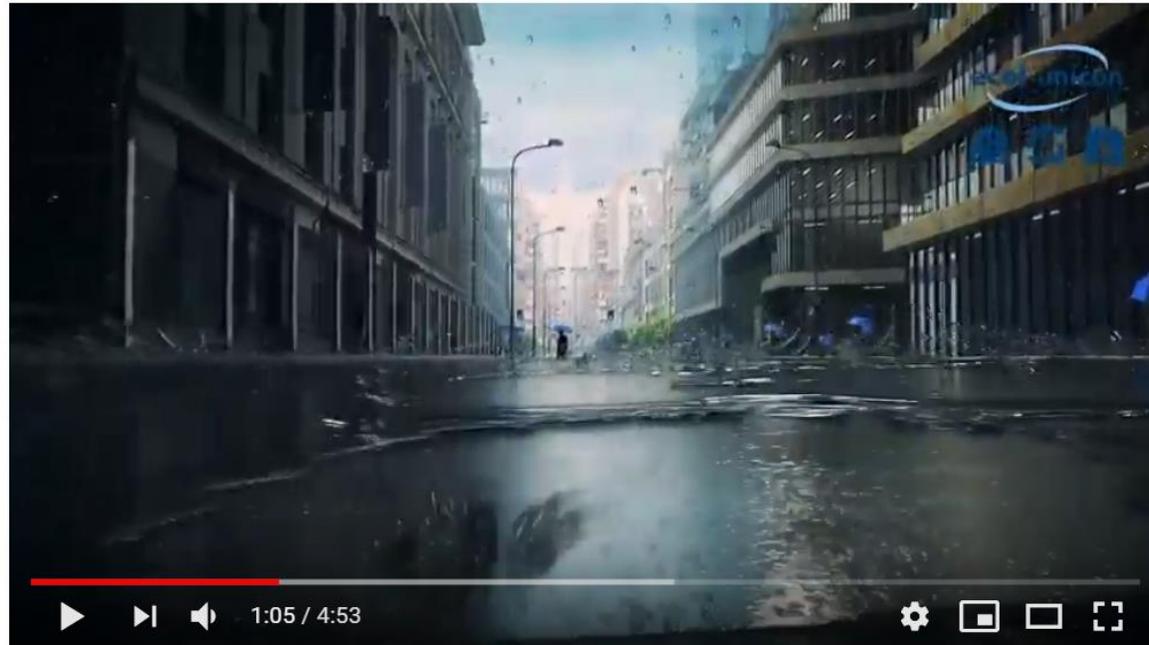


The image features a white background with several realistic water droplets of various sizes scattered across it. In the center, there is a graphic element consisting of a white square with a thick black border. This square is partially overlaid by a green frame that has a gradient from light green to a darker green. The text 'WATER MANAGEMENT' is centered within the white square in a bold, black, sans-serif font.

WATER MANAGEMENT



Co-funded by the
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BUMERANG

**is a remote monitoring and control system
for devices water and sewage systems**

POLAND

3CITY: GDAŃSK - GDYNIA - SOPOT



WHAT IS THE PROBLEM?

- as a result of urbanization, we have **less and less green areas**
- because of building streets, parking, industrial areas, etc. **the grounds are hard that water from rain can not enter the ground, because there is no way**
- more and more extreme climatic events, especially floods, but also droughts. we have **bipolar situation**: once the water is too much, and in a moment - too little
- we do not have normal rain now - but **very heavy rain**
- flooded streets, flooded cellars, huge puddles in parking lots are just a part of the problem we see physically

no rainwater sewer is able to pick up rainwater
(especially separated devices and separate solutions
are not able to cope with this amount of water)
this increasing the risk of flooding



- as a consequence, there is **no natural infiltration**
- water from the rain can not increase the amount of water underground that we need to live
- water that so far has soaked in and fed groundwater, is now discharged into the river's sewage system - **we do not give nature what belongs to it**
- where possible, it is best to drain rainwater directly to the ground or receivers, but only after they have been appropriately pre-treated (separators)

We need an **efficient system** that will enable it!

- constant monitoring of important data in the process of transport, cleaning and use purified "clean" wastewater and exploitation management
- the collected data is transferred via the **GPS network** to the decision system
- the software constantly monitors the changes taking place in the database and presents the current status of the objects
- thanks to this, it is possible for example, **start and test** pumps, block work, object or sensors, turn off the alarm signaling
- the user has the option connecting to the system **an unlimited number of objects**
- together with the bumerang system user has a **dispatching (controlling) station with the necessary software**

GOAL



- **SAFETY** - conscious action to minimize flooding and flooding
- **ECOLOGY USE OF RAINWATER**, limiting direct rainwater runoff, increasing groundwater
- **OPTIMIZING WATER SAVING**, more efficient use of retention capacity; reduction of operating costs,
- **PLANNING** - land development and infrastructure
- **SATISFACTION** - personal, user and city residents, improving the comfort of living

BLUE-GREEN INFRASTRUCTURE POTENTIAL





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Blue-green infrastructure potential

adaptation of rainwater drainage systems to climate change

POLAND - BYDGOSZCZ



PROMOTE OF CREATING "GREEN AND BLUE" INFRASTRUCTURE:

- properly designed parks
- rain gardens
- natural retention reservoirs
- roadside ditches
- individual solutions for house

GOAL



- development of hydraulic models integrating sewage systems, rivers and land cover
- creation of green and blue infrastructure for the retention of rainwater
- the idea is for the city to become resistant to climate change, to function **like a "sponge" accumulating rainwater** and allowing its use during periods of drought

HOW?

- **GREEN AREAS FOR RETENTION** - open ponds and retention containers instead of underground containers- instead of treating water in pipes and drain
- **BUFFER PLANTS** increases the surface of water infiltration and evaporation. green belts located below the street, ditches, city gardens, green roofs and facades)
- **A SPECIAL TYPE OF MATERIAL** from which we build roads and pavements (mineral, geogrids etc.)
- **PROTECTION AND REVITALIZATION** of green spaces
- **REUSING RAINWATER** - watering greenery, rinsing streets, reusing rainwater in buildings, for example, toilets



GOOD PRACTICE



- **Turn off the tap!**

Just by turning off the tap while you brush your teeth in the morning and before bedtime, you can save up to 8 gallons of water! That adds up to more than 200 gallons a month, enough to fill a huge fish tank that holds 6 small sharks! The same is true when you wash dishes. Turn off the tap! Scrape your dirty dishes into the trash—then put them in the dishwasher.

- **Shower power!**

Taking a shower uses much less water than filling up a bathtub. A shower only uses 10 to 25 gallons, while a bath takes up to 70 gallons! If you do take a bath, be sure to plug the drain right away and adjust the temperature as you fill the tub. To save even more water, keep your shower under five minutes long—try timing yourself with a clock next time you hop in!

- **Fix that leak!**

Fixing a toilet leak is a great way to reduce household water use and boost water conservation. If your toilet has a leak, you could be wasting about 200 gallons of water every day. That would be like flushing your toilet more than 50 times for no reason! Try this experiment: ask your parents to help you test for leaks by placing a drop of food coloring in the toilet tank. If the color shows up in the bowl without flushing, you have a leak!

- **Beat the heat!**

Watering your yard first thing in the morning is a great first step to water-efficient landscaping. Avoid watering your yard in the middle of the day. Watering when it's hot and sunny is wasteful because most of the water evaporates before the plants have time to drink it. Also, when you're helping your parents water the yard, make sure not to water the plants too much—remember that a little sprinkle goes a long way!

- **Who needs a hose?**

An easy way to save water is to use a bucket and sponge when washing cars and bikes. Washing your bike or car with a bucket and sponge instead of a hose saves a lot of water. A hose can waste 6 gallons per minute if you leave it running, but using a bucket and sponge only uses a few gallons! Also, some car washes recycle water instead of letting it run down the sewer drains. Ask your parents to check if a car wash near you recycles water

- **Use rainwater!**

During the rain, display a bucket or container or place them directly under the gutter. Use rainwater to watering plants at home or in the garden.