STOP SUSZY

START RETENCJI

You don’t have to read this... but

The climate is changing and ecosystems
are becoming increasingly vulnerable to water shortages.
Your daily choices can help counteract the effects of drought.
We can all play a part in reducing the water crisis.
Big achievements start with small changes.
It’s easier than you think – read on to find out how you can help.

STOP SUSZY
START RETENCJI

Common mission for a better future!

Drought is one of the most serious natural phenomena, which has become increasingly severe in recent years both in Poland and worldwide. Rising temperatures, longer periods without precipitation and changing climate conditions significantly reduce the availability of water, which has far-reaching consequences for agriculture, industry, and everyday life. In response to these challenges, actions are being taken to minimize the effects of drought and improve the management of water resources.

On September 3, 2021, the Minister responsible for water management published a **regulation on the adoption of the Drought Effects Counteracting Plan (DECP)**. According to the Water Law Act, this document is subject to update at least once every 6 years. The project Review and **Update of the Drought Effects Counteracting Plan (uDECP)** is just such an update.

PPSS

The implementation of DECP is the responsibility of the government and local government administration bodies, as well as the State Water Holding Polish Waters. They are responsible for developing and implementing the necessary systemic actions.

Each of us can and should play our part in counteracting the effects of drought, saving water and protecting it. This is a joint mission that – with the involvement of many parties – will help protect water resources and limit the negative effects of climate change.

Drought – Local Consequences of a Global Problem

Drought is one of the most serious challenges of the present world, affecting the natural environment, economy, and societies all over the world. According to the report of the United Nations Convention to Combat Desertification (UNCCD)[1], over the last three decades, about 77.6% of the land surface has become drier, and by the end of the 21st century, the effects of droughts may affect up to five billion people. In Poland, this phenomenon is also gaining momentum, which results in serious consequences for various sectors of the economy, social life and the natural environment.

Why Is Drought a Problem?

Drought is a long-term lack or deficiency of atmospheric precipitation, leading to a water deficit in the soil, streams, and water reservoirs. In Poland, water resources are limited due to geographical location and climatic conditions. The average annual rainfall is around 600 mm, but its spatial distribution is uneven – in the mountains it reaches up to 1700 mm, while in the central part of the country it does not exceed 500 mm per year. In addition, climate change increases the frequency and intensity of periods without precipitation, which increases the risk of drought.

WOW!
Water Resources

The consequences of this phenomenon are multifaceted:

Drinking water – a drop in groundwater levels and low water levels in rivers can result in a reduction in water resources intended for consumption. In extreme cases, this phenomenon leads to a water deficit in municipal intakes and forces restrictions on its distribution.

Agriculture – rainfall deficit and reduced soil moisture result in reduced yields and deterioration of crop quality. This directly translates into financial losses for the agricultural sector and an increase in food prices, destabilizing supply chains, and affecting the country's food security.

Energy – persistently low river flows limit the capacity of hydroelectric power plants to produce energy and also make it difficult to cool coal-fired units and, in the future, nuclear units. This may lead to reduced availability of electricity and an increase in the cost of its generation.

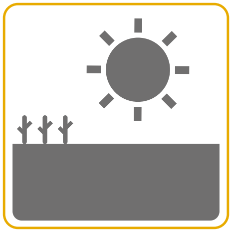
Aquatic ecosystems – drought causes lower water levels in reservoirs and rivers, leading to the degradation of aquatic and water-dependent habitats. The decrease in the amount of available water disrupts the biological balance, contributing to the extinction of aquatic organisms, the degradation of peatlands and an increased risk of toxic cyanobacteria blooms.

1 UNCCD - Dz.U. L 83 z 19.3.1998, link: https://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:21998A0319(01)

Types of drought

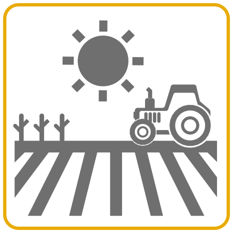
Drought is a complex hydrological and climatic phenomenon, the effects of which include both the natural environment and key sectors of the economy. Depending on the area of occurrence and the mechanisms of impact, several types of drought are distinguished, each of which has a different impact on the functioning of ecosystems, economies and societies. Each of the Each

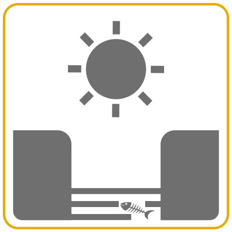
Dictionary



Atmospheric (meteorological) drought – the earliest and most basic form of drought, resulting from a long-term deficit of precipitation in relation to the multi-year average values for a given region. Long periods of high temperature result in a decrease in air and soil humidity, which leads to increased evaporation and intensification of water stress in ecosystems.

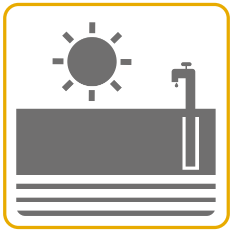
Agricultural (soil) drought – a condition in which long-term water deficit in the soil exceeds the capacity of plants to take it up, disrupting their growth, development, and productivity. The effects of agricultural drought include reduced yields, reduced crop quality, and an increased risk of soil degradation due to limited activity of soil microorganisms.





Hydrological drought – characterized by a long-term deficit of water resources in rivers, lakes, and reservoirs. It is also referred to as a "hydrological low flow." It occurs when flows in watercourses fall below multi-year averages, such as the average annual or monthly flow. This leads to the degradation of aquatic ecosystems and water-dependent ecosystems, a decrease in biodiversity, and a deterioration in the quality of surface waters due to the concentration of pollutants. Limited resources reduce the efficiency of hydropower plants and can cause difficulties in water supply. Long-term shortages also affect inland transport, leading to restrictions in navigation.

Hydrogeological drought – is the latest stage in the drought development cycle and is characterized by a long-term decrease in the level of groundwater. It leads to a reduction in the availability of water resources in wells, as well as to a reduction in the efficiency of natural and exploitation sources, supplying the population and industry. It is particularly dangerous due to the slow process of renewing groundwater resources, which – depending on geological and hydrodynamic conditions – can last from several to several dozen years.



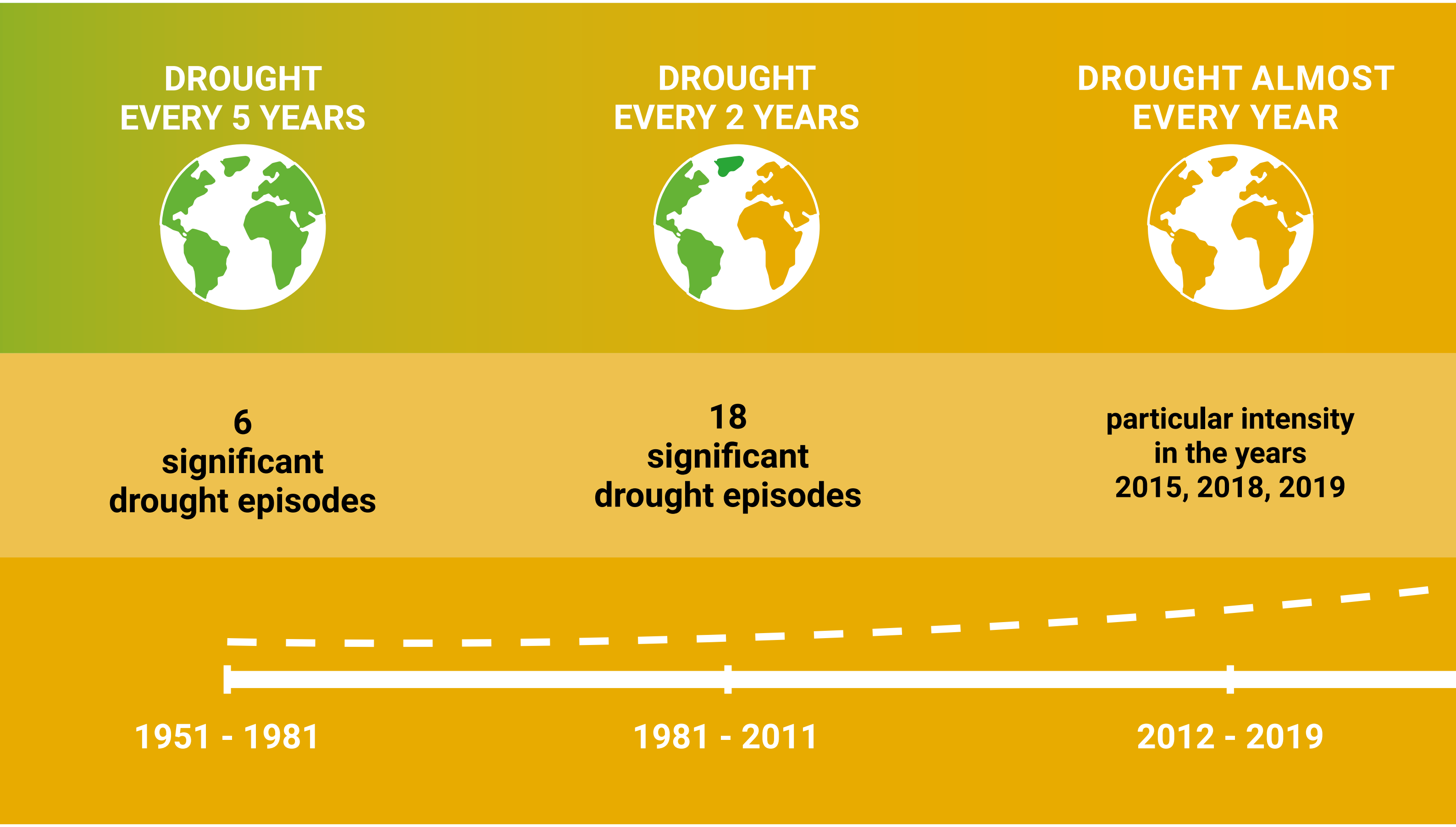
Each of the above types of drought can occur independently or simultaneously, leading to the accumulation of effects and an increase in their impact on the environment and the economy.

Drought – from history to the challenges of the future

PODCAST
First of all, water

Historical analyses indicate that drought in Poland is a cyclical phenomenon, which is characterized by varying intensity in different periods. Paleoclimatic and historical studies, conducted among others at the University of Wrocław, included analysis of data from the years 1722–2015. The results show that most episodes of meteorological drought lasted on average about two months, although there were cases extended to 3-4 months, and in extreme situations even to 7-8 months. Historical reconstructions, based among others on chronicles and records of hydrological measurements, reveal that from the mid-15th to the end of the 18th century, over 100 drought episodes were recorded in the territory of present-day Poland, 17 of which were defined as **"mega-droughts" – exceptionally extensive and severe in their consequences.** These extreme events often led to famines and significant economic losses.

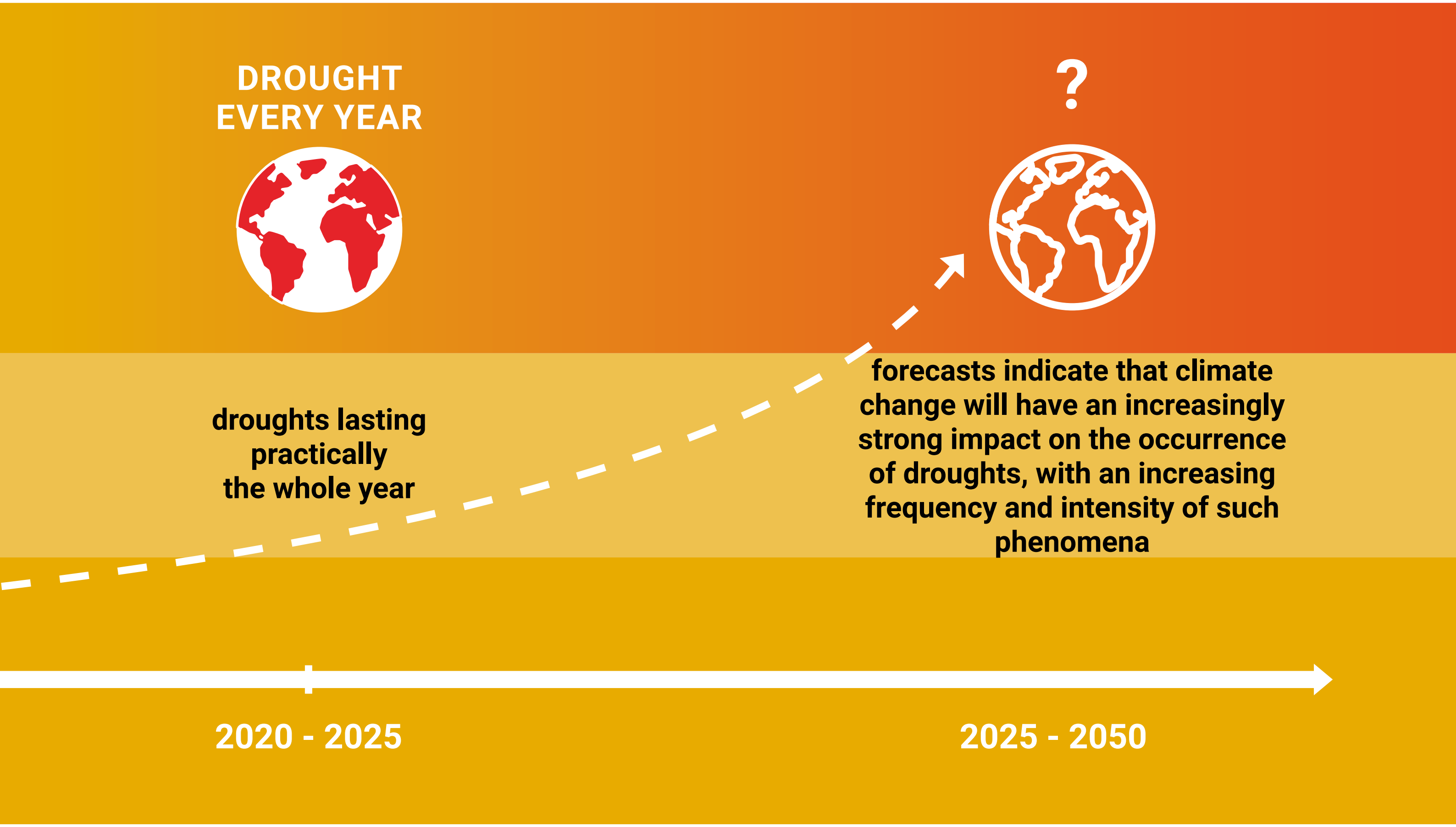
Contemporary data confirm a significant increase in the frequency of droughts in Poland in recent decades. In the period 1951–1981, six significant drought episodes were recorded, which corresponds to an average of one drought every five years. In the next thirty years (1982–2011), this number increased to eighteen, which corresponds to an average of one drought every two years. This trend intensified after 2013, when droughts began to occur almost every year,



with particular intensity in 2015, 2018, and 2019. In the last four years, this phenomenon has remained at a high level: spring 2020 brought one of the most severe droughts in the growing season, and 2021 and 2022 were characterized by prolonged periods of precipitation deficit, especially in central Poland. 2023 was also recorded as a dry year, with record low water levels in the Vistula, while in 2024 agricultural drought affected 13 provinces, with water deficits ranging from -160 to -219 mm in the summer. Analyses indicate that meteorological droughts are increasingly transforming into agricultural and hydrological droughts, which results from the accumulation of rainfall deficiencies and high temperatures.

IPCC

Projections for the coming decades, based on climate models (e.g. RCP 4.5 and RCP 8.5 scenarios from IPCC reports), suggest further intensification of droughts in Poland. Climate change, including an increase in average temperatures by 1-2°C on a regional scale and changes in the distribution of precipitation contribute to the extension of rainless periods and increased evapotranspiration. Regional studies indicate that the annual total precipitation in Poland (approx. 600 mm) remains relatively constant, but its distribution is becoming more uneven – most of it falls in the winter months, which limits the availability of water in the key vegetation period for agriculture (from March to September). At the same time, the demand for water increases as a result of intensified evaporation, which increases the water deficit, especially in the central and eastern regions of the country.



How can we counteract drought?

The growing problem of drought in Poland requires the implementation of effective water resources management strategies. They **should focus on increasing retention and protecting aquatic and water-dependent ecosystems.** Improving the capacity to store water in the environment is considered one of the most effective methods of adapting to climate change, as it protects not only against drought, but also against fires and floods.

Why is retention important?

Retention, or the ability to retain and store water in the environment, plays a fundamental role in maintaining hydrological balance.
By increasing retention, we can:

- **improve water balance** - storing water in natural and artificial reservoirs, wetlands, or landscapes allows for its gradual release in periods of shortage, which stabilizes water availability for ecosystems and the economy
- **stabilize ecosystems** - maintaining an appropriate level of groundwater and surface water supports the functioning of natural habitats and provides optimal living conditions for many species of plants and animals
- **protect regions from drought and floods** - increased retention reduces the risk of flooding by absorbing excess rainwater and mitigates the effects of drought thanks to accumulated water reserves

Funding for micro-retention

Many municipalities in Poland offer subsidy programs for projects that increase the level of water storage in the environment. Property owners can count on subsidies for the implementation of rainwater management projects, including the construction or installation of small retention tanks, the construction of soakaways, and seepage boxes, or the establishment of rain gardens. Such initiatives have already been implemented in Warsaw, Sopot, Legnica, Sosnowiec, Lublin, and Bielsko-Biała.

In Poland, retention activities include both the construction of large reservoirs of regional importance and the development of small retention. Business entities, local governments, as well as owners of private properties (so-called micro-retention) can engage in small retention. Such a responsible approach supports sustainable water management and counteracts the negative effects of extreme weather events.

Micro-retention includes in particular the creation of **ponds, water holes, rain gardens, garden ecological pools**, and above all **the development of rainwater collection systems**, from rain barrels to tanks (above ground or underground) collecting water from roofs and impermeable surfaces. This category also includes bioretention and infiltration ditches and structural substrates.

The fight against drought also includes projects supporting the retention potential of soils. They include activities such as: terracing slopes, liming or increasing the humus content in the substrate. The more precipitation permeates the ground, supplying groundwater, the lower the risk of deep lows and hydrogeological drought. This permeability of the substrate is a key issue.

WOW!
Micro-retention

Curiosity:

Improving retention in cities can be achieved by... establishing flower meadows. This solution is more beneficial than lawns, because it does not require watering, and it perfectly binds moisture in the soil and protects against evaporation. An additional advantage is the increase in biodiversity, including, above all, help for endangered species of pollinating insects.

Flower meadows

Protection of aquatic and water-dependent ecosystems

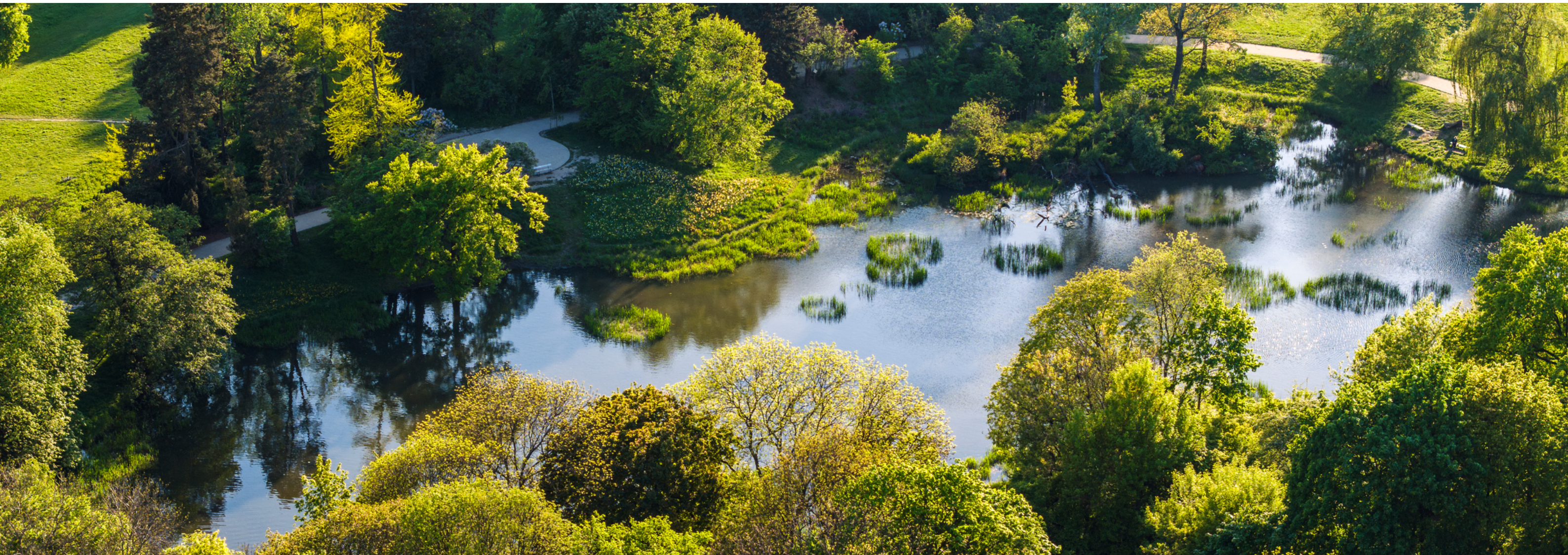
Artificial retention will not solve all our water shortage problems. In the fight against drought natural ecosystems, in which water plays a dominant role, are of key importance. Unfortunately, irresponsible urbanization has disrupted the functioning of many of them, and prolonged periods without rain deepen the problem.

The effects of droughts on nature

Drought primarily lowers the water level in rivers – in the case of small streams, it even dries up completely. This has a dramatic effect on the life of aquatic organisms – fish, crustaceans, amphibians, but also waterfowl and vegetation. As the water level in rivers, lakes and wetlands decreases, its quality deteriorates, which has a fundamental impact on the biodiversity of a given ecosystem. Permanent disruption of the water cycle can lead to irreversible species changes and habitat degradation.

The prolonged drought also causes significant damage to forest ecosystems. Its direct effect is an increased risk of fires, which not only physically destroy the tree stand, but also pose a threat to animals and negatively affect air quality. In 2024, the State Fire Service recorded as many as 4,335 forest fires, which is 300 more than the previous year. Even if a fire is not ignited, the lack of water in a given growing season leads to the drying out of young trees, which seriously limits the process of forest regeneration.

The long-term effects of drought in forest ecosystems are only visible after several years. Plants are less effective at taking up nutrients from dry soil, which leads to a deterioration in their condition and reduced resistance to diseases and pests.



Wetlands, i.e. areas of special hydrological importance

High temperatures, lack of rainfall, and low water levels in rivers are also a serious threat to wetlands, i.e. areas that are permanently or seasonally flooded with water. These include, among others, peat bogs and marshes, and in the coastal zone also halophytes and estuaries. These still underestimated ecosystems are in fact the key to combating drought and floods, the two most serious natural disasters occurring in our country in recent years.

The importance of wetlands is much greater than is commonly assumed. The centuries-old stereotypes about their uselessness and hostility to humans have obscured scientific facts. Wetlands:

- **store water.** Thanks to their sponge-like structure, wetlands retain huge amounts of water. They are able to store twice as much water as all the lakes in the country. By stopping the runoff of water, they also contribute to increasing its penetration into the aquifer.
- **store organic carbon.** Plants living in wetlands have been capturing carbon dioxide from the atmosphere for millions of years and binding it in their tissues through photosynthesis. When they die and sink, their remains decompose in water at a very slow rate. This process promotes long-term storage of organic carbon in soil and sediments, thus contributing to reducing the amount of carbon dioxide in the atmosphere.
- **filter water.** Vegetation in wetlands captures nitrogen and phosphorus compounds, preventing eutrophication of water in rivers and lakes.
- **protect against floods.** The absorption capacity of wetlands means that they can absorb large amounts of water from heavy rainfall or flooded rivers, acting as a buffer zone and flattening the shape of the flood wave.
- **are the habitat of thousands of species of flora and fauna.** A significant part of them are rare and endangered species that cannot cope in other habitats.
- **cool the local climate** thanks to the phenomenon of water evaporation on warm days.

Unfortunately, global estimates (WET index) show that since the 1970s, 35% of wetlands have disappeared worldwide. The main cause is the intensive drainage of these areas associated with changes in spatial development. As a result, the potential for natural water retention in the environment is drastically reduced, and phenomena such as droughts and floods are becoming more widespread. An additional threat is the release of carbon stored in peat bogs – when the water level drops below 20 cm, the peat begins to decompose, emitting huge amounts of carbon dioxide into the atmosphere.

Wetlands in Poland

According to data from IMWM-NRI, wetlands in Poland cover an area of about 43 thousand km^2, of which 12 thousand km^2 are peat bogs. Most of the latter are low peat bogs, developing in permanently watered zones or subject to long-term flooding – their condition therefore depends on the water level in rivers. Raised peat bogs, in turn, are supplied by atmospheric precipitation – they are found mainly in the belt by the Baltic Sea, in the Giant Mountains and the Jizera Mountains.

Of the 19 Polish areas listed in the Ramsar Convention on the Protection of Nature in Wetlands, the most important are the wetlands in the Biebrza Valley and the upper Narew. Significant peatland complexes also extend along the Noteć River, in the Rospuda Valley and in the Szczecin Lowland. In total, Polish peatlands store about 35 billion m^3 of water.

How can we protect water ecosystems?

Good practices

The best answer seems to be renaturation, or restoring ecosystems to their natural functionality. There are already a number of activities in this direction taking place around the world, and one of the most interesting is the creation of urban wetlands, or retention reservoirs planted with water-loving plants. Such wet oases not only improve the water balance, but also help combat urban heat islands.

Supporting natural ecosystems to combat drought, however, requires a systems approach that treats rivers, lakes and wetlands as an integrated, interdependent whole. The most important actions in this area include:

- **river renaturation,** which is the process of restoring rivers and streams to a state close to their natural state by removing artificial impoundments, restoring meanders, banks, and bays, and restoring natural flow dynamics. These activities increase surface water retention and support the reconstruction of river ecosystems. Renaturation involves planting coastal vegetation that stabilizes the banks and improves water quality, and also introduces natural obstacles such as boulders (so-called deflectors) or fallen trees that slow down water runoff and limit erosion
- **limiting river regulation,** which means refraining from excessive interference in natural riverbeds, including avoiding reinforcing banks with concrete, building embankments, deepening the bottom, and erecting new hydrotechnical structures. Excessive regulation reduces the capacity of rivers to retain water and increases

the risk of hydrological drought, which is confirmed by research on the degradation of river valleys in Poland.

- **biological activation of oxbow lakes** involves restoring the ecological functions of oxbow lakes by restoring their hydraulic connections with the main stream of the river and removing accumulated organic sediments. This process increases local water retention by 20–30% and supports biodiversity by creating habitats for aquatic and marsh species
- **eliminating barriers to fish migration,** i.e. removing obstacles in the continuity of rivers or building fish ladders at existing hydraulic structures, such as water stages or weirs, to enable fish to migrate upstream. These activities support the recovery of migratory fish populations, such as salmon and trout, which contributes to improving the health of aquatic ecosystems.
- **lake reclamation** includes activities aimed at stopping eutrophication (excessive increase in fertility) by reducing the inflow of nutrients such as nitrogen and phosphorus, and restoring the ecological balance in water bodies. This process improves water quality and increases the retention capacity of the catchment area.
- **reintroduction** or introduction of the European beaver (Castor fiber) to wetlands to improve natural water retention. The dams they build slow down water runoff, raise groundwater levels and increase retention in the landscape by 10–15%.
- **water reclamation of mining excavations,** i.e. creating water reservoirs in places of former mining activity, which allows for the collection of rainwater and meltwater and alleviates local water deficits. Such activities, if properly planned, also support the restoration of ecosystems and biodiversity.
- **restoring wetlands** is an effective strategy for increasing natural retention and reducing flood risk. Although it is a process that requires interdisciplinary cooperation and careful planning, its ecological and climatic benefits are invaluable. Restoring wetlands supports water storage, improves the quality of ecosystems and promotes biodiversity. On a smaller scale, wetland restoration is carried out by installing barriers, speed bumps and gates that protect the marshes from drying out. With appropriately carried out actions, the potential risk of methane emissions can be minimized and the positive impact on the carbon balance and hydrological stability of the catchment can be maximized.

How do we benefit from restoring water ecosystems?

The scale of changes initiated by restoring the natural functionality of rivers, lakes and wetlands cannot be overestimated. One of the basic benefits is the improvement in **the quality of drinking water,** which in Poland comes from underground sources in about 70%, and the rest is drawn from lakes, rivers and reservoirs. The fewer organic pollutants in water subjected to chlorination, the lower the risk of consuming substances harmful to health (trihalomethanes - THM).

Restoring the health of water and water-related ecosystems is also a chance **to maintain balance in the natural environment.** As a result, this means healthier soils, cleaner air, and greater drought resistance. The World Health Organization has also emphasized the importance of blue-green infrastructure for well-being and physical health for years – recreation in the bosom of nature remains one of the most important recommendations for a healthy lifestyle.

Society also benefits in a measurable economic way from the reduction of the extent and intensity of droughts. In conditions of sufficient water supply, agricultural production is more efficient and food prices are more affordable.

Remember about water!

Water reuse

According to a report by the European Environment Agency[2], 74% of water used in European industry, agriculture, and households comes from surface water intakes, and 26% from groundwater intakes. In the face of climate change and growing anthropogenic pressure, it is important to limit water withdrawal from rivers, lakes, and reservoirs in favor of reusing rainwater and so-called grey water.

Reusing rainwater and grey water is a way to reduce the amount of water taken from rivers or lakes to meet economic and municipal needs. As a result, the chance of restoring groundwater levels increases, and the consumption of energy and chemicals used for traditional water treatment and purification is reduced.

What is grey water?

It is domestic sewage without feces and highly polluting substances. It includes water used in households, including from sinks, bathtubs, showers, and washing machines, but not from toilets. Although it is not suitable for consumption, its level of contamination is relatively low, which allows it to be reused, e.g. for flushing toilets or watering plants. It is estimated that grey water constitutes 50 to 80% of domestic sewage generated in households.

Water retention and recycling in industry

In the face of growing challenges related to water availability and the need to limit its consumption, actions aimed at saving and reusing water are becoming increasingly important. Industry, as one of the largest consumers of water resources, is faced with the need to implement modern technologies that allow for more efficient water management.

Modern technologies enable the development of installations for the recovery of industrial wastewater and their treatment on site. The purified water returns to the production plant, reducing or eliminating the need for further water collection. Additionally, the industry can use its own rainwater and meltwater retention systems, storing them for later use, and thus reducing the operating costs associated with fees for the discharge of rainwater and meltwater.

Reusing water in agriculture

Treated sewage can also be used to irrigate crops in agriculture. This solution not only reduces pressure on local water resources, but is also beneficial to the environment – the recovered water is rich in organic substances, and its reuse limits the penetration of nutrients into natural water bodies, preventing eutrophication.
Grey water is considered a beneficial form of fertilization for plant growth.

EU Regulation 2020/741, which came into force in June 2023, regulates the issue of minimum quality standards for water recycled for agricultural purposes. In international practice, both classic, ground-based sewage irrigation and an innovative subsurface method are used, which reduces evaporation losses and additionally filters pathogens and micropollutants.

2 Water abstraction by source and economic sector in Europe, 05 Dec 2024

Farms can also use rainwater collected in ponds and above-ground tanks – **digging a pond with a surface area of up to 5,000 m² does not require a water permit.**

Water recovery from sewage treatment plants

According to data from the Polish Waterworks Chamber of Commerce, 70% of large Polish treatment plants have systems that recycle sewage for reuse on the premises of the plant itself. They are used, among other things, for washing equipment and rinsing screenings. Sewage treated on site can be taken outside the plant and directed, for example, to watering urban greenery or washing streets. Active use of sewage in agriculture is not yet practiced in Poland, but it has huge potential.

Use of grey water and rainwater in households

Local water shortages, as well as ecological and economic considerations, are driving households to invest in systems for **recovering and reusing grey water.** These can take the form of simple internal systems, where water from the kitchen and bathroom is collected in a special tank, filtered, and reintroduced to the water supply. More complex solutions enable grey water to be recycled and reused in the home and garden.

Rainwater management in a household can be independent of grey water recovery. Modern technologies allow water to be collected from the roof surface, filtered and stored in underground tanks equipped with a pump and control unit. The system can be connected to the power supply of a toilet or washing machine, as well as automatic garden irrigation. Various sources suggest that the use of rainwater can reduce the consumption of water from the water supply in a household by up to 40-50%.

Water saving solutions

The state of water resources, on the one hand, depends on the amount of rainfall, and on the other hand, it is fundamentally influenced by the amount of water consumption. The more economically we manage it, the less severe the effects of drought will be. Thanks to modern technologies and intelligent resource management systems, it is possible to reduce the demand for water while maintaining the functionality of economic processes and the comfort of life of local communities.

Saving water in agriculture

Global estimates suggest that around 70% of the world's freshwater is used for crops and agricultural production. So how can this burden be reduced?

Drip irrigation is considered one of the most water-saving solutions in agriculture, which allows for the delivery of precise amounts of water exactly where it is needed. The efficiency of such a system is estimated at 95%. In the case of row crops, drip irrigation reduces the overall production costs, and additionally allows for the delivery of fertilizers and plant protection products to plants.

Classic irrigation systems, which often involve large water losses, are increasingly being replaced by technologically advanced low-pressure systems that reduce both energy and water consumption. An alternative solution is subsurface irrigation, using hidden drip lines that minimize water loss through evaporation and more effectively deliver water directly to the root system of plants.

Water consumption in agriculture can also be reduced by:

- selection of species and varieties that are more resistant to drought
- avoiding sowing in unfavourable positions
- optimal soil fertility management, including liming
- soil regeneration (crop rotation, introduction of fallow periods)

Retention in agriculture

The future direction is the concept of precision farming, in which resource management is carried out with the support of navigation and information technology. Such a system combines satellite data with spatial data, obtained from combine harvesters, for example, to determine in detail the environmental conditions in a given area and then precisely match the amount of water and fertilizers to the needs in individual parts of the field. The effect is maximization of yields with minimal use of resources.

Water-saving solutions for households and cities

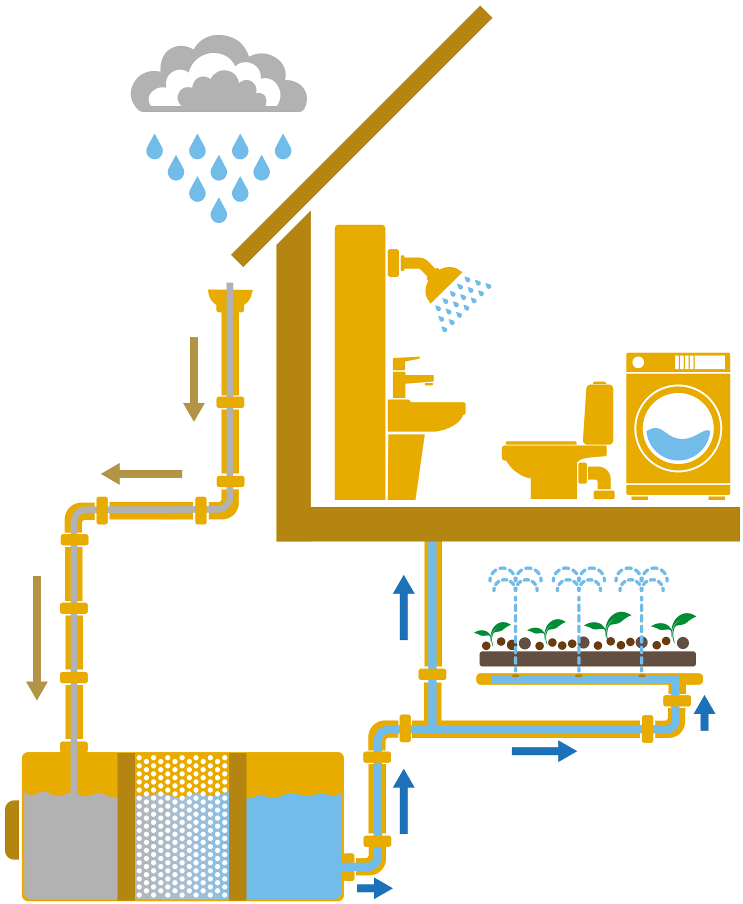
Up to 60% of Poles live in cities. We have all become accustomed to clean water flowing from our taps day and night, and washing machines and dishwashers operating without restrictions. As a result, average water consumption per capita is approximately 34,000 liters per year (approx. 95 liters per day) and is constantly growing. Can it be reduced?

The simplest answer is of course more rational water management, i.e. shorter showers, turning off taps or washing dishes in a closed sink rather than under running water. Technological solutions also come to our aid, such as:

- water-saving household appliances with ecological operating programs
- shower faucets and shower heads equipped with aerators and water flow limiters
- thermostats in faucets that limit excessive water consumption for heating
- dual flush toilets

Reducing water consumption can also be done at the municipal level. It is largely based on retention within the blue-green infrastructure and the use of collected rainwater, e.g. for irrigation of urban greenery.

Retention at home and in the city



Intelligent water and sewage management systems are also playing an increasingly important role in cities. They include Smart Flow, a system for monitoring flows, which allows us to detect failures and leaks early, as well as forecast water consumption peaks. Such solutions have already been successfully implemented in Wroclaw, Krakow and Gliwice. Wrocław authorities estimate that 500 million liters of water were saved in the first year of the system's operation, and the waiting time for failure repairs was significantly shortened.

Smart Home and saving water

Smart Home systems can be equipped with intelligent modules that monitor water consumption in the home. Owners receive real-time information about consumption (so-called smart water meters), leaks, and even installation failures. This solution allows for automatic water shut-off after a specified limit is exceeded, and can also be integrated with an automatic garden irrigation system.

Education as an element of counteracting the effects of droughts

Drought is a challenge that is unfortunately growing stronger. Although we cannot completely prevent its effects, a properly prepared society has the opportunity to significantly reduce water consumption and minimize the negative consequences of a lack of rainfall. This is why media campaigns, local initiatives, and micro-retention funding programs that support pro-ecological behavior are so important. It is also crucial to shape good habits related to rational water management from an early age, which allows for building lasting ecological awareness in the entire society.

For households, an important argument for saving water is the economic aspect – knowing how much a long shower costs, we are more inclined to turn off the taps faster. Financial rationality also speaks in favor of collecting rainwater and using it to water the garden and reusing grey water – the chance to significantly reduce bills is one of the most motivating arguments.

Educational activities focused on knowledge about counteracting the effects of drought should also include sensitizing the general public to the importance of aquatic ecosystems and the need to protect them. The involvement of non-governmental organizations and citizens in wetland protection campaigns, river cleaning, or tree planting contribute to increased ecological awareness and facilitate the implementation of projects that revitalize aquatic ecosystems and water-dependent ecosystems.

In a global perspective, thinking about water as the most valuable of the Earth's resources must also include the issue of the water footprint of individual products. Knowing how many liters of water are needed to produce a given type of food, clothing, or equipment, we can make more responsible purchasing decisions.

Aktywni Błękitni (Active-Blue Project)– a water-friendly school

In 2019, State Water Holding Polish Waters launched a project aimed at primary school students, the aim of which is to disseminate knowledge about sustainable water management. The program is implemented in cooperation with the police, fire brigade, and paramedics and includes educational classes on saving water, threats related to drought and floods, and safe recreation by the water.

Are we ready to think about water every day?

An experiment conducted in the Australian state of Queensland between 2006 and 2009 proved that long-term change in attitudes is possible. In response to one of the worst droughts in the history of the region, which led to a critical drop in water levels in reservoirs, the Queensland Water Commission launched a campaign to change household habits. Within a year, water consumption was reduced from 180 litres per person per day to 129 litres, which enabled savings of as much as 20 billion litres of water. Importantly, the effect of reduced consumption was maintained in subsequent years, despite the lifting of official restrictions.

Test your knowledge about the drought threat and answer the question if you too are ready to think about water every day.

Key takeaways – what's worth remembering?

According to the World Meteorological Organization, droughts are the most costly natural disasters on Earth, and by 2050, their effects will affect as much as 75% of the global population. In Poland, for at least a decade, we have been struggling with permanent drought in the summer season, which threatens agriculture, energy production, natural ecosystems, but also drinking water resources. Every year, there are months in which the groundwater table falls below the low warning level.

How can we reduce the catastrophic effects of drought?

The problem of water shortages requires a systemic approach and one consistent with the assumptions of the sustainable development concept. As a society, we should learn to retain water when it is available, save, use it rationally, and protect its resources. The basic directions of action in this area include:

- protection of natural aquatic and water-dependent ecosystems that are able to store huge amounts of water
- reduction of water withdrawal and consumption thanks to water-saving technologies in agriculture, industry, and households
- reuse of water implementing the principles of a closed-loop economy
- broad implementation of good habits aimed at eliminating water waste
- renaturation of rivers in order to restore their natural retention functions
- micro-retention, i.e. local activities consisting of collecting rainwater and using it in the immediate vicinity
- artificial retention, consisting of retaining water in water reservoirs, which is the final solution in response to urgent economic needs, e.g. water withdrawal for consumption

It is worth remembering that climate change is a rapid and unpredictable process that carries an increased risk of many natural disasters. The strategy of reducing the effects of drought largely overlaps with counteracting floods, which increasingly often alternate with periods without rain. Rational management of water resources is also one of the key elements of environmental protection and public health.

Act With Us. Let's Say "Stop Drought! Start Retention!" Together!

The State Water Holding Polish Waters is working on updating the Drought Effects Counteracting Plan.

The project was co-financed from the European Funds for Infrastructure, Climate, Environment for 2021-2027.

gov.pl/wody-polskie

Państwowe
Gospodarstwo Wodne
Wody Polskie

stopsuszy.pl

STOP SUSZY
START RETENCJI

Fundusze Europejskie
na Infrastrukturę,
Klimat, Środowisko

Rzeczpospolita
Polska

Dofinansowane przez
Unię Europejską

Państwowe
Gospodarstwo Wodne
Wody Polskie