

# »» Protecting scarce water resources with nature-based solutions

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2.1 billion people worldwide still have to make do without access to safe drinking water in 2018. 1.9 billion people already live in areas where water is in short supply. At the same time, in the past 25 years more than 4 billion people have been affected by floods, droughts and storms, which have caused, in addition to many deaths and human suffering, economic damage to public and private infrastructure totaling more than USD 1 trillion (and set to increase further).

## **Overuse of natural resources increases risk of water shortages & flooding**

Population growth, economic growth and urbanisation contribute to overuse and, in some cases, even irreparable destruction of the Earth's natural resources. Since 1900, two thirds of natural wetlands have disappeared. Two thirds of all forests around the world are degraded. In spite of global efforts, 80% of all wastewater still flows untreated into rivers and oceans.

The overuse and destruction of natural resources is a major cause of both water scarcity on the one hand and flooding on the other. Forests act as the planet's lungs and extract carbon dioxide from the atmosphere; wetlands, floodplains and bogs serve as natural retention basins and unique habitats; rivers and oceans store fresh water and are a source of food for humans and animals.

## **In suitable cases, nature-based approaches can also be very cost-effective solutions**

According to World Bank estimates, the cost just to achieve the water target stipulated in the 2030 Agenda for Sustainable Development (SDG 6) is USD 100 billion (per year!).

Recent research shows that there are sometimes very cost-effective, nature-based solutions to rebalance the water cycle, mitigate the effects of climate change and improve living conditions: restoring natural rivers, meadows, marshes and mangroves instead of constructing dams and dikes can – where there is enough space – even be more effective than the "grey" concrete alternative. Targeted afforestation helps to stabilise the water cycle in the long term, protects the soil and reduces the risk of flooding. If not overtaxed, plant-based purification systems can be used in certain situations as an alternative to or to supplement the capacity of traditional treatment plants.

## **Prudent urban planning must close the gap in the water cycle**

Nature-based approaches are generally not incompatible, even in an urban context, but must be adapted to the prevailing conditions.

Forward-looking urban planning, for example, restores the natural water cycle in places where it can no longer function unhindered due to surface sealing. In regions where heavy rainfall events are also on the rise in the wake of climate change, retention areas can provide temporary buffering, make rainwater usable through storage and treatment and ease the strain on increasingly stressed aquifers through targeted augmentation, for example.

## **The limits of nature-based approaches**

While using nature as a role model is an interesting principle, the approach reaches its limits in increasingly concentrated urban environments where space-saving solutions are needed. Nature-based approaches are usually space-intensive and not infinitely scalable. Where chemicals and

pharmaceutical residues pollute wastewater, plant-based purification systems, for example, are ruled out from the outset as an alternative. The time factor is also often cited as an argument against nature-based solutions such as afforestation as flood protection.

## **Conclusion: nature-based approaches are an important building block in sustainable water management**

Why is it worthwhile to consider nature-based solutions in the 21st century? The approach of respecting the complex ecological balance in order to preserve the Earth's unique living conditions is nothing new – as opposed to the challenges posed by today's rapid population growth, climate change and dwindling resources. Many promising approaches exist for the water sector. Nature-based approaches are an important and efficient solution in certain circumstances. In other cases they can at least contribute to a solution. However, further research is required on expanding the range of use, increasing the effectiveness and improving the scalability of nature-based solutions. ■

## **Literature for further reading**

World Water Development Report 2018: Nature-based Solutions for Water.