NATURE FOR LIFE

# Nature for Water
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**Nature-based solutions for achieving the Global Goals**

NATURE FOR LIFE

Convention on Biological Diversity

LEONARDO DICAPRIO FOUNDATION

UNDP

*Empowered lives. Resilient nations.*

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# EXECUTIVE SUMMARY

## About this publication

The purpose of this publication is to highlight the importance of safeguarding nature in order to secure water-related services, and to achieve the Global Goals. This document serves as a call to action, to governments, to land use planners, to corporations, and to citizens everywhere to take urgent action to secure nature for life.

## Water is essential to achieving the Global Goals

Without sufficient quality and quantity of water, we will not be able to achieve the Global Goals, especially goals associated with poverty, food, health, economic development, energy, and gender.

## Our current level of water consumption is unsustainable

Only a tiny fraction of the Earth's water is freshwater that can be accessed for human use. Our current rate of water consumption is unsustainable. Over a quarter of the world's population lives in areas with potentially severe water scarcity, and nearly half the world's population experiences water scarcity at least one month per year.

## We will face acute water shortages in the future, creating many barriers to achieving the Global Goals

Driven by increasing irrigation, ground water extraction, changing diets, increasing energy demands, and a changing climate, global demand for water is expected to grow by more than 50 percent by 2030. This will lead to acute water shortages. Water quality is also expected to decline, as a result of pesticide use, salinization, industrial waste, and municipal sewage. Together, these will result in urban water crises, food insecurity, vulnerability to natural disasters, political instability, rising tensions, and increasing corruption, all of which will disproportionately affect the poor and vulnerable.

## Nature – especially forests, grasslands, mountains, wetlands – are essential for water security

Nature has a vital role to play in securing water resources, including regulating water flow, ensuring water quality, and reducing impacts from natural disasters. Particularly important are wetland, forest, mountain, and grassland ecosystems. Forest protected areas supply drinking water for one-third of the world's largest cities, and the Himalayas supply water to one out of five people in the world.

## Despite the importance of nature for water services, a large portion of the world's important areas for water security are unprotected, degraded, or converted

Over the past three decades we have lost ten percent of the planet's wilderness, covering an area the size of half of the Amazon. In roughly the same time period, from 1990 to 2015, we lost 129 million hectares of forest. As a result, 40 percent of source watersheds for the world's top 4,000 cities have moderate to high levels of degradation. In addition, only a fraction of the world's source watersheds have legally-designated protection.

## Nature-based solutions are effective and cost-efficient, and deliver multiple co-benefits

More than 3,200 of the world's largest cities could significantly improve their water quality and quantity through nature-based solutions, at a cost of less than US$2 per person annually. In many cases, forest restoration has already become an investment asset class.

## There are many examples around the world of using nature-based solutions at local and national scales

Communities and governments have long recognized the value of nature for water. Examples from around the world show the same trend – safeguarding nature secures water-related services at a low cost, and is an investment that has multiple co-benefits that align closely with the Global Goals.

## There is an urgent need for a call to action to protect, restore, and manage nature if we are to ensure water security and to achieve the Global Goals

Governments around the world have already made bold commitments to protect, restore, and sustainably manage ecosystems. Action has been taken through National Biodiversity Strategies and Action Plans of the Convention on Biological Diversity, Nationally Determined Commitments of the UN Framework Convention on Climate Change, the Bonn Challenge for forest restoration, and the Sendai Framework to reduce disaster risk, among others.

# WATER AND THE GLOBAL GOALS

Adopted in 2015 by all countries, the 2030 Agenda for Sustainable Development and its associated Global Goals represent humanity's best efforts to end poverty and hunger, to help all humans enjoy prosperous lives, to foster peaceful, just and inclusive societies, and to protect the planet from degradation. In implementing these goals, we must commit to leaving no one behind, and we must ensure that no single goal is achieved at the expense of others, as the goals are integrated and indivisible. The Global Goals, also known as the Sustainable Development Goals, include Goal 6, which focuses on ensuring the availability and sustainable management of water and sanitation for all, and Goal 15, which focuses on protecting, restoring and sustainably managing terrestrial ecosystems. Together, these two goals form the foundation upon which many other goals depend.[1,2,3]

The development of our national economies has long been based on the exploitation, rather than conservation, of natural resources and ecosystems. However, over the past few decades, studies such as the Millennium Ecosystem Assessment[4] and The Economics of Ecosystems and Biodiversity[5] have increased awareness of how healthy ecosystems underpin our well-being and the functioning of our economies and societies. In particular, these studies have increased widespread awareness of the role of ecosystems in securing water services.[6]

If we are to achieve the 2030 Agenda, we must identify new pathways for growth and development, integrate new data on ecosystem functioning, and turn knowledge of sustainability into practice.[7,8] For water, this means investing in the conservation, restoration, and sustainable management of the ecosystems that play a crucial role in providing freshwater. The choices we make now about the management of our forests, grasslands, mountains, and wetlands will decide our water future over the coming century, with ramifications across all areas of sustainable development.


45% of the world's population lives in transboundary watershed basins. [11]

No other intervention has a more significant impact on global poverty than the provision of safe water. [12]

About 10% of the global water sector is lost to corruption, undermining rule of law. [14]

40% of all food produced is irrigated [15], accounting for 70% of all freshwater use. [16]

1/4 of water-related mammals and 1/3 of inland fish are threatened with extinction. [10]

"Clean water and sanitation are among the most powerful preventive medicines for reducing childhood to mortality." [13]

80% of all industrial and municipal wastewater is released into rivers without any treatment. [17]

"We could gain an estimated 1.9 billion school days if we achieve our goals related to safe water and to sanitation." [18]

Climate change will account for about 20% of the world's water scarcity by 2030. [19]

Women and girls in Africa spend up to 6 hours a day collecting water, affecting education and income. [20]

It takes 10,000 liters of water to produce a quarter pound of beef. [21]

Universal access to water and sanitation would reduce health costs by 7% across sub-Saharan Africa. [23]

1/3 of the world's largest cities depend on forest protected areas for water. [24]

15% of all withdrawals is for energy [27] and hydropower supplies 1/4 of our global power. [28]

The urban poor often pay 50 times more for water than their urban neighbors. [25]

20% of all water withdrawals is for industrial purposes. [22]

3 out of 4 global workforce jobs heavily or moderately depend on water. [25]

# WATER – GLOBAL CONTEXT, STATUS, AND TRENDS

Although the world is covered with water, most of this water is saltwater, or is in the form of snow and ice. Only 0.007 percent of global water is readily available freshwater.[28, 29] Over 1.7 billion people already live in areas where water use is greater than natural replenishment; by 2025, two-thirds of the world's population are expected to be living in water-stressed countries.[30]

## Increased water scarcity

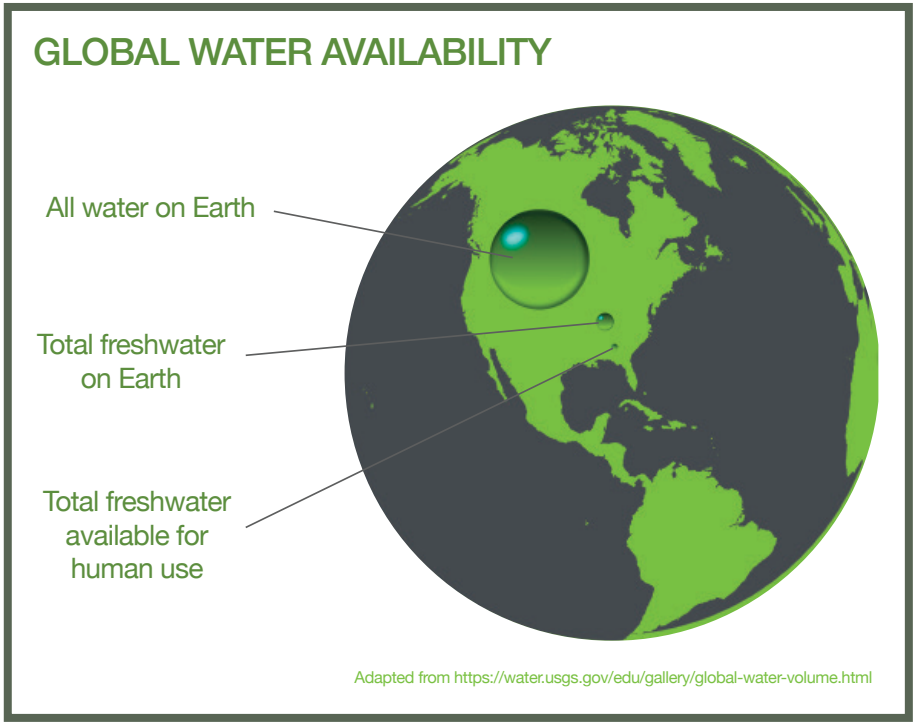
Usable water is scarce and getting scarcer. Our rate of water consumption is not sustainable. Over the past century, the world population has tripled, but water consumption has increased six-fold.[31] Global demand for water is expected to grow by more than 50 percent by 2030, to a level 40 percent above current water supplies.[32] This increased water demand is driven by several factors, detailed below.

### *Increasing irrigation*

Agriculture accounts for 70 percent of all water use, and even more in some areas that are facing critical water stress.[33] Moreover, most newly converted agricultural land is likely to be irrigated.[34]

### *Increasing groundwater extraction*

Surface water shortages are encouraging greater reliance on groundwater, of which extraction has increased ten-fold in 50 years.[35] Groundwater is currently used on 38 percent of global irrigated lands.[36]




### *Changing diets*

Changing diets, particularly increased meat consumption, are increasing water demands. Many foods are water intensive. A single almond, for example, requires a gallon of water to produce.[37] Maize requires 900 cubic meters of water per ton, chicken requires 3,900 cubic meters per ton, and beef a hefty 15,500 cubic meters per ton.[38] Increases in family income and a growing global middle class are driving shifts toward more water-intensives diets, with profound implications.

### *Increasing energy demand*

Energy already accounts for 15 percent of water withdrawals globally,[39] and energy demand is expected to increase by more than 50 percent by 2030.[40] Much of this demand will depend on water withdrawals. A massive increase in dam building for hydropower is altering flow patterns in many rivers. Globally, at least 3,700 major dams are planned or under construction, which will reduce the planet's remaining free flowing rivers by over one-fifth.[41]

### *Climate change*

Various studies have predicted that the average global temperature is likely to increase by 1.4 to 5.8°C. Even small levels of temperature increase would result in substantial reductions in freshwater resources by 2100. Approximately 75 percent of the Himalayan glaciers are already retreating and are likely to disappear by 2035,[42] which means the loss of a water source for more than 1.5 billion people.[43] Moreover, in Sub-Saharan Africa, rainfall could drop by 10 percent.[44]

## Decreased water quality

Along with increased water scarcity, water quality is declining over much of the planet. Lack of access to potable drinking water remains a major hazard; in 2014, 1.8 billion people still used unsafe water supplies, and another 1.1 billion relied on water with at least a moderate risk of contamination.[45] Decreases in the loss of water quality are the result of several factors, detailed below.

### *Run-off*

Pesticides and fertilizers have harmful effects on aquatic life[46] and contaminate drinking water. Since the 1960s, application of synthetic nitrogen fertilizers has grown nine-fold, with a 40 to 50 percent increase expected in the next 50 years.[47] Phosphate use has tripled since 1960,[48] exacerbating impacts of nitrate pollution from nitrogen fertilizers.[49] Global run-off is currently at 32.6 million tons per year,[50] causing major eutrophication problems in inland and marine waters.[51]

### *Salinization*