



SECTION

Key Water  
Developments  
in the World

## 11.1. Africa

**The Grand Ethiopian Renaissance Dam on the Nile River.** In 2023, Ethiopia [completed the fourth and final filling](#) of its huge Grand Ethiopian Renaissance Dam (GERD) situated on the Nile, near the Sudanese border. Dam's filling was initiated in the summer of 2020 causing concerns among the downstream nations such as Egypt and Sudan. Negotiations regarding the dam have oscillated for more than a decade. Mediation efforts by entities such as the United States and the African Union (AU) have [failed to yield a consensus](#). The AU's last sponsored direct negotiations on the dam occurred in 2021. Egypt, Ethiopia and Sudan resumed talks in July to work out a final plan by the end of 2023 for managing the project in a way that protects all three countries' interests. There were four rounds of negotiations since then. According to Egypt, the last fourth round of talks has failed. Egypt and Ethiopia [blame each other](#) for unwilling to compromise. The government in Cairo has long opposed the project because of worries about its future supplies of water from the Nile, on which it is heavily dependent. Ethiopia argues that it is exercising its right to economic development.

**African Development Bank (AfDB) and the United Kingdom** signed an agreement to fund up to U.S. \$ 2 billion in climate projects in Africa (Accra, Ghana, [May 25](#)). Two projects have already been identified as the first to benefit from the Room to Run financing mechanism. These are the El Asfar Wastewater Treatment Plant (WWTP) in Egypt which will be implementing a project on the reuse of treated wastewater in agriculture. In Senegal, the AfDB will finance a project providing sustainable and climate resilient access to safe water and sanitation services to some 1.45 million people. The governments of **Malawi** and **South Sudan** announced the launch of Presidential Compacts<sup>340</sup> on Water and Sanitation (Stockholm, Sweden [August 21](#)). In the case of Malawi, in support of the \$145 million in funding received from the World Bank, the Compact will provide a blueprint for rebuilding water and sanitation infrastructure and enhancing climate resiliency following the devastation from Cyclone Freddy. In the case of South Sudan, the country has earmarked \$56 million to increase access to sanitation and also promised to expedite the passing of Water Bill 2014 to ensure a safe water supply.

**Morocco** will receive a 100-million-euro [loan](#) from EIB to help implement its strategy for boosting water and forestry sector resilience. The funds will be used to modernize and enhance the competitiveness of the water and forestry sector in Morocco, with a focus on climate change adaptation and biodiversity promotion.

WaterAid **Nigeria**<sup>341</sup> formally [launched](#) a new five-year [Country Program Strategy](#) for 2023-2028, to improve access to basic water and sanitation services.

The Country Program Strategy aims to improve access to clean water, sanitation and promote good hygiene for 17 million Nigerians.

The government of **Tanzania** has [announced](#) that it will launch a \$20 billion water investment program in the course of 2023. The aim of the program, which will run from 2023 to 2030, will be to boost water security in Tanzania through investments in four key areas: (1) investments to improve access to water and sanitation services, the promotion of gender equality and social inclusion, and livelihood improvement; (2) water governance by strengthening institutions, investing in human resources development, and leveraging other investments; (3) facilitating economic development; (4) improving climate resilience and environmental sustainability.

Heatwave and drought leave **Tunisia** farmers [struggling to survive](#). Farmers in northern Tunisia say conditions are getting progressively worse despite government efforts to combat climate change. There's a serious water scarcity, the wells are getting dry and the government is putting too many restrictions on water use. Satellite footage of Tunisia's water reserves taken before the current bout of extreme heat paints a stark picture. Levels in none of Tunisia's reservoirs exceeded 31%, while the country's largest freshwater reserve, the Sidi Salem reservoir west of Tunis, is only about 16% full. The capital and its surroundings have been earmarked as of special risk of water scarcity. In late March, SONEDE, the agency that manages Tunisia's water, announced that it would be cutting supplies to households from 9pm nightly, and prohibited its use for washing cars and cleaning public spaces. Those found to be infringing upon the new laws faced a fine and imprisonment of anything of up to six months.

**South Africa sets ambitious plan for \$1.5B water project.** The project aims at supplying major platinum and chrome operations, as well as hundreds of thousands of people with drinking water is anticipated to be finalized by 2030. It is planned to construct 400 kilometers of pipelines, delivering 250 million liters of water per day, which is approximately one-third of Cape Town's daily consumption. The project will also provide water to the city of Polokwane and the town of Mookgophong, located north of Johannesburg. This initiative represents a [significant departure from the usual approach](#) in South Africa, where the state has historically led water infrastructure projects, particularly of this magnitude. The world's largest mining companies *Glencore* and *Anglo American Platinum* were among the companies striving to secure half of the required financing by the end of the year, while the remaining funds would be sourced from municipalities and the government.

<sup>340</sup> The Compacts are a part of an initiative by the heads of state aimed at developing water supply and sanitation services all over the world. The initiative was launched at Stockholm Water Week. See details on: <https://www.sanitationandwaterforall.org/heads-state-initiatives>

<sup>341</sup> International non-government organization dealing with WASH

**South Africa** and **Cuba** strengthen cooperation in the water sector. The island's specialists are currently working in South Africa in the operation and maintenance of pumping stations and systems, as well as in reservoirs associated with electricity generation, mining industries and food production. They are also involved in hydraulic and civil engineering work on

regional infrastructure projects, cost control associated with their development in municipalities, and drought relief programs. The parties agreed to work together on the development of green energy, including hydropower, as well as to address climate change and its impact on infrastructure and national disaster management.

## 11.2. Asia

### Afghanistan

**Economy.** Afghanistan's economy remains exceedingly fragile, and the food insecurity remains alarmingly high. In October, during the postharvest season, approximately 13.1 million people are facing high level of **acute food insecurity**. In 2023, Afghanistan's **total exports** reached \$1.9 billion, a modest increase of 0.4 percent from the previous year. In particular: (1) food exports grew by 13% to \$1.3 billion; (2) textile exports also experienced notable growth, surging by 46% to reach \$281 million; (3) coal exports saw a 46% reduction.

**Imports**, more than half of which is comprised of food, textile and minerals, surged to \$7.8 billion, a 23% increase. Particularly: (1) food imports, accounting for 22% of the total, grew by 9% to \$1.7 billion; (2) minerals (fuel, mineral oils, salt, and sulfur) contributed 20% to total imports, rising by 15% (to \$1.6 billion); (3) textile imports increased by 11% percent (to \$0.72 billion).

The agriculture sector is a core component of Afghanistan's national economy. The country needs over 6 million tons of wheat every year from which 4.5 million tones are produced inside the country and the remaining 1.5 million tons are imported from abroad. The industrial sector also saw a contraction of 5.7% last year, as businesses – especially those owned by women – faced closures due to limited access to resources and financial challenges. Almost two thirds of Afghan families face significant challenges to keep their livelihoods.

**Extremes.** 2023 has become the third consecutive year of drought in the north and south Afghanistan. According to **FAO's assessment**, this drought was categorized as extreme and severe. In July, flash floods caused significant damage: as of 30 July, approximately 126,000 people have been affected by the disaster in 18 provinces, 1,360 residential houses have been partially or completely damaged, over 13,023 hectares of agricultural land have been washed away, and at least 1,128 livestock have been killed. The prolonged drought has aggravated the damage from floods since reduced soil capacity to absorb water.

**Water infrastructure.** The Taliban government in Afghanistan is **going ahead** with plans to build dams on major rivers as a source of hydropower, to provide irrigation facilities so that farmers in several drought-prone areas might revert to farming and not the least, to secure the country's freshwater supply.

**Dam on Kunar River** is an ambitious project, construction plans of which are already impacting the fluctuating political relations between Afghanistan and Pakistan. Kabul's decision to remedy its water shortages has been a source of considerable alarm for Pakistan, which believes that the Islamic Emirate's unilateral decision to construct a dam on the Kunar River amounts to a hostile act.

**The Qosh Tapa Canal.** This 285-kilometer canal is designed to provide irrigation for 550,000 hectares of land by redirecting 25% of the Amu Darya River's flow. Construction is planned to last to 2028, and the canal will be put into operation in three phases. The first phase – launch of the first 108 km – was completed on October 11<sup>th</sup>. The same day the second stage of the next 65 km has been launched. Over 8 billion Afghani has been allocated from the national budget for the first phase. 6,500 workers and over 4,000 pieces of equipment were engaged in the construction. The third phase is to create an irrigation network in Faryab, Balkh and Jawzjan provinces. This would create approximately 200,000 new job places. The satellite monitoring by UzbekCosmos showed on November 4<sup>th</sup> a water breakout on a 75.6 km on the right bank. The flooded area increased from **19.5 km<sup>2</sup> on November 5<sup>th</sup> to 23.8 km<sup>2</sup> on November 25<sup>th</sup>** and reached **30.3 km<sup>2</sup> by December 13<sup>th</sup>**.

The **completion** of **Kajaki dam** has resulted in a power capacity increase from 51 to 151 MW. Besides supplying electricity to Helmand, the dam now serves Kandahar as well. The Islamic Emirate of Afghanistan is steadfast in its commitment to domestic energy production. Efforts to generate electricity from natural gas in Jawzjan Province and harness wind energy in Herat Province are already underway. The goal is to prioritize the production of 200 MW of electricity and explore further renewable energy sources.

**Kamal Khan, Shah Wa Aros, Pashdan, and Bakhshabad dams.** The National Development Corporation has commenced the remaining works of the Kamal Khan Dam, which is expected to store 52 million cubic meters of water, irrigate 174,000 hectares of land, and generate approximately 9 MW of electricity. The ongoing construction of the Shah Wa Aros Dam, upon completion, will provide Kabul city with 5 million cubic meters of drinking water annually, irrigate 2,700 hectares of agricultural land, and generate 1.2 MW of electricity. The preliminary works for the Bakhshabad Dam have also begun, with an annual storage capacity of 1,360 million cubic meters of water. This dam has the potential to irrigate up to 100,000 hecta-

res of desert land and generate 27 MW of electricity. It will play a pivotal role in groundwater replenishment, flood control, and overall surface water management.

**Humanitarian aid.** Overall, the humanitarian response has reached 23.7 million people in 2023, with 20.8 million receiving direct aid at \$906 million by August. Despite the crisis scale, the humanitarian response plan is underfinanced, with 26.8% received only out of \$3.2 billion (the initial planned amount was \$4.6 billion).

The U.S. Government aid amounted to, through international organizations: \$168 million (implementing partners); \$500,000 (FAO); \$430,000 (IOM<sup>342</sup>); \$1.2 million (OCHA<sup>343</sup>); \$8.3 million (UNFPA<sup>344</sup>); \$35 million (UNICEF); \$422 million (WFP); \$7 million (WHO), etc. The total financing reached **\$844 million**. Thanks to USAID's food-for-work effort, 10,000 Afghans across the country have received baskets of food for their work to rehabilitate irrigation systems. WB have continued to provide support for basic services and livelihoods in health, agriculture, and education, with more than \$1 billion in off-budget support implemented.

In 2024, more than half of Afghanistan's population will require humanitarian assistance. Communities highlighted food as a top need, in addition to health care services, education and water, sanitation and hygiene (WASH). Nearly half of households emphasized the importance of livelihood support.

## China

China saw investment in water resources management reach a historical high in 2023. Almost 1.2 trillion yuan (\$166.7 billion) of investment was made for water resources management projects across the country last year, up by 10.1 percent year-on-year. The ministry managed to accomplish a total of 41,014 projects on flood control, water supply, irrigation, and ecological conservation. 13,083 projects were carried out in basins of the country's eight major water bodies, including the Yangtze, the Yellow River, and the Huaihe River, to enhance their flood control systems. The investment for these projects, many of which are for constructing reservoirs, dikes, and flood storage basins, reached 328.2 billion yuan. Over 8,000 projects with a total investment of 220.4 billion yuan were implemented to strengthen the ecological conservation of major rivers.

**China has launched a large-scale operation to clean the Yellow River bed from sediment.** It is not the first year that the river has been undergoing a coordinated release of water from several reservoirs. The aim of the 20-day operation is to flush out the loess sediment that is abundant in the country's second-largest waterway. By alternately opening the spillways of the

reservoirs, the riverbed is effectively cleared of sediment. By the end of the operation, more than 80 million tonnes of mud and sand will have been removed from the Huang He. Thanks to years of water level control, the sediment situation in the lower reaches of the Huang He has improved significantly. The channel has become wider and the negative impact on the river floodplain during floods has been reduced.

Ministry of Ecology and Environment released 2023 Report on the state of ecology and environment in China. According to the Report: (1) groundwater quality remained stable, with slight improvement; (2) surface water quality continues improving – water sections meeting Grade I-III standard<sup>345</sup> increased from 87.9% in 2022 to 89.4% in 2023; sections with water quality inferior to Grade V+ remained the same – 0.7%; (3) all seven major river basins meet the targets of "Water Ten Plan" – Grade I-III standard >70% и V+ <5%; (4) four large river basins (Yangtze, Pearl, Huaihe and Haihe) were excluded from Grade V+; (5) more than 250,000 sewage outlets into rivers have been investigated, and about a third of them had completed rectification; (6) 70% of black and odors water bodies in country-level cities have been eliminated.

**Water Quality of China Main River Basins 2023 & comparison to 2022**

	Grade I-III	Grade IV-V	Grade V+
Yangtze	98.5% (+0.4%)	1.5% (-0.4%)	0.0% (0.0%)
Pearl	95.3% (+1.1%)	4.7% (-0.7%)	0.0% (-0.3%)
Yellow	91.0% (+3.5%)	7.5% (-2.8%)	1.5% (-0.8%)
Songhua	74.9% (+4.4%)	22.3% (-5.2%)	2.7% (+0.7%)
Huai	87.1% (+2.6%)	12.9% (-2.7%)	0.0% (0.0%)
Hai	79.3% (+4.5%)	20.7% (-4.5%)	0.0% (0.0%)
Liao	83.9% (-0.6%)	15.6% (+0.1%)	0.5% (+0.5%)

Note: (+) means improvement for Grade I-III but deterioration for Grade IV-V and Grade V+ between 2022-2023; on the other hand, (-) means deterioration for Grade I-III but improvement for Grade IV-V and Grade V+.

Source: CWR, MEE State of Ecology & Environment Report 2023

**Climate litigation takes its first steps in China.** China's highest court has released a guidance document on climate change-related cases, which is a strong indication that the state is backing climate litigation as an effective channel to address environment

<sup>345</sup> Grades: I – source water; II – primary protected zones of centralized domestic drinking water sources, rare aquatic habitats (and some other uses); III – secondary protection zones of centralized domestic drinking water sources (and some other uses); IV – industrial use and recreational purposes that do not involve skin contact; V – agricultural water areas; V+ – hardly any function



challenges. The new move will encourage China's public interest prosecutors to bring climate cases to court and pressure local governments and businesses to abide more strictly by emerging environmental laws.

In the past 50 years, glaciers on the Tibetan Plateau have shrunk by about 15 percent. According to research from the Chinese Academy of Sciences, the [use of geotextile](#) may slow melting of glaciers. In this context, scientists at Nanjing University have covered most of the Dagu Glacier in the Tibetan region with white sheets in an attempt to slow its melting caused by abrupt temperature rise and climate change. A study showed that a blanket installed over part of the Dagu Glacier was effective at slowing melting, with the covered area showing 15 percent less mass loss than uncovered areas. However, there are some limitations for using blankets, including high expenses, harsh geography and environmental impact of production of these textiles.



Dagu Glacier in the Tibetan region  
Photocredit: Tencent

China has made significant progress in its **greening efforts** in 2023, with about 8.33 million ha of trees and grasses planted. Land restoration efforts have been taken on 1.9 million ha. However, a holistic approach is needed for protection of mountain, aquatic, forest, agricultural, steppe and desert resources and their management, as well as for further support of forest economy and ecotourism.

Southwest China's **Xizang Autonomous Region** has completed its first [water-use rights trade](#), with an agreement signed between Lhozhag County and Konggar County of the region's city of Shannan. Water-use rights trading allows for the buying and selling of water-use quotas to reallocate water resources through a market-based approach. A total of 1.81 million cubic meters of water will be transacted between the two counties, with a total transaction value amounting to about \$25,341.

In the Chinese Northern **province of Hubei**, a [water tax reform](#) model has been developed. The model presents four key scenarios: S0, which involves no water resource tax; S1, where a tax rate is based on

surface and groundwater use in all industries; S2, which imposes a 5% higher tax rate on water-intensive industries; and S3, proposing a high tax rate on industries with substantial water consumption and offering tax refunds to water users through subsidies. These scenarios consider various water sources, including conventional water (surface and groundwater) and unconventional water, which is not subject to water resource taxes. The total water consumption is calculated as the sum of conventional and unconventional sources.

The vast territory of **Hebei province** has encountered heavy precipitation since July 27. The average precipitation exceeded 146 mm, the equivalent of 27.5 billion m<sup>3</sup>, which is twice as more the total capacity of large and medium reservoirs in the province. 1.2 million have to be evacuated as a result of flooding.

## Other Asian Countries

**Vietnam.** The 2023 rainy season began a month earlier than usual in southern Vietnam, where the second largest city of the country **Ho Chi Minh** is located, arriving in April. Ho Chi Minh City is one of the world's fastest-sinking coastal cities, alongside Tianjin and Shanghai in China, and Semarang and Jakarta in Indonesia. The city is also at increasing risk of substantial flooding from rising sea levels: a one-metre rise would be enough to submerge a fifth of the city by 2100. Ho Chi Minh is also criss-crossed by a network of tide-influenced rivers and canals that covers approximately 21% of the city. The government is currently betting on engineering to hold back the water in this city but with slow progress. Alongside large-scale engineering interventions, it is proposed to deploy "small-scale [rainwater detention measures](#)" (also known as the 'sponge city' approach), such as installing green roofs, rain barrels, porous sidewalks and water-detention basins as a "highly complementary adaptation pathway".



Ho Chi Minh City's District 8 is a low-lying, historically swampy area that has been built over in recent years, hindering water drainage

**Cambodia.** The World Bank has approved a \$163 million project to support Cambodia's efforts to [strengthen water supply](#) and sanitation services in four pro-

vinces, benefiting over 175,000 people. The six-year Water Supply and Sanitation Acceleration Project will support government actions to increase access to safe water supply and sanitation, improve the operation and maintenance of existing systems, and ensure the sustainability of services.

**Japan.** IAEA confirmed that Japan had begun discharging treated radioactive wastewater from the disabled Fukushima-1 Nuclear Power Station into the Pacific Ocean, 12 years on from the major meltdown there. The water has been used to cool the plant's reactors. Experts from the IAEA were present to monitor and assess that all relevant international safety standards were applied. An IAEA report said Japan's approach and activities to discharge the treated water were "consistent with relevant international safety standards". Furthermore, the "controlled, gradual discharges" of the treated water would have a "negligible radiological impact" on people and the environment. Japan's decision to release the treated water into the sea drew criticism both at home and in some neighboring countries. Protests have occurred there and in the Republic of Korea. China also announced that it will immediately ban seafood from Japan.

**India.** ADB has approved a \$200 million loan to strengthen flood and riverbank erosion risk management along the main stem of the Brahmaputra River in Assam. By stabilizing 60 km of banks, installing 32 km of pro-siltation measures, and building 4 km of climate-resilient flood embankments in five high-priority districts, the project will secure living spaces, support livelihoods, create employment opportunities, and ultimately enhance the navigability of the river. It will advance the institutional capacity in flood forecasting and warning systems, modern surveys, erosion and embankment breach modeling, asset management, flood risk mapping, land use planning, and pilot nature-based solutions and the graduation approach.

Delhi constructs rainwater harvesting pits to capture water during the monsoon and recharge aquifers. The installation of rainwater harvesting systems was made mandatory in 2012 for all plots exceeding an area of 100 m<sup>2</sup> and for buildings whose water discharge during rains can exceed 10,000 litres per day. Furthermore, new water connections to households are only approved if the building plans include a rainwater harvesting system. These measures are to satisfy the demand of the population of 21 million for some 477,000m<sup>3</sup> of water per day.

## Large River Basins in South Asia

### Mekong River Basin

NGO China Water Risk released a report on the state of 10 rivers in the Hindu Kush-Himalayas region titled "No River, No Power: Can Asia's Rivers Power Growth in Changing Climate?", which analyses a third of global power generation capacity to find that escalating climate risks and rivers running dry can strand sizeable portions of national power generation assets. The information on the Mekong River is shown below.

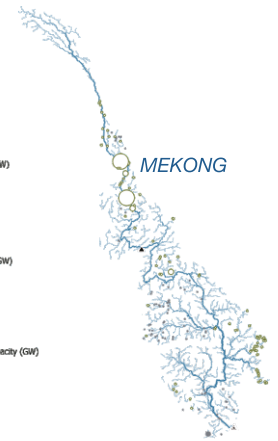


NO RIVER, NO POWER  
Can Asia's rivers power growth in a changing climate?

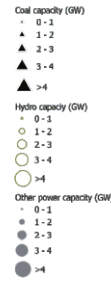
## MEKONG RIVER

Mekong River flows over 4,800 km through six countries. Due to its seasonal variation in water level and the range of wetland habitats, the river is rich in biodiversity and productivity. The ecosystems supported by the river are fundamental to the viability of natural resource-based rural livelihoods of a population of 60m people living in the Lower Mekong Basin.

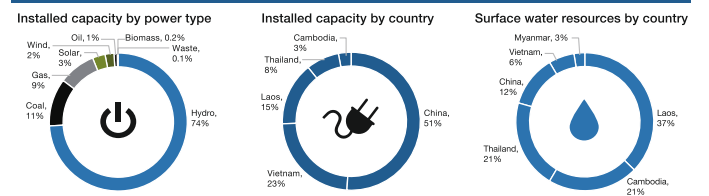
To achieve optimal basin development, the six riparian countries are cooperating through various stakeholder groups such as the Lancang-Mekong Cooperation & the Mekong River Commission. Together, they are working to expand beyond transboundary water management to include improving connectivity, production capacity, economic cooperation, agriculture, water resource management and poverty alleviation. Hydropower clearly dominates the power generation capacity in this river basin.



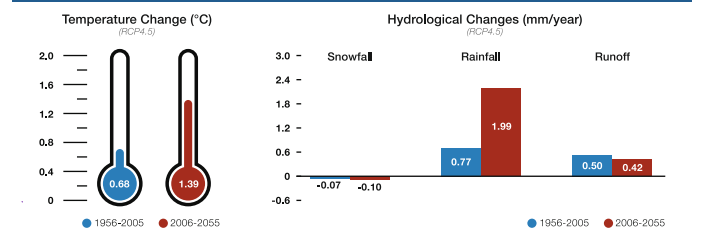
THE MEKONG RIVER BASIN	
Length	4,800 km
Basin Area	0.81-0.90 million km <sup>2</sup>
Annual flow	390-492 billion m <sup>3</sup>
Flow through	China, Myanmar, Laos, Thailand, Cambodia, Vietnam
Share of ice & snow melt in upper reach	22-33% of runoff
Average surface water resources	588 billion m <sup>3</sup>
Basin Population	57 million
Basin GDP in 2015	US\$160 billion (constant 2010 price)



### 34 GW OF INSTALLED POWER CAPACITY ON THE MEKONG



### CLIMATE CHANGE: PAST & FUTURE TREND



Source: CWR, CWR's Report "No Water, No Growth - Does Asia have enough water to develop?", 2018, Center for Water Resources Research, Chinese Academy of Sciences, Global Power Plant Database. This factbook is part of CWR's Report "No River, No Power - Can Asia's rivers power growth in a changing climate?" 2023 and should be read in conjunction with this report. © China Water Risk 2023, all rights reserved | Contact: info@chinawaterrisk.org

The 4<sup>th</sup> Mekong River Commission (MRC) International Conference of Stakeholders was held with the theme "Innovation and Cooperation for a Water Secure and Sustainable Mekong" on April 2-5 in Laos. Representatives of the parties and regional and global experts presented and discussed the most up-to-date perceptions and innovative solutions around the problems of the Mekong River and other river basins. The participants adopted a landmark declaration reiterating the region's commitment to cooperate and safeguard a beleaguered river that's the lifeblood for some 70 million of their citizens. The Declaration states that while development opportunities exist to benefit from large water infrastructure projects, including hydropower, there is urgency to address the "growing risks and trade-offs" – especially, "adverse impacts, including transboundary impacts." These are further exacerbated by climate change-fueled floods and drought. In response, the Declaration calls for the MRC, its partners and other stakeholders in this region to further "intensify cooperation" and seek "innovative solutions." The Declaration appeals for greater coordination from an industry accustomed to private, autonomous decision-making on when to withhold or

release water; expresses the “highest political commitment” from each country’s leadership, for the multi-pronged role of the intergovernmental MRC: the MRC serves as a treaty-based forum for “water diplomacy” that aims to strike a balance between maximizing the benefits of development, while minimizing any harm to either the environment or the fishing and farming families. The Declaration also enshrines the essential MRC role as a “regional knowledge hub” dedicated to implementing “basin-wide strategies, procedures, guidelines and data- and information-sharing, that drives peaceful and mutually beneficial cooperation to achieve our shared vision.”

Politicians and experts expressed their anticipation for **Lancang-Mekong Cooperation (LMC)**<sup>346</sup> to entering a new golden era in the next five years amid laudable achievements in recent years at the 2023 LMC Week Activities on Water Resources successfully held in Beijing (May 26). Representatives from the relevant riparian countries offered active suggestions on the Five-year Plan of Action Lancang-Mekong Water Resources Cooperation (2023-2027) and appealed for joint efforts in promoting technical exchanges, joint research, and pragmatic projects that directly serve people’s livelihoods in the fields of climate change adaptation, flood and drought disasters management, water information monitoring, technical standards and specifications, as well as infrastructure construction related to water, and other areas of common interest. In particular, the countries agreed to jointly build a demonstration zone for high-quality construction of the Belt and Road Initiative (BRI), an early zone for the Global Development Initiative (GDI) and an experimental zone for the Global Security Initiative (GSI).

**PRC’s hydroelectric dams threaten Mekong River.** In recent years, Mekong’s water levels have been among

the **lowest recorded**. Much of the vital sediment, which 15 years ago was estimated at 143 million tons yearly, is being blocked. Such conditions **contribute to** food insecurity and environmental crises for nearly 60 million people downstream. While acknowledging the role of climate change, experts say there is a direct culprit for the river’s woes: the PRC’s construction of 95 hydroelectric dams on the upper Mekong. Since 1995, China also has built 11 main-stream megadams, with more planned, and helped build two dams in Laos. It is not only the dams, but how they are managed that contributes to the crises downstream, with analysts contending that Beijing acts with little regard for other Mekong nations. The MRC estimates that by 2040 less than 5 million tons of river-borne soils will reach the delta each year. The commission works with member nations to manage water resources. The PRC, however, has not signed a water-sharing agreement with its neighbors.

## Indus River Basin

On 6 July 2023, the **Court of Arbitration in Hague rendered its Award** on the Competence of the Court, in an arbitration initiated by the Islamic Republic of Pakistan against the Republic of India under the Indus Waters Treaty. In these proceedings, Pakistan requests the Court of Arbitration to address the interpretation and application of the Indus Waters Treaty to certain design elements of the run-of-river hydroelectric projects that India is permitted by the Treaty to construct on the tributaries of the Indus, Jhelum, and Chenab, before those rivers flow into Pakistan. In the Award, the Court carefully considered **objections** to the competence of the Court raised by India. In a unanimous decision, which is binding on the Parties and without appeal, the Court rejected each of the objections raised by India and determined that the Court is competent to consider and determine the disputes set forth in Pakistan’s Request for Arbitration.

## 11.3. America

In 2023, **the three out of seven states that make up the Colorado River Basin reached consensus on water conservation deal**. The Lower Basin states – Arizona, California and Nevada – have committed to conserving at least 3 million-acre-feet of river system water through the end of 2026 to address **ongoing severe drought conditions** along the river basin. Current operating guidelines are set to expire that year. More than two thirds of the expanded conservation efforts by the states will be financially compensated by the federal government. About 700,000 of the proposed volume would be voluntarily conserved without compensation.

**Measures to protect the Colorado River Basin, which has been suffering from the impacts of drought since 2020.** The U.S. Bureau of Reclamation in the Department of Interior has drafted a set of **three different**

**options** to preserve the water in the Colorado River Basin: a do-nothing scenario, a scenario in which states are allocated water rights based on the seniority of their rights, and a scenario in which each state must cut its water use by 13% beyond cutbacks in demand that have already been agreed to.

The water levels in the river’s main reservoirs – Lake Powell and Lake Mead – have recently fallen to critically low levels. At the beginning of December 2022, the river’s various water storage systems were only 28% full, triggering emergency water sharing measures between the United States and Mexico. The Bureau of Reclamation had also given the seven basin states until the end of January to discuss a new joint agreement of water reductions. The current options being presented relate to a revision of the short- and medium-term operating guidelines for the

<sup>346</sup> LMC, formed in 2016, includes six countries, such as China, Thailand, Cambodia, Laos, Myanmar, and Vietnam



People were able to walk to Tower Rock, normally only accessible by boat, on October 19 2022, in Perry County, Missouri. Jeff Roberson/AP



Hoover and Glen Canyon dams as well as the allocations to the different states in the basin.

**Mississippi River.** Water levels along the Mississippi River are plummeting for the second year in a row. The drought comes as a critical harvest season approaches. Water level dropped below the baseline – to 3.24 m on September 28. A unique nature reserve Tower Rock normally only reachable by boat is accessible by foot for the second year in a row due to the [current situation](#). The US Army Corps of Engineers is making an underwater levee larger to prevent saltwater intrusion into drinking water systems of New Orleans.

**The largest dam removal project in United States history is underway.** Until the end of 2024, one reservoir will be emptied and four dams will be [demolished](#) on the Klamath River along the California-Oregon border. More than 2,000 dams have been removed in the U.S, with the bulk of those having come down within the last 25 years, but that on the Klamath River is the largest one.

Although the hydroelectric power generated by dams is considered a cheaper, clean, and renewable energy source, it causes significant environmental harm. These impacts include river shallowing due to substantial evaporation from the reservoir's surface, algal blooms leading to water toxicity, and barriers to fish migration routes. In particular, wild salmon in North America faces the threat of widespread extinction. However, upon the completion of the Klamath River project, over 600 kilometers of river will be reopened for salmon spawning.

**The right to water in Mexico.** In 2023, the Supreme Court of Justice of the Nation (SCJN) published two [decisions](#). Last April, the highest judicial authority protected a group of people and organizations against the Ministry of the Environment and Natural Resources (Semarnat), the National Water Commission (Conagua) and the Organismo de Cuencas Centrales del Norte, forcing them to take measures to preserve the main aquifer of the lagoon area of the state of Coahuila. The complaint dates back, at least, to 2021 when it was revealed that Conagua continued to grant exploitation permits to companies and residential developments, despite the depletion of this aquifer being proven. It was also found that the agency was not doing enough to stop illegal exploitation of the resource. The SCJN determined that the plaintiffs had the right to force Conagua to comply with an aquifer rescue program, as well as to stop being omisive in its supervision. Another relevant case is a lawsuit that was carried out in the municipality of Ecatepec, in the State of Mexico, where the municipal government is accused of not providing water service and for this reason it was intended to remove the mayor. The Supreme Court took up the case, focusing on determining whether the municipality is obliged to provide water to people who have not paid for the service and do not have a water contract.

Farmers in Chihuahua State in **Mexico** have approached the government to [reserve water](#) for irrigation rather than releasing it in order to comply with a treaty obligation to share water with the US. In 2020, protestors occupied the site of the La Boquilla Dam to protest an impending release of some 36 million m<sup>3</sup> of



water from the reservoir. Technical reports of accumulated water deliveries from Mexico over the past five years showed a shortfall which was to be met by the 24<sup>th</sup> of October. Mexico has reportedly relied on waters downstream of the dam to meet its treaty obligations rather than making use of reservoir water.

No region of **Canada** has gone completely untouched by 2023's [devastating wildfire season](#). More than 15 million hectares have gone up in smoke across the country this year, shattering the previous record of 7.6 million hectares in 1989. By September, 6,118 wildfires have been reported across Canada. Nearly 200,000 Canadians have been placed under an evacuation order this season.

In **Brazil**, the **Amazon** River has fallen to its lowest level in 120 years, reaching 13.59 meters. For comparison, during the same period in 2022, the river's level was at 17.6 meters. This significant drop is attributed to a severe drought caused by the El Niño phenomenon, which originates from underwater ocean currents and triggers extreme weather events worldwide.

**ClientEarth** has [filed a legal complaint](#) against US-based agricultural giant Cargill over its failure to adequately deal with its contribution to soy-driven deforestation and human rights violations in Brazil. This is the first time the company – the largest privately held firm in the United States with annual revenue of \$165 billion – will face legal action in the US related to its deforestation footprint in the Amazon rainforest, Atlantic Forest and Cerrado savanna.

**Panama Canal experiences lowest water levels in history.** El Niño and climate change are currently [affecting](#) international trade. Although this is not the worst drought Panama has ever experienced, it could be a very long one, with serious consequences for the global economy. Water levels in Lake Gatún, which feeds the waterway, were at 24.2 meters last week, compared with 26.6 meters for the month of September in recent years. This could trigger further restrictions in navigation.

## 11.4. Australia and Oceania

The **Australian parliament passed legislation that extends the timeframe for delivering the Murray-Darling Basin plan (MDBP)**. The Murray-Darling Basin is Australia's largest river system covering more than 1m sq km. The MDBP was introduced in 2012 to bring the basin back to a healthy and sustainable level by limiting how much water can be extracted and by [restoring environmental water flows](#) by 3,200GL a year. The plan had gone off track: an audit found the plan would probably fall about 750GL – about 1.5 times the volume of Sydney Harbour – short of its total of 3,200GL by the deadline of June 2024. About 315GL of the shortfall is due to major water saving projects either

Since 2020, the Canal has been implementing the Water Program, an initiative that includes the identification and execution of a series of projects that would guarantee the availability of water to supply the population's consumption and ensure the waterway's operation for the next 50 years. Since technical solutions within the jurisdiction of the Panama Canal are not sufficient, there are also external solutions which are not part of the Panama Canal watershed, e.g. a project for additional reservoirs that would require a change in legislation.

**Uruguay** is currently facing its worst drought in 74 years. The city of Montevideo relies for its water supply on the **Paso Severino Dam**<sup>347</sup>, but dam's levels have been dropping. The authorities declared a [state of emergency](#). Dam's level reached just 4.6 million hm<sup>3</sup> in early June, or 6.6% of total capacity. Water managers at the Aguas Corrientes water treatment plant which supplies potable water to the department of Montevideo have resorted to mixing water from the Paso Severino reservoir (fresh water) with water from the lower section of the Santa Lucia River, which has higher salt content. The utility submitted an application to the Ministry of Public Health to request permission to temporarily exceed the maximum salinity levels in the drinking water. In May, the authorities raised the limit for sodium in the water by 160%.

The government of **Ecuador** has completed the world's [largest debt for nature swap](#)<sup>348</sup> with the support of the InterAmerican Development Bank (IDB) and the U.S. Development Finance Corporation (DFC). The IDB provided a \$85 million guarantee, while the DFC provided a \$656 million political risk insurance to purchase the country's existing debt at better financial terms. The agreement serves the double purpose of reducing the country's debt burden while releasing hundreds of millions of dollars for marine conservation around the Galapagos islands. The country will be considering other options to monetize Ecuador's biodiversity in the coming two years, including the protection of Amazon corridors.

running late or failing to materialise. The legislation says states responsible for this infrastructure should deliver the infrastructure by 2026. The legislation extends a deadline for the recovery of 450GL a year of environmental water to ensure flows to South Australia to 2027. It also lifts a cap on buy-backs to allow the government to purchase more water for the environment.

A new report reveals the [dire state](#) of many of **New Zealand's** fresh waterways: only 2% of large lakes were in "good or very good" health. More than half – 55% – of the country's total river length showed "moderate or severe impairment" from organic pollution or

<sup>347</sup> a potential storage capacity of 70 million m<sup>3</sup>

<sup>348</sup> the concept of debt for nature swaps was developed by Thomas Lovejoy at the World Wildlife Fund, and the first debt for nature swap was carried out in Bolivia in 1987. Since 1987, some 140 such deals have been concluded worldwide

nutrient enrichment – typically caused by effluent and runoff from farming, and 45% of rivers were unswimmable, due to campylobacter infection risk.

Tropical cyclone Gabrielle was the worst storm to hit New Zealand so far in the XXI century. The cyclone was expected to lead to bigger impacts since the weeks prior to its arrival had seen severe flooding across much of New Zealand. The storm brought further heavy rain on top of the record-breaking downpours in the preceding weeks as well as very high winds. The economic impacts of storm Gabrielle were significant, at nearly 1 per cent (about \$2.4bn) of New Zealand's GDP.

*Source:* Counting the cost 2022: A year of climate breakdown, Christian Aid, December 2023

## 11.5. Europe

### 11.5.1. Western and Southern Europe

In a **judgement** believed to be the **most significant UK Court ruling** on the Water Framework Directive (WFD) of the last two decades, on the 20<sup>th</sup> of November, the High Court of Justice in England ruled that the Department for Environment, Food and Rural Affairs (DEFRA) had failed in its duties to review, update and implement measures to restore rivers and other water bodies. The case was brought by the Pickering Fishery Association together with an environmental organization, Fish Legal. In terms of WFD, EU member states need to implement the necessary measures to prevent deterioration of the status of all bodies of surface water and protect water bodies so as to achieve good 'ecological potential' and good 'surface water chemical status' by December 2027. Concerns have been raised about the adherence of the U.K. to European water quality standards, as, although the WFD was transposed into British law in 2016, there have been incidences of divergence from EU rules. For instance, the quality of the U.K.'s rivers is currently tested only once in three years, as opposed to once a year in the EU. The court found, for instance, that the DEFRA's river basin management program lacked the legally required measures necessary to achieve the obligatory targets for each waterbody – such as tightened environmental permits for controlling sewage pollution.

Lough Neagh, the largest freshwater lake in the **Great Britain**, is being **poisoned** by a toxic blue-green algae due to discharge from farming and sewage. It is killing fish, birds and dogs and there are serious concerns about public health because the lough provides 40% of Northern Ireland's drinking water.

The **Netherlands** announced that it had taken out a 'blue bond' worth € 5 billion which will go towards efforts to mitigate flood risks. The government had announced also its new **Green Bond Framework**. The Netherlands seeks to create a Climate Fund which can be used to channel investments needed to align the economy and infrastructure to the new realities

In **Fiji**, the impacts of climate change, which has been driven by industrial development far from the country, are happening at an **accelerating pace**. As a result of storm surges, floods, destructive tides and landslide, 20% of Fiji's population living on coastal fringes, now face the prospect of having to move to higher ground. As part of the government program, six Fijian villages have already been moved and dozens more are currently being assessed. Relocating a village is not a simple matter of finding. In Fiji, it also means severing the very spiritual connections to ancestors and to the land and seas of the territory to which they belong – the traditional bonds known as "Vanua".

under climate change scenarios and pledges. This development comes as the Netherlands seeks to adhere to the terms set out in the Paris Agreement on Climate Change which will require a minimum of 55% reduction in emission levels by 2030 relative to 1990.

The Rhône River has again become the **subject of negotiations** between Switzerland and France against the background of recent drought and water shortages in France. Importantly, the water of the Rhône is used to cool 14 of the 56 nuclear reactors providing France with electrical power.

A study by the French water agency warned that as a result of climate change, the level of the Rhone River could be lowered by up to 20% over the next three decades, and in certain tributaries such as the Isère and the Drôme, the reduction could amount to between 30% and 40%. Currently the summer demand on the Rhone does not exceed 15%. Nevertheless, in the medium term, it is envisaged that the Rhone is no longer going to be an inexhaustible resource. In the short term, the legal limits placed on the temperature of the water used to cool the nuclear reactors at the point of release into the river will force reduction in power production. Additionally, at the river mouth, the progressive ingress of salt water upstream in dry months could cause damage to crops and riparian vegetation.

**Water utilities request transparency over discharge permits as Meuse River quality deteriorates.** The Maas / Meuse River is a source of drinking water for some 7 million customers across Belgium and the Netherlands. Over the past year, concentrations **above the permitted levels** have been measured for 79 substances. In 11% of all measurements of water quality along the river, pollution levels were found that were above the maximum set by European norms. In addition, the river's flow has declined because of climate change, resulting in less dilution of the harmful chemicals.

To adequately perform their task of protecting water quality, the utilities state, it is essential to be able to identify the harmful substances that end up in the water, as well as to know where exactly they are being discharged. They are requesting a complete overview of all direct and indirect discharge permits and that substances that are harmful to drinking water supplies to be included in discharge permits.

All of **Spain** has been in **drought** since January 2022, but water supplies in Catalonia have fallen so low that authorities this week introduced laws including a 40% reduction in water used for agriculture, a 15% reduction for industrial uses, and a cut in the average daily supply per inhabitant from 250 litres to 230 litres. The average amount of available water had fallen by 12% since 1980, and projections suggested a further drop of between 14% and 40% by 2050. Spain's government in January approved a €23bn plan to protect and improve water supplies by investing in areas including infrastructure, water treatment and purification, irrigation modernisation and flood-risk management.

On the 1<sup>st</sup> of June, the **European Commission** decided to refer **Italy** to the European Court of Justice (ECJ) for breaching its obligations under the wastewater treatment directive. According to the EU, although Italy has made significant progress in the implementation of the wastewater directive, there are still five settlements where the terms of the ruling have not been observed. The EU argues that the lack of adequate wastewater treatment systems for these five agglomerations poses significant risks to human health, inland waters and the marine environment in the environmentally sensitive areas in which the untreated waste water is discharged.

**In France, protests erupted against the construction of agricultural reservoirs in the southeast of the country.** Some 50 different civil society groups including environmentalists and trade unions have grouped themselves together to oppose the further development of these storage structures. Currently, more than 100 such water pans are under development inland of la Rochelle and along the eastern border with Switzerland and Italy. Developed, a typical water pan covers some 10 to 16 hectares, is covered in thick plastic, and surrounded by a dyke of 10 m in height: such pans can therefore store up to 820 000m<sup>3</sup> of water. Instead of being filled naturally through rainwater harvesting or runoff water, they are filled by pumping groundwater during winter and stored for use in times of peak agricultural demand. France, however, currently has critically low levels of groundwater. The current beneficiaries of the water pans are industrial agriculture, whereas what would be needed for a medium to longer term management is to retain the water in the soil through a transition to a form of agro-ecology.

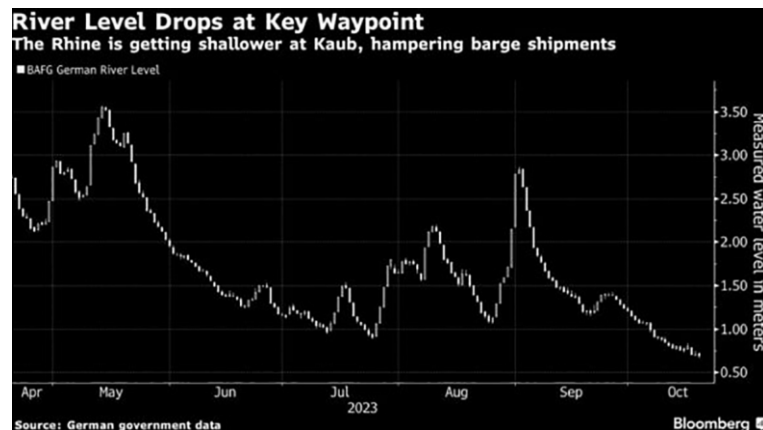
**Revised EU Drinking Water Directive entered into force on January 12.** The Commission launched a public consultation and came to the conclusion that the WFD needed to be reviewed in four key areas: (1) the list of substances to be monitored needed to be updated to include additional pathogens and che-

mical substances in the water; (2) extend the risk analysis beyond monitoring to include the whole water value chain from the catchment area through to abstraction, treatment, storage and distribution; (3) improvements in communication and public provision of information on water; (4) harmonisation of the rules with regard to the products that come into contact with water – such as pipes, treatment chemicals and filter media.

## Rhine River Basin

At the annual plenary assembly of the International Commission for the Protection of the Rhine (ICPR) on **June 30, 2023**, the **Rhine Monitoring Programme Biology 2024/2025** was adopted. Every six years, the ICPR investigates within the context of an international monitoring campaign how five important bio-indicators (phytoplankton, benthic diatoms, macrophytes, macrozoobenthos and fish fauna) have developed along the Rhine. The results provide information on the ecological status of the Rhine and will be taken into account when reporting on the implementation of the Water Framework Directive in the Rhine river basin. The participants noted that progress has been made in restoring the ecological continuity of the southern Upper Rhine.

**Fuel transit costs raise abruptly in Germany** due to a **falling Rhine River** and the resulting decreased load capacity of barges. Water at a key waypoint Kaub not far from Frankfurt dropped to the lowest seasonal level since 2018 – to 67 cm. The lower water level makes barge shipments unprofitable and leads to growing prices.



## Danube River Basin

**Restored floodplains could remove 38.000 tons of nitrate pollution in the Danube river basin.** Nitrogen emissions in the Danube river basin are currently estimated at around 500 000 tons per year, with 44% deriving from agriculture, 30% from urban areas and 23% from forests and natural areas. About 340 000 tons enter the Black Sea, into which the Danube drains. Nutrient pollution means that more than a fifth of surface-water bodies in the Danube river basin are at risk of failing good ecological status by 2027. Flood-

plains offer a vital ecosystem service through denitrification. However, 70-80% of the river basin's floodplains have been converted to arable land, or disconnected by dykes, engineering works for navigation and hydropower dams. Restoration of floodplains could increase in-stream removal by 9.2%, removing about 2,350 tons more nitrates per year. The greatest effect is expected from restoring the previously meandering Yantra and Tisza Rivers and the upper Danube. Reconnecting potential floodplains (e.g. by removing dykes) could remove an approximate additional 2,500 tons a year, representing a rise in potential denitrification of 32%. If both water bodies

and floodplains were reconnected, a total of 38,000 tons of nitrate could be retained by river-floodplain systems, per year.

As part of the **DANUBE4all project** (2023-2028), funded by Horizon Europe, a comprehensive, scientifically based, and practically orientated Restoration Action Plan is being developed to support the EU's Mission to "Restore our ocean and waters by 2030." With a Science-to-People approach, the project will promote the knowledge, awareness, and participation of local people and business actors in implementing freshwater ecosystem restoration.

## 11.5.2. Eastern Europe and Caucasus

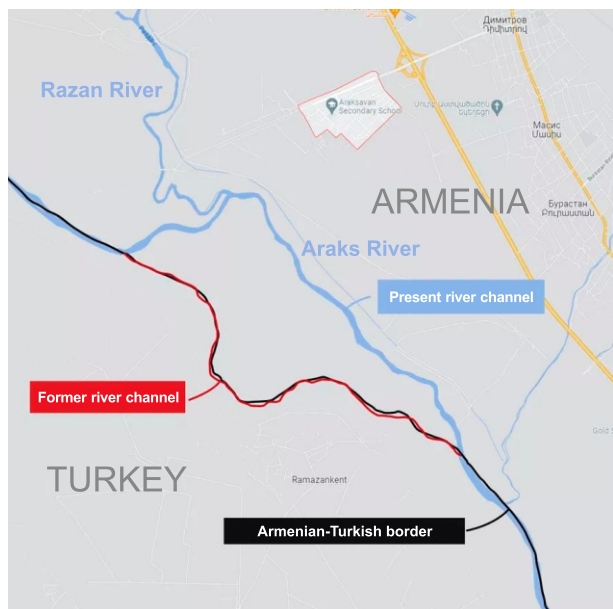
### Armenia

**Water management.** Large-scale reservoir construction projects are progressing across the country. This year, the construction of the Vedi Reservoir is nearing completion. Meanwhile, work on the Kapsi Reservoir, funded by the German Development Bank (KfW) and the state budget, is commencing. Discussions are also underway regarding the potential construction of the Yeghvard Reservoir and the Selav-Mastara Reservoir in the Aragatsohn region, with support from the Eurasian Development Bank (EDB). Additionally, tenders for the design and estimate works for 31 regulating reservoirs have been finalized.

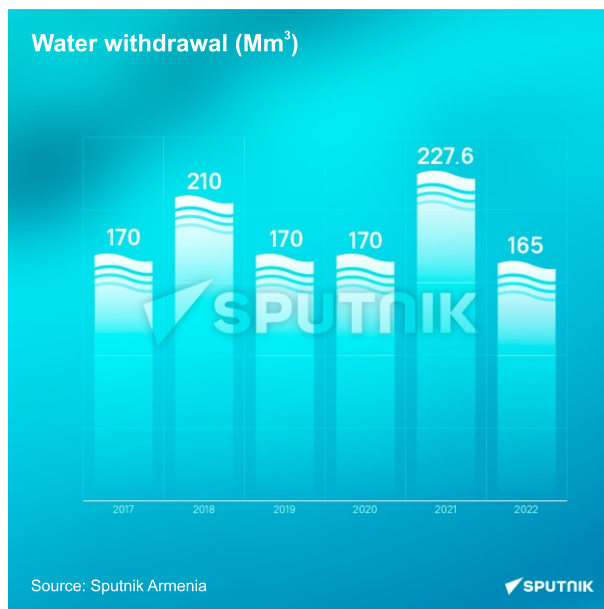
In 2022, the national government allocated 22.4 million drams (approximately \$53,000) for the design and

estimate works needed to restore the Araks River<sup>349</sup> to its former course in the Araksavan and Burastan communities of Ararat Province.

On July 12, 2023, the Armenian Parliament approved a government bill authorizing an increase in water withdrawals from Lake Sevan from the initially permitted 170<sup>350</sup> million m<sup>3</sup> to 240 million m<sup>3</sup> for that year. By July 23, the lake's water level had already receded by 16 cm compared to the same period in 2022. This increased withdrawal is likely to exacerbate the negative trend. It could result in a significant slowdown in the rate of lake level rise and potentially lead to a water level in January 2024 that is considerably lower than the level observed during the same period in the current year.



Source: [https://am.sputniknews.ru/20230406/tainstvennyy-ostrov-vozvrashchenie-reki-araks-v-prezhnee-ruslo-zaymet-16-mesyatsev-57772428.html?\\_ga=2.115033863.1069361655.1720121779-627434803.1720121779](https://am.sputniknews.ru/20230406/tainstvennyy-ostrov-vozvrashchenie-reki-araks-v-prezhnee-ruslo-zaymet-16-mesyatsev-57772428.html?_ga=2.115033863.1069361655.1720121779-627434803.1720121779)

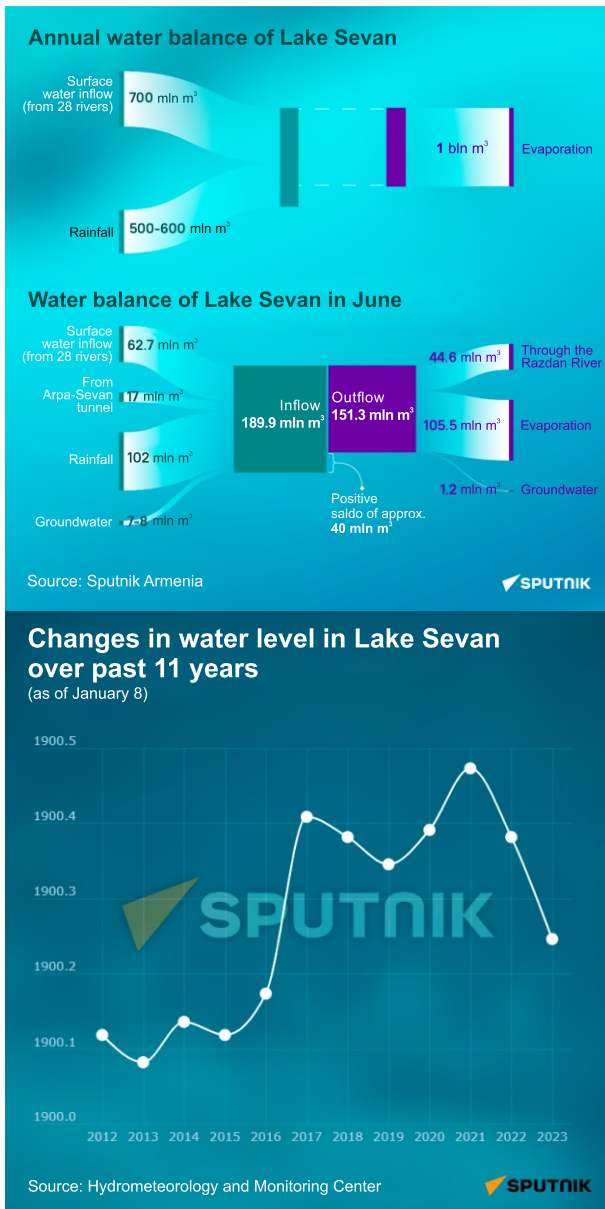


Source: <https://am.sputniknews.ru/20230731/udar-po-ekosisteme-sevana-chem-opasen-dopolnitelnyy-zaborvody-63628469.html>

<sup>349</sup> the Araks River which forms part of the border with Turkey has changed its course due to illegal sand mining (channeling through the Razdan River), with the formation of an island on approximately 400 ha

<sup>350</sup> the permitted amount of water releases from the lake is 170 Mm<sup>3</sup>, however, withdrawals have exceeded this limit in previous years





Source: <https://am.sputniknews.ru/20230731/udar-po-ekosisteme-sevana-chem-opasen-dopolnitelnyy-zabor-vody-63628469.html>

**Agriculture.** The Ministry of Economy of Armenia held meetings with: (1) USAID: discussions focused on enhancing cooperation, improving the investment climate, and ensuring the successful implementation of ongoing programs. USAID presented its 'Economic Foundations for a Resilient Armenia' activity, which prioritizes key sectors such as agriculture, tourism, and high technology (July); (2) SDC: meetings addressed the current state and future prospects of Armenia's agricultural development. Specific programs discussed included 'Modernizing Vocational Education and Training in Agriculture in Armenia' (MAVETA) and 'Sustainable and Inclusive Growth in Mountainous Armenia' (SIGMA) (November).

**Energy.** The Government approved a draft Presidential decree for a €6.5 million Financial Agreement with

the European Commission titled "Sustainable Energy, Energy Security and Climate Resilience in Rural Armenia." The agreement aims to address energy poverty, enhance energy security and independence, mitigate climate change impacts from an environmental perspective, and protect natural resources and ecosystems. To achieve these goals, energy efficiency and sustainable energy projects will be implemented in Tavush, Shirak, Gegharkunik and Syunik regions of Armenia.

The Armenian government will allocate \$65 million to extend the operational life of the second power unit of the Armenian Nuclear Power Plant (NPP) until 2036. The project is set to begin in 2024, with Rusatom Service overseeing its implementation.

Renewable energy is a key focus for the development of Armenia's energy system, with solar energy playing a particularly significant role. Currently, over 5% of the country's electricity is generated by solar power plants. As of June 1, there are more than 12,000 autonomous solar energy producers in Armenia, with a combined installed capacity of 220 MW. The country aims to increase the total capacity of solar and wind power plants to at least 2,000 MW by 2040. To support this effort, the German government will provide €12 million to Armenia for the third phase of a program aimed at expanding the use of renewable energy sources and enhancing energy efficiency.

**Ecology and environmental protection.** In December 2023, a draft law titled "On Environmental Service" was submitted to the Parliament and is set to come into force on January 1, 2024. The new service will consolidate inspectors from the state organization "Hayantar" ("Armls") and the national parks of the Republic, encompassing approximately 1,180 personnel in total.

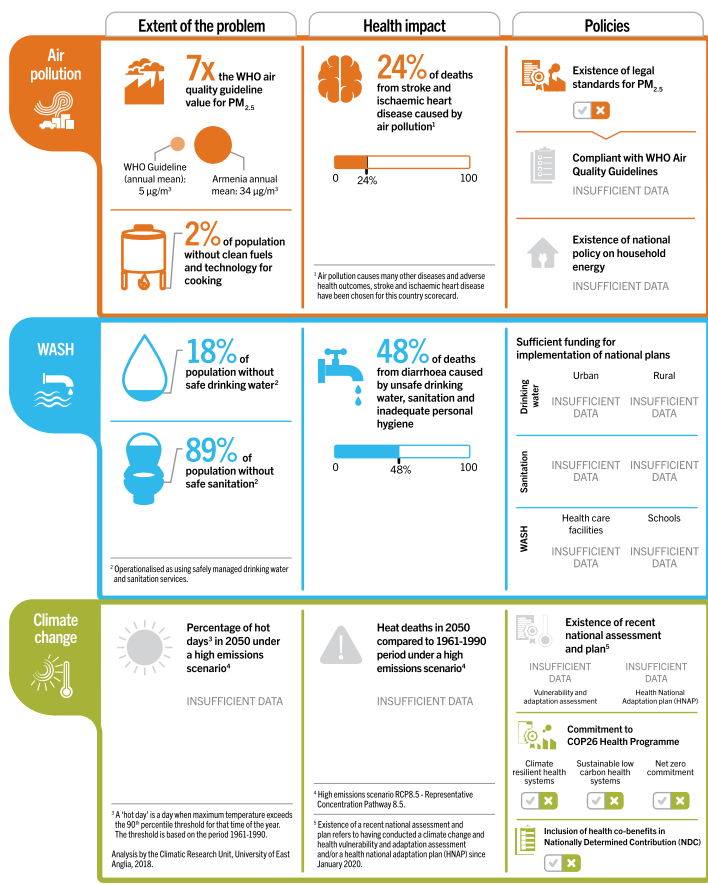
According to the 2023 activity report of the Armenian Ministry of Environment, significant achievements were made in environmental management and forestry. For the first time, aerobiological pest and disease control measures<sup>351</sup> were implemented across 4,120 hectares of forest in the "Armforest" SNCO area. Additionally, 38.8% of planned environmental projects were completed, including 226 hectares of reforestation and afforestation efforts. An 8-hectare seedling nursery was established, producing 250,000 seedlings with closed root systems.

The Centre for Hydrometeorology and Monitoring conducted activities in hydrometeorological services, environmental monitoring, and forest state monitoring. Notably, 20 automatic meteorological stations were purchased, with 9 funded by the state budget. Five stations were installed in the Lake Sevan basin, and two of these are equipped with mechanisms for monitoring evaporation from the water surface.

WHO has prepared a health and environment scorecard for Armenia in 2023.

<sup>351</sup> earlier chemicals were used in this work

## Health and environment scorecard Armenia



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Source: [https://cdn.who.int/media/docs/default-source/country-profiles/environmental-health/environmental-health-arm-2023.pdf?sfvrsn=c0585840\\_14&download=true](https://cdn.who.int/media/docs/default-source/country-profiles/environmental-health/environmental-health-arm-2023.pdf?sfvrsn=c0585840_14&download=true)

**International cooperation.** Armenia and Iran will resume joint monitoring of the Araks River's border waters to identify pollution sources and locations.

### Azerbaijan

**Water management.** The newly established State Water Resources Agency of Azerbaijan assumed control over JSC 'Azersu' and JSC 'Land Reclamation and Water Management of Azerbaijan'.<sup>352</sup> Concurrently, the charters of the Regional Water Reclamation Service, the United Service for Water Supply of Large Cities, the Water and Land Reclamation Research Institute, and the Irrigation and Drainage Design Institute were approved.

Two pilot projects have been formally launched: (1) a seawater desalination project to enhance drinking water production for Baku and surrounding areas,

and (2) a project to treat and reuse wastewater discharged from the Govsan aeration plant in Apsheron district, mitigating its impact on the Caspian Sea.

The World Bank is developing a new model of water resources management in the suburban and rural areas of Azerbaijan. A comprehensive inventory of water sources will be conducted, aiming to ensure equitable access to drinking water, secondary water, and irrigation water, particularly in rural areas, to address water supply challenges.

**Agriculture.** As part of the project on strengthening best practices in soil, nutrient, and water management agricultural practices for cotton, wheat and rice production, the Azerbaijani delegation took part in the training on climate-smart agriculture to improve soil fertility in Asia, combat salinization, improve water and nutrient application and productivity of main crops (Faisalabad and Islamabad, Pakistan, October). The Ministry of Agriculture of Azerbaijan and IAEA, which supports the project, also discussed the tasks to be solved by the project.

**Energy.** EBRD is allocating \$197.1 million (€186.9 million) for the construction of a 240 MW wind power plant<sup>353</sup> in Eastern Azerbaijan. This project is poised to generate a substantial amount of clean energy, with an estimated annual output of up to 893 GW and thus reduce greenhouse gas emissions by more than 400,000 t.

JSC "AzerEnergy" is finishing the construction of hydropower cascade (HPPs Sarygyshlag, Shayfly, Zangilan, and Djakhangirbeili) on the Okhchuchai River. The 42 MW cascade is to generate annually more than 130 million kWh of green energy.

**Environmental protection and green development.** WHO has prepared a health and environment scorecard for Azerbaijan in 2023 as a tool to measure and track the progress of Member States.

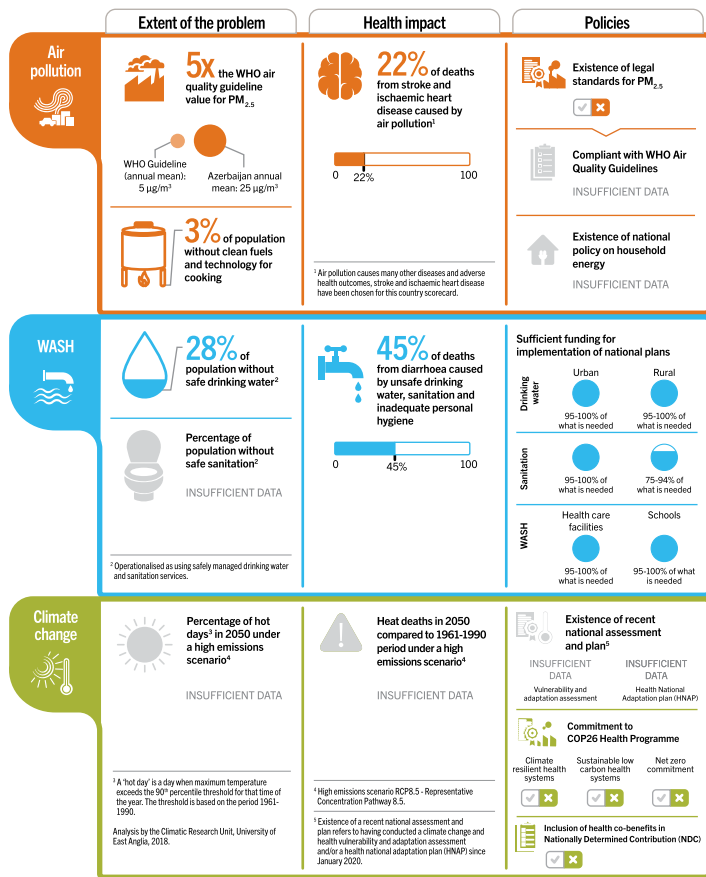
The OECD collaborates with Azerbaijan on advancing a green economy through two EU-funded programs. These include: (1) 'Green Economy EU4Environment', focusing on developing comprehensive green investment strategies, establishing robust green growth indicators, and ensuring strict adherence to environmental regulations; (2) 'EU4Environment Water and Data' to promote sustainable use of valuable water resources and support open access to environmental data.

**International cooperation.** The Ministry of Ecology of Azerbaijan announced the first joint expedition with Russia to the Samur River. The expedition aims to study biodiversity, water resources, and analyze changes in both ground and surface waters within the river basin. The collected data will be utilized to develop project proposals focused on climate change adaptation and the reduction of greenhouse gas emissions.

<sup>352</sup> by Presidential Decree of 30 March

<sup>353</sup> first wind power project on domestic scale and the largest one in Caucasus

## Health and environment scorecard Azerbaijan



Source: [https://cdn.who.int/media/docs/default-source/country-profiles/environmental-health/environmental-health-aze-2023.pdf?sfvrsn=d9fab562\\_14&download=true](https://cdn.who.int/media/docs/default-source/country-profiles/environmental-health/environmental-health-aze-2023.pdf?sfvrsn=d9fab562_14&download=true)

## Georgia

**Water management.** Parliamentary committees in Georgia have decided to review a proposed law, "On Water Resources Management," which introduces new regulations for water use by companies. Under the draft law, water resources will be declared state property, and private companies will be granted authorization to use water for production purposes.

The Spanish company Aqualia, which owns 80% of Georgian Water and Power (GWP), plans to invest 363 million GEL in improving the water supply systems of Tbilisi, Rustavi, and Mtskheta between 2024 and 2026.

**Agriculture.** The French Development Agency (AFD) will allocate €70 million to Georgia for a program aimed at promoting irrigated agriculture. Of this, €35 million will be dedicated to infrastructure, particularly

the modernization of the Zemo Samgori irrigation canal. This initiative seeks to enhance the efficient production of high-quality agricultural products, improve food availability for the local population, boost the competitiveness of Georgian products in regional markets, and establish a sustainable irrigation system to address the challenges of climate change. The remaining €35 million will fund a budget support program designed to strengthen public policies for sustainable and inclusive water governance. This includes enhancing the policy and institutional framework to integrate climate-smart practices into agriculture and water management, as well as improving the governance and risk management of the Georgian Land Reclamation Company.

ADB will provide a loan of approximately €45 million to Georgia to implement a climate-smart irrigation sector program. The project aims to strengthen agricultural systems in eastern Georgia, with a particular focus on modernizing the Kvemo Samgori left main canal and its associated irrigation system in the Kakheti region.

**Energy.** By the end of the year, the Georgian government expects to complete the construction of hydro-power plants (HPPs) with a total installed capacity of approximately 118 MW. These plants are projected to increase Georgia's annual electricity production by over 540 GWh.

The German government will allocate €23 million to support the development of green hydrogen,<sup>354</sup> marking the first investment project in this fuel technology in the Caucasus region. With the backing of an Arab investor, the largest power plant in terms of capacity will be constructed in the Gardabani municipality (Kvemo Kartli region). This project aims to reduce dependence on imports and diversify local sources of electricity supply.

**Green development.** The WB will provide a €46.3 million loan to Georgia as part of the country's first green and sustainable development policy operation. The funds will be allocated to promote sustainable agriculture, support irrigation projects, and develop the land market.

**International cooperation.** Georgia and Qatar have signed a Memorandum of Understanding (MoU) on water resources, air quality monitoring and control, biodiversity conservation, and the implementation of joint environmental projects and programs. The MoU aims to address the mitigation of risks caused by climate change.

The Georgian Ministry of Education and Science and the Helmholtz Centre for Heavy Ion Research have signed a memorandum of cooperation to collaborate on joint educational and research projects. These initiatives will focus on proton therapy, clean energy, hydrodynamics, ecology, radiation physics, and other scientific fields.

<sup>354</sup> "Green" hydrogen is produced through the electrolysis of water, where electricity generated from renewable energy sources is used



## Belarus

**Water management.** Water extraction indicators over the past five years have shown a steady downward trend. Total water use has decreased, with domestic and drinking water consumption remaining the largest component. In 2023, surface water withdrawal decreased by almost 3%, while groundwater extraction increased by less than 1%. Water usage for agricultural needs was 3% lower compared to the previous period, whereas water use for industrial purposes increased, with a notable 17% rise in energy-related water consumption.

Belarus is developing a set of measures for water conservation and restoration, which includes both immediate priority actions to be implemented within the year and long-term strategies for adapting water management to climate change. These measures also focus on the development of information systems and economic mechanisms. Currently, Belarus has 112 gauging stations, comprising 102 river gauging stations and 10 lake gauging stations.

The Pripyat River Basin Management Plan (RBMP)<sup>355</sup> has been approved, with the main objectives being to identify environmental issues within the river basins and develop solutions. This includes creating measures aimed at improving the environmental status of surface water bodies (or their parts). These measures will be considered in the future formulation (or adjustment) of state programs and regional action plans for water protection and use.

A regular meeting of the interdepartmental working group was held, where the proposal to develop model examples of water storage and level regime maintenance using different flow regulation methods was supported. The approaches developed during the meeting are reflected in the set of priority measures aimed at improving water conservation for 2023 (Minsk, February 7).

**Agriculture.** In 2023, agricultural production contributed 6.5% to the country's GDP, with more than 251,000 people employed in the industry. As of January 1, 2024, there were nearly 1,500 agricultural organizations and 3,400 peasant (farm) households. Agricultural products are exported to over 100 countries, including all CIS countries, EU nations, countries in Asia, South and North America, the Middle East, and Africa. In 2023, new foreign markets were developed, including Bahrain, Somalia, Mexico, Senegal, and Cape Verde. Additionally, Belarus is ranked among the top five global producers of flax fiber, with 37.2 thousand tons produced in 2023.

**Forestry.** Belarus is ranked among the top ten European countries in terms of forest cover, forest area, and timber reserves per capita. Forests in the country cover more than 9.7 million hectares, with the forest

cover rate reaching a record 40.2%. There is approximately 1 hectare of forest per inhabitant. In 2023, the Ministry of Forestry planted around 29,000 hectares of new forests.

**Energy.** In Belarus, the primary focus is on increasing the use of wood fuel, which requires the smallest capital investments and has the shortest payback periods compared to other renewable energy sources (RES). Nearly 97% of the country's RES comes from biomass, mainly wood fuel, while just over 3% is derived from water, wind, and solar energy. Over the past 14 years, the capacity of RES installations has increased 14-fold, reaching 632 MW. This includes **84 solar power plants** with a capacity of 272.7 MW, **55 hydro-power plants** with a capacity of 96.5 MW, **108 wind power plants** with a capacity of 122 MW, **31 biogas complexes** with a capacity of 40.2 MW, and **11 mini-TPPs** using wood fuel with an electric capacity of about 100.5 MW. The development of renewable energy in Belarus was discussed during the press conference "Clean Energy. Development of Renewable Energy in Belarus" held on October 20 in Minsk.

Belarus has constructed its own nuclear power plant, which is now operating at full capacity with two power units. These units are expected to generate approximately 18.5 billion kWh of electricity annually, which will cover more than 40% of the country's domestic electricity needs. Additionally, this output will replace around 4.5-5 billion m<sup>3</sup> of imported natural gas each year.

**Ecology and environmental protection.** An interactive map of nature conservation areas (NCAs)<sup>356</sup> has been created as an online resource providing information on all unique natural landmarks in Belarus. As of January 1, 2023, the system of Belarusian NCAs covers a total area of 1.9 million hectares, represen-

### Map of nature conservation areas in the Republic of Belarus



<sup>355</sup> Joint decision (No.844/739/43-15/1053) of Gomel', Brest, Mogilyov and Minsk provincial executive committees of October 27, 2023

<sup>356</sup> as part of international technical assistance project "Development of ecotourism to promote green transition to inclusive and sustainable growth"



ting 9.1% of the country's territory. The system includes 1,354 sites, comprising one nature reserve, four national nature parks, 376 sanctuaries, and 973 natural monuments of national and local importance.

The Ministry of Natural Resources has implemented five international [technical assistance \(ITA\) projects](#) focused on environmental protection, the rational use of natural resources, and climate change mitigation, with a total budget exceeding \$15 million.

During the year, 2,315 environmental activities were conducted, engaging approximately 160,000 participants, including over 30,000 young people. Over 550 members of the public actively contributed to discussions and solutions for more than 95 environmental challenges through a diverse range of events, activities, and campaigns. Key highlights of the year included: II International Specialized Exhibition "ECOLOGY EXPO-2023" (Minsk, August 22-24) and XVII Republican Ecological Forum (Brest region, August 25-26).

**International cooperation.** The following events were held: (1) A meeting of the Belarusian-Chinese Intergovernmental Cooperation Committee, which resulted in the signing of a memorandum of understanding on cooperation in environmental protection, sustainable development, and climate change mitigation and adaptation between the Ministry of Natural Resources of the Republic of Belarus and the Ministry of Ecology and Environment of the People's Republic of China (Beijing, July 11); (2) XIV meeting of the Joint Belarusian-Russian Commission for the Protection and Rational Use of Transboundary Water Bodies. The meeting addressed issues related to water quality and the condition of aquatic ecosystems in the transboundary water bodies of the Dnieper and Western Dvina river basins, ongoing water management and protection measures, and summarized the results of the work for 2022. It also discussed promising areas for further cooperation (Minsk, August 23).

## Moldova

**Water management.** The Government of Moldova approved: (1) amendments<sup>357</sup> to the Water Law. The new provisions are designed to properly recognize the value of water bodies as an indivisible commodity and to ensure that revenues generated from the provision of water resources for use are collected into the state budget; (2) the river basin management plan of the Danube-Prut and Black Sea hydrographic basin district cycle II (2023-2028).<sup>358</sup>

**Agriculture.** By the end of the year, the Ministry of Agriculture and Food Industry (MAFA) plans to introduce

70 EU regulations into the national legislation. Additionally, a law is being prepared to establish 10 agricultural chambers across the country, which will include all farmers who own land plots of 1.5 hectares or more. The leadership of these agricultural chambers will be elected by the farmers themselves. The Ministry will also cover the salaries of counselors and other employees working in the chambers.

The MAFA is establishing<sup>359</sup> the Agency for Land Reclamation Policy Implementation by restructuring the Sustainable Development Fund of Moldova. This new agency will be responsible for the implementation of land reclamation policies and the management of investment projects related to the construction of centralized irrigation systems.

The WB and the International Bank for Reconstruction and Development (IBRD) will invest \$55 million and €50.1 million, respectively, in Moldova's agricultural sector through the Agricultural Governance, Growth, and Resilience Investment (AGGRI) project. This initiative aims to develop underperforming agricultural subsectors, increase farmers' incomes, create new jobs and market opportunities, introduce smart farming technologies, and promote organic production.

**Energy.** To accelerate Moldova's EU integration: (1) The AFD has pledged a €120 million loan to support energy sector reforms in Moldova. Key priorities include decarbonization efforts, such as enhancing energy efficiency in buildings, transitioning to electric public transport, and expanding the use of renewable energy sources; (2) The U.S. administration plans to provide Moldova with up to \$300 million in emergency energy assistance. This aid will be used to bolster local energy production and provide financial support.

**Ecology and environmental protection.** As part of the national program for forest expansion and restoration for 2023-2032, the Ministry of Environment, together with the Moldsilva agency, launched a nationwide greening campaign "Plant Your Future." The [EU Green Week](#) with the general theme "Delivering a net-zero world" was marked in the Republic of Moldova, via a large-scale information and awareness campaign, creative contests for children and outdoor events promoting green lifestyles (June 3-11). The fall campaign for forest restoration and expansion has begun, with plans to plant approximately 4,000 hectares of tree seedlings.

**International cooperation.** Moldova, Ukraine, and Romania will jointly manage the Prut River basin to enhance water resources management. The colla-

<sup>357</sup> the need for amendments was driven by the political direction of the Republic of Moldova's European integration and the fulfillment of commitments outlined in the Association Agreement signed between Moldova and the EU, as well as the Treaty on the Establishment of the Energy Community

<sup>358</sup> Moldova has harmonized its legislation with the Water Framework Directive (WFD). However, further harmonization with other aspects of EU legislation is still needed. In particular, a significant portion of the country's population still lacks access to quality water supply and sanitation services

<sup>359</sup> this is the first time in Moldova's history that a single central administrative body with clear responsibilities for implementing land improvement policies has been established

boration aims to unify river basin management plans, address flooding and water scarcity risks, and conserve biodiversity, particularly in the Lower Prut region.

## Russia

**Water management.** The federal law On Amendments to the Water Code of the Russian Federation and Certain Legislative Acts of the Russian Federation (No.657-FZ, dated 25 December) has been adopted. Under this law, municipalities, in coordination with regional authorities, must establish rules for the recreational use of water bodies by 1 March 2025.

The law also makes changes to the content of Master Plans for the integrated use and protection of water bodies. These plans no longer include measures related to water management, the protection of water bodies, mitigation of the negative effects of floods, or other adverse impacts of water. Additionally, the plans are no longer required to provide funding estimates for their implementation. Furthermore, the development of operational and improvement rules for reservoirs is no longer a requirement within these Master Plans.

The draft Water Strategy of the Russian Federation for the period until 2035 has been published. The Strategy outlines 5 key priorities and objectives: (1) preservation and restoration of water bodies; (2) guaranteed water supply; (3) protection of population and economic facilities from floods; (4) system management of the water sector, increasing the country’s technological sovereignty in the water sector; and, (5) development of international cooperation in the water sector.

Three pilot regions – Stavropol Krai, the Chechen Republic, and Tula Oblast – have been selected for the initial implementation of a unified register of water resources.<sup>360</sup> This register will include comprehensive data on freshwater stocks. Based on the findings of this pilot phase (concluding in October 2024), recommendations for the nationwide rollout of this register across all regions of Russia will be formulated.

As part of the following initiatives: (1) State Program ‘Reproduction and Use of Natural Resources’, more than 100 activities were financed, amounting to RUB 1.74 billion, to rehabilitate hydraulic structures in 44 regions of the Russian Federation; (2) ‘Clean Water’ Project, a total of 389 water supply facilities were commissioned. In 2024, work is planned for an additional 230 facilities.

Rosvodresursy<sup>361</sup> received over RUB 27.3 billion from the Russian Federation’s budget, primarily funded through payments for the use of water bodies. The largest contributors in the energy sector were hydropower plants of the Angara reservoir cascade, which accounted for RUB 3.2 billion.

**Agriculture.** The Russian agricultural investments decreased by 4% in the first 9 months of 2023 compared to the same period in 2022.

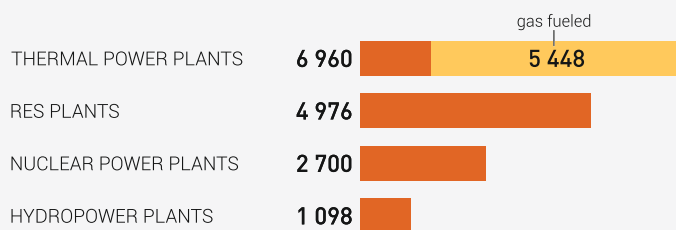
The Strategy for the Development of Organic Production until 2030 has been approved by Government Order No.1788-r, dated 4 July 2023. The Strategy aims to promote the growth of organic production and consumption, balance the domestic market and export of organic products, adopt and implement modern technologies in organic agriculture, and incentivize businesses to engage in organic production practices.

**Energy.** At the end of the year, electricity generation in Russia reached 1,151.6 billion kWh, while consumption totaled 1,139.2 billion kWh. The green energy sector contributed 6 GW, with investments amounting to RUB 600 billion. However, green energy’s share in total consumption remained below 0.8%. Capacity growth was driven primarily by wind power, while small hydropower capacity increased by 25 MW and solar power capacity by 44 MW.

In 2024, a total of 482 MW of green energy projects is expected to be commissioned. By the end of 2025, the newly commissioned green energy capacity is projected to include 645 MW from solar power, nearly 1.4 GW from wind power, and 128 MW from small hydropower. According to the Electric Power System Development Scheme and Program in Russia, 15,734.3 MW of generating capacity is planned to be commissioned between 2024 and 2029.

### FORECAST OF NEW GENERATION CAPACITIES BY 2029, MW

Source: Ministry of Energy RF



Infographics RG / Alex Chistov / Michail Kalmatskiy

Source: <https://rg.ru/2023/12/22/kilovatt-stanovitsia-chishche.html>

**Ecology and environmental protection.** In 2023, several federal environmental projects made significant progress: (1) ‘Clean Country’: 77 of the most hazardous sites of accumulated environmental damage

<sup>360</sup> to maintain integrated monitoring of drinking and household water uses

<sup>361</sup> one of Rosvodresursy’s key functions is administering revenues from fees collected for the use of federally owned water bodies. These revenues will be allocated for co-financing measures aimed at protecting water bodies and implementing flood control initiatives

were remediated; 66 landfills were decommissioned, including 19 in the Moscow region; (2) 'Integrated System of Solid Municipal Waste Management': 238 waste management infrastructure facilities were commissioned, with a combined capacity to process 19.493 Mt of waste annually, recycle 5.743 Mt of waste per year, and landfill 4.152 Mt of waste per year; (3) 'Clean Air': emissions were reduced by a total of 259.2 thousand t through implemented measures; 29 cities participated in an emissions quota experiment. The project aims to reduce emissions of "priority" pollutants that negatively impact the environment and human health.

Rosprirodnadzor continued its ongoing efforts to review and issue Integrated Environmental Permits (IEPs) to businesses<sup>362</sup>. According to the public register of IEPs, a total of 269 IEPs were issued by Rosprirodnadzor during this period.

**Actions towards carbon neutrality.** For the first time in Russia, regulatory entities have submitted reports on greenhouse gas (GHG) emissions. This requirement is mandated by Presidential Decree No.707 of April 20, 2022, which obligates entities emitting more than 150,000 tons of CO<sub>2</sub>-equivalent greenhouse gases into the atmosphere to submit these reports. Recognizing GHG emissions as a form of negative environmental impact, this decree aligns with the Russian Federation's broader climate goals. These goals include a 70% reduction in GHG emissions by 2030 compared to 1990 levels and achieving carbon neutrality by 2060.

**International cooperation.** Several important events took place in 2023, including: (1) XXIV Meeting of the Joint Russian-Azerbaijani Commission on the Samur River (July): the parties reviewed progress on shared initiatives and agreed on a work plan for the upcoming period (July); (2) 6<sup>th</sup> Joint Meeting of Environmental Ministry Panels of Russia and Belarus: discussions focused on the results and future prospects of 20 years of cooperation in transboundary water protection and use (October); (3) VII Meeting of the Joint Russian-Abkhaz Commission for Transboundary Water Protection and Use: the parties reported on surveys of the Psou River's main course<sup>363</sup> and bank protection structures within their respective areas of responsibility; agreements were reached on procedures for joint environmental impact assessments of planned economic and other activities (November); (4) XIII Meeting of the Joint Russian-Kazakhstan Commission on Transboundary Water Use and Protection: progress was reviewed on drafting water balances for the Bolshoi and Malaya Uzeni rivers, and agreements were made to enhance research cooperation in the basins of major rivers, including the Ural and Irtysh (December).

## Ukraine

**Water management.** Several basin council meetings were convened: (1) Southern Bug: progress achieved over the past five years was reviewed, and reports on the status of preparing the South Bug River Basin Management Plan (RBMP) were presented (November 13); (2) Tisza River: a meeting focused on the preparation of the Danube RBMP for 2025-2030. Discussions included methods for restoring hydromorphological characteristics of watercourses, experiences from restoration projects in Ukraine and Hungary, and methodological recommendations for assessing rivers in the Carpathian region (May 30); (3) Middle Dnieper River: the council addressed water and environmental challenges within the Ros' River basin. A key presentation highlighted the project aimed at "Reducing excessive flow regulation and improving hydrological conditions of the Ros' River" (April 26).

The Nagornyanska, Tashbunarska, and Izmail irrigation systems will be repaired as part of the Agrarian Odeschyna program, funded by the regional budget with an allocation of UAH 94.5 million. Additionally, the USAID Agrarian and Rural Development (AGRO) program will contribute UAH 36 million to modernize these irrigation systems by implementing modern resource-saving technologies and irrigation automation. Each project will cover a service area of at least 200 hectares, and water management organizations are required to contribute at least 30% of the total project budget as part of the sub-grant.

**Agriculture.** A new law governing the leasing of state-owned agricultural land has been enacted.<sup>364</sup> This legislation mandates the re-registration of all agricultural land currently utilized by entities such as the National Academy of Agrarian Sciences of Ukraine, the penitentiary service, and other state-owned enterprises. Under this law, the lease rate for these lands will be increased from 1% to 12% of their standard monetary value. Furthermore, the law allows for the sub-leasing of these lands through a competitive auction process.

According to the Draft Law of Ukraine "On Characteristics of Business Regulation in the Transition Period" (No.6013), farms will be restructured into business entities on preferential terms, ensuring that owners face no additional challenges or financial costs in the process.

The World Bank and the German Ministry of Agriculture are launching initiatives to support Ukraine's agricultural sector. The World Bank's "Ukraine Agriculture Recovery Inclusive Support Emergency" (ARISE) project aims to assist over 90,000 farmers in accessing concessional loans and grants for agricultural pro-

<sup>362</sup> in Russia, there are approximately 6,000 businesses that are required to obtain an Integrated Environmental Permit (IEP)

<sup>363</sup> the Psou River originates in mountains and ends in the point of inflow into the sea, not far from the Adler city and makes the border between Russia and Abkhazia

<sup>364</sup> about 3.2 million ha of agricultural land (7.5% of the total area) are in the permanent use of state-owned enterprises, institutions and organizations

duction. This project seeks to mobilize approximately \$1.5 billion in working capital to support Ukraine's agricultural sector. The German Ministry of Agriculture is providing €5 million to specifically develop Ukraine's horticultural sector. This funding will be used to support vocational education and consultancies, improve production processes and storage capacity, and foster the growth of horticultural start-ups.

**Energy.** The Energy Strategy until 2050 has been approved. This Strategy outlines a path towards carbon neutrality within the energy sector. Aligned with the objectives of the European Green Deal, it emphasizes a comprehensive approach to energy policy development and implementation. This includes creating a framework for the resilient and sustainable development of the Ukrainian economy.

The Cabinet of Ministers approved the Resolution on the implementation of an experimental project on the construction of the [Kakhovka hydropower plant](#)<sup>365</sup> and reconstruction after the destruction. The experimental project consists of two stages. First, the design of structures as part of the preparatory measures of the Kakhovka hydroelectric unit, as well as the design and construction of a support structure in the lower bay of the Dnipro hydroelectric power station, were foreseen. The second stage – survey, dismantling of destroyed structures and structures of the Kakhovka hydroscheme, development of a design for the construction of the Kakhovka HPP; construction of temporary dams in the upstream and downstream of the Kakhovka HPP.

"Hydro Energy Ecology of Carpathians" Ltd. has [patented](#) a new-generation damless hydropower technology. A pilot project with a capacity of up to 50 kWh is planned for implementation in Transcarpathia. The project aims to demonstrate the technology's functionality and environmental safety, paving the way for potential expansion to larger capacities. This innovative damless hydropower system addresses two critical challenges: managing water drainage during floods and generating electricity.

Ukraine plans to develop a wind farm near the Chernobyl Exclusion Zone.<sup>366</sup> The construction of the [Tiligul wind farm](#) in Mykolaiv region is expected to be completed in 2025. This project, with an installed capacity of 500 MW and a total investment exceeding €650 million, will be the largest wind power plant in Eastern Europe.

**Environmental protection.** The State Anti-Corruption Program on Environmental Protection, 2023-2025 was approved. The Program provides for: continued digi-

tization and public disclosure of up-to-date natural resource data; updating environmental registers and developing new information systems, integrated into the EcoSystems platform, which will streamline environmental services and make them accessible online; continuation of the national forest inventory, annual monitoring of the effectiveness of the unified state system of electronic timber accounting for all permanent forest users, and monitoring and systematization of data on the sale of 100% of untreated timber at auctions.

The Ministry of Environmental Protection and Natural Resources of Ukraine and the EU Delegation to Ukraine discussed the next steps toward establishing the Climate Office. The launch of this office is expected to provide substantial support for implementing Ukraine's Recovery Plan and aligning national legislation with EU standards. A key priority of the Climate Office will be the development and support of tailored climate financing approaches for Ukraine.

**International cooperation.** Reports indicate that Ukraine and Romania have reached a settlement regarding the long-standing dispute over the construction of the Danube-Black Sea deep-water shipping lane. The agreement was reached on the sidelines of the Ninth Meeting of the Parties to the Espoo Convention (Geneva, December 12-15).

Ukraine and the Republic of Moldova reached agreements on the sustainable use and protection of the Dniester River. The discussions also focused on coordinating and harmonizing actions in light of their status as EU candidate countries. Additionally, the parties reviewed the Regulation on Cooperation on Water Monitoring and Information Exchange in the Dniester River Basin (Ivano-Frankivsk, November 22-23).

The following events were held in 2023, including: (1) XVIII meeting of the Ukrainian-Slovak Commission on Border Waters: the parties reviewed cooperation on border watercourses for the period 2019-2023. Key topics included the implementation of hydraulic engineering and operational activities, measures for protecting the quality of border waters, the hydrometeorological situation in the region, and the development of joint international projects (Kaluza village, Slovak Republic, December); (2) XXV meeting of Ukraine and Hungary on border water management: the parties reviewed and summarized activities conducted from October 2021 to December 2023. Key issues on the agenda included the irrigation of border systems using water from the Borzhava and Tisza rivers, as well as exploring strategies for managing water scarcity (December).

<sup>365</sup> Kakhovka HPP is a last structure in the Dnieper reservoir cascade. It is located on the south of Ukraine, 5 km far from New Kakhovka city. With the destruction of the Kakhovka HPP, Ukrhydroenergo lost a station with a capacity of 343.2 MW and about 1.5 billion to 2 billion kWh of electricity, which the station produced. The company also lost maneuvering capacity to regulate peak loads, in particular, in the Kherson and Mykolaiv regions

<sup>366</sup> in 2018, the first solar farm was opened near the Chernobyl nuclear power plant. This project involved the installation of 3,762 solar modules, the construction and equipping of transformer substations, and the establishment of a robust system for the physical protection of the structures



## 11.6. Middle East

Seven out of the 10 [most water-stressed nations](#) are in the Middle East and North Africa. In those countries, the average water stress level is 820 percent, which means that the annual water withdrawal is eight times higher than the water supply from renewable resources. As of 2017, the countries with the highest water stress levels were: Egypt (6,420 percent), Bahrain (3,878 percent) and the United Arab Emirates (1,708 percent). To provide their residents with enough water, several countries in the region, particularly in the Gulf, rely on desalination.

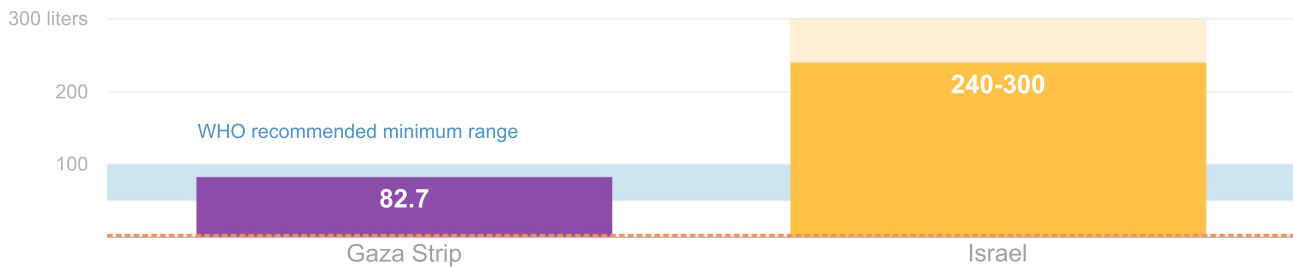
In response to growing water scarcity, **Egypt** is actively implementing new measures to mitigate the threat of water shortages. The government has committed to investing over \$4.7 trillion in water-related projects, including 30 new initiatives – nine assigned to the Ministry of Irrigation and 21 to the Ministry of Housing. To date, several large-scale projects have been executed in the water sector, notably the launch of the world's largest wastewater

treatment plant in Cairo and the construction of desalination plants along the country's coastline.

**Gaza's limited water access.** According to the Palestinian Water Authority, Gazans have long lacked access to the minimum amount of water required for daily needs.<sup>367</sup> Most of their water supply comes from the coastal aquifer, which is severely over-extracted and affected by saltwater intrusion, sewage contamination, and near depletion. As a result, this water is salty and brackish, with up to 96 percent deemed unsuitable for human consumption.

United Nations are [warning](#) that millions of Palestinians face dehydration and are at risk of waterborne disease in an escalating water crisis as Israel continues to withhold essential supplies from Gaza in the wake of Hamas' Oct. 7 attack. The last functioning desalination plant shut down on Sunday due to lack of fuel, as did the last functioning wastewater treatment plant.

### Daily water consumption estimates before the war, liters per capita



Sources: UN Atlas of Sustainable Development 2020 (Israeli consumption); Palestinian Water Authority (2021 Gaza consumption)  
Graphic: Rachel Wilson, CNN

**Jordan** signed an [agreement](#) to receive a grant worth \$845.1 million from the United States, as part of annual U.S. financial aid to the Arab country. The grant will support Jordan in its efforts to implement a number of development projects and economic reforms in sectors such as public finance, water, energy, education, health and housing, among others.

**Iraq's** Ministry of Water Resources has warned that Iraq is facing its worst water shortage in a century with 7 million people experiencing reduced access to the resource. According to the United Nations, 90 percent of the country's rivers are polluted and Iraq will meet only 15 percent of its water demands by 2035. Moreover, Iraq is considered a country with [high water stress](#). About 98% of Iraq's surface water comes from the Tigris River and the Euphrates River, both of which originate from Turkey. It is suggested that by 2040, the Tigris River and the Euphrates River will be completely dry within the borders of Iraq.

**Habbaniyah Lake** is rapidly shrinking. Due to the declining flow of the Euphrates River from neighboring Syria, a barrage in Ramadi<sup>368</sup> began redirecting the water away from the lake and towards Fallujah. 13,000 residents who live around the lake have been affected by shortages caused by redirection of water. The crisis in Habbaniyah Lake is just one aspect of Iraq's environmental threats.

One of the most significant climate disasters of all 2023 was the **Libya floods** in September. Around 11,000 people are thought to have lost their lives when Storm Daniel led to flash floods. One impact was the bursting of two dams near Derna. Rivers flooded in five provinces and almost 1 million people were affected, representing more than 10% of Libya's population. This kind of extreme event has become up to 50 times more likely and up to 50% more intense compared to a 1.2°C cooler climate. Source: Counting the cost 2023: A year of climate breakdown, Christian Aid, December 2023.

<sup>367</sup> according to a UNGA resolution adopted in July 2010, every person shall have a right to sufficient water for personal and domestic uses, between 50 and 100 litres of water per person per day

<sup>368</sup> a barrage in Ramadi was built in 1955 to fill Habbaniyah Lake with water

