



# Section 11

Key Water  
Developments  
in the World

## 11.1. Africa

**Construction of the Grand Ethiopian Renaissance Dam on the Nile River in Ethiopia.** As of the end of 2019, the dam is 70% complete. According to Ethiopia, no one can halt the project, but Egypt is concerned about the dam's impact on its water resources and with how much water will be used by Sudan. [In October](#), Egypt said that talks with Sudan and Ethiopia have reached a deadlock, and it called for international mediation and help in reaching a fair and balanced agreement. [On 6 November](#), the Foreign Ministers of Egypt, Ethiopia agreed to work toward completion of an agreement by 15 January 2020, and would attend two meetings in Washington, D.C. on 9 December 2019 and 13 January 2020 to assess and support progress. If an agreement is not reached by 15 January 2020, the foreign ministers agree that Article 10 of the 2015 Declaration of Principles will be invoked. Article 10 stated that "The Three Countries will settle disputes, arising out of the interpretation or implementation of this agreement, amicably through consultation or negotiation in accordance with the principle of good faith." The foreign ministers noted their agreement to hold four technical governmental meetings at the level of water ministers. The ministers agreed that the World Bank and the United States would support and attend the meetings as observers. [On 9 December](#), the Ministers of Foreign Affairs of Egypt, Ethiopia and Sudan met again through the USA and the World Bank. They noted the progress achieved in the technical meetings among the Ministers of Water Resources in Addis Ababa and in Cairo. The Ministers agreed that the strategic direction of the next two technical meetings should be the development of technical rules and guidelines for the filling and operation of the Grand Ethiopian Renaissance Dam, the definition of drought conditions, and drought mitigation measures to be taken.

Source:  
<https://home.treasury.gov/news/pressreleases>

**Developments with the Inga III project on the Congo.** With a capacity of 11,000 MW, the Inga III project is part of Grand Inga, a series of dams designed to exploit up to 40,000 MW of electricity from the Congo River. If successful, Inga III will become the largest hydropower plant in sub-Saharan Africa. Its development was entrusted by the Congolese government, in October 2018, to two international consortia, led by China Three Gorges Corporation and Spanish construction firm ACS. In October 2019, a [report](#)

published by the Congo Research Group and Resource Matters revealed serious disagreements between groups of Spanish and Chinese developers on the constitution of a joint consortium, required by the Congolese presidency, to carry out the project. This report also demonstrated how the Inga III project, which was being negotiated behind closed doors, was intended for outside consumption and did not guarantee access to electricity for the millions of Congolese who are forced to go without. The report criticized the Inga III process for its lack of inclusion and transparency, and in particular the uncertainty that it will address the crippling energy needs of 90 million Congolese. In [November 2019](#), the South African parliament has heard a submission from two leading civil society organizations, calling for them to stop government funding to the Grand Inga Dam Project. The South African government signed a treaty and Memorandum of Understanding with the DRC government, committing the country to buying 2500 MW of electricity from the hydropower and paying for the transmission lines from DRC to South Africa.

**Construction of the Isimba HPP on the Nile River in Uganda.** In 2019, the World Bank Inspection Panel completed its Investigation Report regarding the Bank-financed Uganda Private Power Generation (Bujagali), Water Management and Development, and Energy for Rural Transformation III Projects. The Request for Inspection was submitted by members of the community from the Kalagala Offset Area (KOA) in Uganda. The complainants raised concerns about potential social and environmental harm caused by the construction of the Isimba Dam and the consequent flooding of the KOA. The Panel's investigation found the World Bank in non-compliance with its policies on Environmental Assessment, Natural Habitats, Project Supervision and Investment Project Financing, observing that the Bank did not address funding and capacity constraints to ensure the maintenance of the KOA. On 3 December 2019 the Board of Executive Directors considered the Panel's report and approved the Management Action Plan, which details how the World Bank and Uganda will work together to protect the extended KOA.

Source:  
[www.inspectionpanel.org/panelcases/private-power-generation-bujagali-watermanagement-and-development-and-energyrural?deliveryName=DM46019](http://www.inspectionpanel.org/panelcases/private-power-generation-bujagali-watermanagement-and-development-and-energyrural?deliveryName=DM46019)

**Impact of the 2018/19 drought on the Zambezi River.** The Kariba dam, the world's biggest man-made reservoir, was close to decommissioning. As of 26 [November](#) 2019, water levels at Kariba Dam receded to the danger mark of 477,19 metres above sea level (57% full), which were just about two metres above the minimum water generation threshold required to turn the turbines. In this situation left the [Zambezi River Authority](#) (ZRA) with no option than to reduce water volumes for Zambia and Zimbabwe's hydropower generation, on which the two countries depend on for most of their electricity supply. The dire situation has come at a time when South Africa's power utility, Eskom, a major supplier of electricity to Zimbabwe, is also facing a critical shortage of power. Currently Zimbabwe and Zambia are planning another power project upstream on the Zambezi, [Batoka Gorge Hydro-Electric Scheme](#), to address electricity shortages. In 2019, ZRA chose a consortium of Power Construction Corporation of China Ltd. and General Electric of US on a build, operate and transfer financial model of this the US \$4 billion project. The project will generate 2,400 MW of electricity to be shared equally by two countries and feed into the regional grid. In [December](#) 2019, the Council of Ministers of the ZRA has also said it is considering alternative sources of energy such as solar as back-up in light of perennial low inflows into the Kariba Dam, which needs three rainfall seasons to fill up.

**Sources:** [www.zimetro.co.zw/kariba-dam-waterlevels-further-recede](http://www.zimetro.co.zw/kariba-dam-waterlevels-further-recede);  
[www.chronicle.co.zw/ministers-zra-mull-alternativeenergy-sources/](http://www.chronicle.co.zw/ministers-zra-mull-alternativeenergy-sources/)

**The Victoria Falls became shallow.** The flow of Victoria Falls, with a height of roughly 108 meters, has been reduced to a trickle. Zimbabwe officials say drought had reduced water levels at the falls to their lowest in 25 years. Photos of the waterfall at the beginning of the year and at the end, when water level decreased, are presented further.

**Source:**  
<https://indianexpress.com/article/explained/explained-why-victoria-falls-are-down-to-a-trickle-6156281/>

**Swedish-owned Ngonyezi Projects has entered into a non-consumptive water use agreement with Zimbabwe National Water Authority**, which will see the installation of a 2,000-MWh Pumped Storage Hydro facility and 300-MW floating solar PV plant. In terms of the design, it is anticipated that the solar PV project will require 500 ha of reservoir surface for solar panels. The water will cool the panels, providing higher efficiency,



Victoria Falls  
Credit: Reuters, 17 January 2019



Victoria Falls  
Credit: Reuters, 4 December 2019

and the panels covering the surface water will reduce algae growth and evaporation by 20 million m<sup>3</sup>/year.

**Source:**  
<https://www.hydroreview.com/2019/11/18/zimbabwe-includes-pumped-storage-hydro-in-renewable-energy-strategy/#gref>

**In July 2019, Tanzanian President John Magufuli officially inaugurated the construction of the 2,115 megawatts Nyerere Hydropower Project** located along the Rufiji River, previously known as the Stigler Gorge Project. The dam will be fourth largest in Africa and ninth largest in the world. The power station is expected to produce 5,920 GWh of power annually. The US \$3-billion project at Stiegler's gorge inside the Selous Game Reserve, a UNESCO World Heritage site, is being jointly built by two Egyptian companies, Arab Contractors and El Sewedy Electric Co, which are intermediary firms for actual contract with [PowerChina](#). The World Heritage Center, IUCN, the WWF, and local groups called for a complete stop to dam construction and forest clearing; restoration of the World Heritage site; and consideration of more sustainable energy sources. An [independent technical review](#)

commissioned by IUCN concluded that the strategic environmental assessment of the Rufiji hydropower project inside the World Heritage site falls “fundamentally short of both international and national guidance for a [strategic environmental assessment]”. The [World Heritage Committee](#) has urged Tanzania not to proceed with it. At its session in Baku in July 2019, the Committee concluded that the project would likely lead to irreversible damage to the site’s Outstanding Universal Value and hence fulfil the conditions for removal of the property from the World Heritage List, in accordance with Paragraph 192 of the Operational Guidelines.

Sources: [www.xinhuanet.com/english/2019-07/27/c\\_138261370.html](http://www.xinhuanet.com/english/2019-07/27/c_138261370.html);  
[www.iucn.org/news/world-heritage/201912/iucn-outsourced-paper-finds-no-proof-rufiji-dam-project-can-meet-tanzanias-development-needs](http://www.iucn.org/news/world-heritage/201912/iucn-outsourced-paper-finds-no-proof-rufiji-dam-project-can-meet-tanzanias-development-needs);  
[www.transrivers.org/2019/2661/](http://www.transrivers.org/2019/2661/)

**Ghana plans more mini hydropower plants** across the country to increase power supply from the national grid. The Minister for Energy said this when he inspected completed works on the construction of civil structures of a 42-kW Tsatsadu mini hydropower project at Alavanyo-Abehenease in the Volta Region. The construction of the mini hydro power plant started in 2005 but stalled before resuming in 2017. It is estimated at US \$400 thousand and, when completed, will be the first in Ghana. Generation from the plant was estimated for seven months in a year after.

Source: [www.hydroreview.com/2019/09/30/ghana-announces-plans-to-build-more-mini-hydropower-plants/?topic=35309](http://www.hydroreview.com/2019/09/30/ghana-announces-plans-to-build-more-mini-hydropower-plants/?topic=35309)

**Cape Town’s Water Strategy was approved by the City Council** on 30 May 2019 following a period of public comment. The new strategy is different in that it is the first roadmap to support Cape Town in becoming more resilient to drought, climate change and other water-related shocks and stresses. At its simplest, the strategy is about avoiding another Day Zero. The strategy is also about building a more equitable, socially just city by improving access to water and sanitation – something that received limited attention during the water crisis, wise use of water, sufficient, reliable water from diverse sources, shared benefits from regional resources, and about a water sensitive city by 2040. There are three obvious indicators in the water strategy that deal with water supply, demand management and revenue collection. These indicators can be used to check on progress. The first indicator deals with alternative water sources, such as

desalination, reuse and groundwater, which by 2040 will reduce the supply of water from storage dams to about 75% as compared with the current supply of 95%. Within the second indicator, the water strategy proposes that future restrictions will be based on the volume of stored water in the dams as of 1 November at the beginning of each hydrological year. Within the third indicator, the city aims to improve its revenue collection by achieving a collection rate of 95% or more.

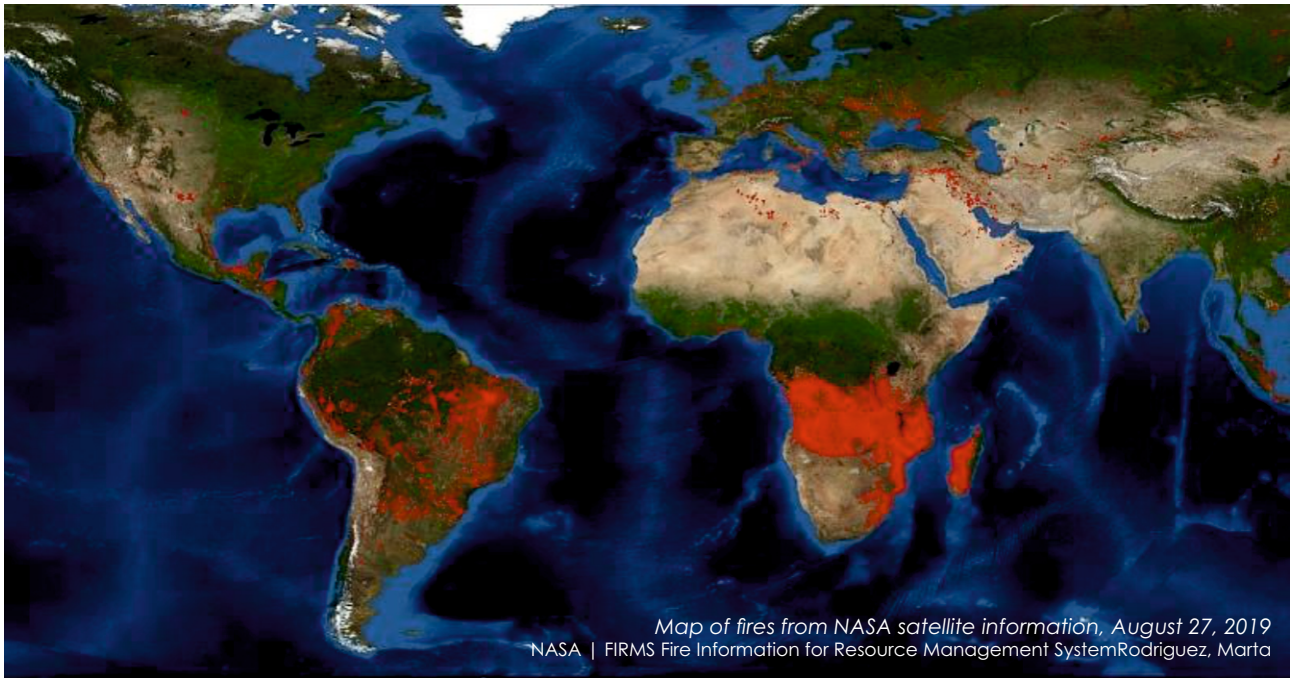
Source: [www.news.uct.ac.za/article/-2019-07-22-cape-towns-water-strategy-what-to-watch](http://www.news.uct.ac.za/article/-2019-07-22-cape-towns-water-strategy-what-to-watch)

**In the east of Africa, devastating floods have displaced hundreds of thousands of people.** South Sudan has been swamped by more than three months of unprecedented rainfall. Over 900,000 people have been affected. Before the flooding, nearly two-thirds of the areas involved reported critical levels of malnutrition. The government of South Sudan declared a state of emergency on 26 October. In Somalia, more than half a million people suffered from flooding which has destroyed infrastructure and agriculture. In neighboring Ethiopia, over 200,000 people had to leave their homes. In Kenya, at least 17,000 people were displaced and 48 died. East Africa’s rains have been amplified by a weather phenomenon that is similar to the El Nino phenomenon in the Pacific Ocean. It’s called the Indian Ocean Dipole, and some consider its effect on South Africa to be the most powerful since 2006.

Source: [www.circleofblue.org/2019/wef/whatsup-with-water-november-11-2019-legionnairesdisease-part-ii/](http://www.circleofblue.org/2019/wef/whatsup-with-water-november-11-2019-legionnairesdisease-part-ii/)

**Wildfires in Africa.** According to data from the Global Forest Watch, in August there has been far greater number of fires in DR Congo, Brazil, Angola, Zambia, and Mozambique. The fires in Africa are almost in the savannahs and not in the rainforests. According to experts, this is a natural cycle in the Savannah – much of the vegetation burns in the dry season. Much of Africa’s annual fires is the result of traditional agricultural and pastoral practices and does not affect large forest areas, but grasslands and farmland. Angola released that in recent years the country had lost a large area of native forests due to uncontrolled fires of various origins, including hunting.

Source: <https://www.euronews.com/2019/08/29/should-we-worry-more-about-the-wildfires-in-africa-or-in-the-amazon>



## 11.2. Asia

### Afghanistan

According to the [National Statistics and Information Authority](#), the population of the country is 32.2 million people; its territory covers 652,864 square kilometers. Afghanistan's economy grew by 3.9% in 2019 driven by easing of drought conditions and rapid agricultural growth. At the same time, there is political uncertainty and security challenges in Afghanistan. Presidential elections were held in September 2019, but the results remain contested.

**Droughts and floods.** Afghanistan experienced the worst drought in a decade in 2018-2019 with about [13.5](#) million people severely food insecure. Several drought-affected provinces were also hit by flash floods in March and April 2019, further exacerbating the humanitarian situation. Seasonal flooding in early 2019 affected about [300,000](#) people. Of 117,000 new disaster displacements [recorded](#) in 2019, 111,000 were triggered by flooding in the western provinces of Badghis, Farah, Ghor, Helmand, Herat and Kandahar. [As of December 2019](#), millions of people are still struggling to recover from the devastating effects of the drought and flash floods. Hunger and malnutrition remain at dangerously high levels despite the passing of the drought with 14.3 million people forecast to be in crisis or emergency food insecurity in the first months of 2020. [As of June 30](#), humanitarian partners reached 5.2 million people affected by drought. Of

those reached, 452 thousand were in places of displacement, while the remainders were in drought-affected rural areas. International assistance provided to Afghanistan: [EU allocated](#) €898 thousand to assist 2,000 families in Afghanistan's western province of Badghis; [UN](#) – US \$733 million; [Japan](#) – US \$2.7 million to provide food assistance to 173 thousand vulnerable people.

**Turkmenistan and Afghanistan discuss cooperation in the water management sphere.** In April, the 3<sup>rd</sup> meeting of the Coordination Commission on Water Management Issues between Turkmenistan and Afghanistan was held; it considered current issues related to the development and strengthening of transboundary water cooperation between two countries. Among other topics, the sides exchanged views on the use of waters of the Amu Darya River – the “road of life” and the source of wealth for more than 25 million people living in its lower basin.

*Source:* <https://orient.tm/en/turkmenistan-and-afghanistan-discuss-cooperation-in-the-water-management-sphere/>

Balkh Agriculture, Irrigation, and Livestock Directorate in coordination with ICOM **launched a training program**, in which some 3,000 residents, both men and women, received water management training.

*Source:* <https://www.mail.gov.af/en/3000-balkh-residents-receive-irrigation-management-training>

## ADB Operations in Afghanistan

**Agriculture, water resources, and rural development.** In 2019, the first phase of the Arghandab Integrated Water Resources Development Project started (US \$231.09 million); additional financing was provided for the Panj Amu River Basin Sector Project (US \$18.28 million); the Road Rehabilitation and Maintenance Program was continued (US \$12 million).

ADB [approved a US \\$348.8 million grant](#) to help in the development of water resources in Kandahar province through the expansion of Dahla Dam under the [Arghandab Integrated Water Resources Development Project](#) (see "[Activities of International Partners in Central Asia](#)"). Construction works will include raising the main dam, six saddle dams, spillways, and other associated structures to increase the full reservoir level by 13.6 meters and storage capacity from 288 mcm to 782 mcm.

**Energy.** Second Solar Energy Development Project was continued (US \$40 million); tranches 6 and 7 of the Energy Supply Improvement Investment Program (US \$55 million and \$80 million, respectively) and tranche 6 of the Afghanistan-Uzbekistan Transmission Line Project were allocated (US \$110 million).

In May 2019, [ADB issued](#) a US \$4 million loan to build and operate a 15.1-megawatt solar power plant. The aim of the project is to reach a goal set by the government to generate 40% share/5,000 MW of the country's total energy capacity from solar by 2032.

### Projects planned for 2020-2021 by sector:

**Agriculture, natural resources, and rural development:** Kabul Managed Aquifer Recharge Project (US \$50 million); Arghandab Integrated Water Resources Development Project (Phase 2) (US \$228.91 million); Horticulture Value Chain Development Sector Project (US \$75 million, additional financing); Climate-Resilient Livestock Value Chain Enhancement Sector Project (US \$75 million);

**Energy:** Energy Supply Improvement Investment Program-Tranche 8 (US \$120 million); Energy Sector Development Program (US \$50 million); TAPI Gas Pipeline Project (US \$100 million); Road Network Maintenance Rehabilitation Project (US \$160 million); Renewable Energy Development Project (solar and wind energy, US \$70 million).

**Source:** Afghanistan Country Operations Business Plan for 2019-2021; <https://www.adb.org/documents/afghanistancountry-operations-business-plan-2019-2021>

## World Bank Operations in Afghanistan

Since April 2002, the International Development Association (IDA) has committed over US \$4.70 billion for development and emergency reconstruction projects, and six budget support operations in Afghanistan. This support comprises over US \$4.26 billion in grants and US \$436.4 million in no-interest loans known as "credits". The Bank has 11 active IDA-only projects (US \$879 million) and 15 projects jointly funded with the Afghanistan Reconstruction Trust Fund (ARTF), with net commitment value of over US \$1.6 billion from IDA.

### Ongoing operations

**Agriculture and water management, and land management.** National Horticulture and Livestock Project, NHLP (Grant – US \$190 million/Afghan Farmers' Contribution – US \$28.2 million): almost 32.5 thousand ha of new pistachio and fruit orchards were established in 34 provinces; over 32 thousand ha of existing orchards were rehabilitated; more than 143 thousand kitchen gardening schemes were established; and 205 thousand livestock farmers were supported.

Afghanistan On-Farm Water Management Project (ARTF Grant – US \$70 million): by its closure on 31 December 2019, good progress was achieved in the agreed targets and disbursing grant proceeds. The cumulative disbursement rate reached 95%. Over 742 km of canals, serving around 7,700 hectares of land, were rehabilitated, and 621 Irrigation Associations were established. 120 Land Laser Leveling units were distributed by the project to private operators serving about 1,400 ha of land. The project team showcased high efficiency irrigation technologies at 51 demonstration sites and supported 122 Farmer Field Schools, covering over 4,000 farmers. The Farmers' Call Center (FCC) [was established](#) and equipped with computers linked to a database on agricultural issues. The experts field about 250-300 calls a day, covering a wide range of topics – crop disease, irrigation, livestock disease, planting, and fertilizing.

Irrigation Restoration and Development Project (IDA Grant – US \$97.8 million/ARTF Grant – US \$118.4 million/Government of Afghanistan – US \$3.5 million): progress had been made in all areas. In the irrigation component, a total of 200 irrigation schemes have been rehabilitated, covering some 284 thousand ha of irrigation command area and 521.3 thousand farmers. A total of 25.68 km (out of 58.26 km of project target) critical river basin erosion protection has been completed so far in various parts of the country.

In the small dam component, a feasibility study on six dams was developed. Dam Safety Inspection reports were prepared for 10 existing dams in various parts of the country. In the hydromet component, installation of 127 hydrological stations and 56 snow and meteorological stations was completed.

Afghanistan Strategic Grain Reserve Project (IDA Grant – US \$20.3 million/Japan Social Development Fund Grant – US \$9.7 million): the project enabled the Ministry of Agriculture, Irrigation and Livestock to establish a strategic wheat reserve to be available to Afghan households to meet their needs following any unforeseen emergency situation that affects access to wheat for their consumption, and to improve the efficiency of grain storage management. The project supports the establishment of a governmental semi-autonomous corporation to be in charge of managing the grain reserve of the country and coordinate its activities with other governmental agencies and donors.

Afghanistan Land Administration System Project (IDA Grant – US \$25 million/ARTF Grant – US \$10 million): the project's objective is to support the development of the Afghanistan land administration system and provide the population in selected areas with improved land registration services, including issuance of titles and occupancy certificates (OCs).

**Energy.** CASA-1000 (IDA Grant/Credit – US \$526.5 million): Afghanistan is expected to receive 300 MW of electricity import from Tajikistan and the Kyrgyz Republic through the existing 220 kV AC lines from Sangtuda substation, and Tajikistan to Chimtala substation in Kabul via Pul-e-Khumri. CASA-1000 came into effect in January 2018. Three contracts for the HVDC transmission line in Afghanistan were signed in December 2017. Survey and design works are in the final stages. Construction of the line in Lot 3 started in January 2020, while work in Lot 1 and 2 is expected to begin in March 2020.

The Scaling Solar project<sup>82</sup> is located in Herat province (40 MW) and, being the largest renewable plant in the country, will have a significant impact on the energy landscape as Afghanistan currently relies on imported electricity.

Naghlu Hydropower Rehabilitation Project (US \$83 million): 50 MW of previously nonopera-

tional capacity of Naghlu Hydropower Plant was revived by rehabilitating Unit 1 and overhauling Unit 3. Unit 2 also requires overhauling. Work on dam safety enhancement is also underway. The contract for procurement of two additional pumps, required to completely drain both galleries, is signed and the pumps are expected to be installed in April 2020. The contract for conducting the Environmental and Social Impact Assessment of Naghlu dam is expected to be signed in March 2020. It is planned to expand the Kajaki Dam and renovate and revive full capacity of Darunta HPP.

WB [approved a financing package](#) of US \$98.8 million consisting of guarantees, a loan, and swaps to support two gas-to-power energy projects in Afghanistan. The projects aim to increase the amount of domestically generated electricity while leveraging private financing for the country's energy sector.

**Gender.** Women's Economic Empowerment & Rural Development Project (US \$25 million by IDA; US \$75 million by ARTF); Strengthening Women's Economic Empowerment Project (US \$2.7 million by Japan Social Development Fund).

*Source:* World Bank Group in Afghanistan: Country Update; <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/389621554235509595/the-world-bank-group-in-afghanistan-country-update>

### FAO Operations in Afghanistan

The [Country Programming Framework](#) (CPF 2017-2021) sets out 4 strategic pillars of expertise to guide FAO partnership with and support to the Government of Islamic Republic of Afghanistan: (1) Better governance through improved capacity for policy planning, land reform, decentralization, and management of common natural resources; (2) Fostering expansion of irrigation and field water management; (3) Intensive agriculture for surplus commercialization, value chains development, and job creation; (4) Supporting vulnerable farmers for improved food & nutrition security, resilience, and emergency response to natural and man-made disasters and climate change.

The **fourth phase of the FAO's irrigation project** "Enhancing Rural Livelihoods through Improved Irrigation Facilities in Bamyán, Kabul and Kapisa Provinces" started (with a total cost of US

<sup>82</sup> Expanded private investments in solar photovoltaic systems projects

\$9.9 million). The project aims to rehabilitate about 28 irrigation systems with nearly 191 km canal length covering 7,000 hectares of land, which will directly benefit over 16,000 farming families through increased agricultural production and productivity. It is expected to increase the wheat yield by 25% from the current value.

Upon the request from the Ministry of Agriculture, Irrigation and Livestock (MAIL) through South-South Cooperation Framework, experts from Thailand **conducted an extensive needs assessment** of the newly established animal feed quality control laboratory of MAIL in Kabul. The scope of the two-week mission was to take stock of the existing laboratory equipment, assess the capacity of the Afghan laboratory technicians and conduct required technical training to these laboratory staff.

About 75% of Afghan households depend on crop and livestock production for their income, and access to quality feed determines animal productivity, health and welfare. In 2018-2019, **FAO supported** thousands of drought-affected families across the country with quality livestock feed.

FAO and GCF have joined forces to **implement the first-ever** GCF project in Afghanistan that focuses on building the capacity of Afghanistan's National Environmental Protection Agency (NEPA). The project is funded by GCF that provides US \$300 thousand for its implementation.

**Planned projects.** Integrated Emergency Agriculture and Livelihood Assistance to Food Insecure Farming Families (2020-2021; US \$2.9 million); Emergency Agricultural-Livelihoods Safeguarding and Rebuilding Livelihoods and Eroded Coping Capacity (2020; US \$2.2 million).

Source: [www.fao.org/countryprofiles/index/en/?iso3=AFG](http://www.fao.org/countryprofiles/index/en/?iso3=AFG)

### USAID Operations in Afghanistan

**Agriculture and water management.** In 2019, a number of projects was continued, including on support to value chains in crop and livestock production, active promotion of innovations in agriculture, research and innovations in grain crops, etc. The following projects were completed: Commercial Horticulture and Agricultural Marketing Program (CHAMP) (February 2010 – December 2019, US \$71 million); On-Farm Water Management Project (OFWMP), Second Phase (January 2016 – Dec 2019; USAID contributed US \$24.2 million of the total US \$45 million).

Source: <https://www.usaid.gov/afghanistan/agriculture>

USAID supports agricultural education and collaborates with several universities in Afghanistan. It hosted the National Agriculture Education, Research, Extension and Economic Conference (July 15-17, 2019), which endorsed the establishment of a National Agriculture Research and Education Council (NAREC), a platform for policy dialogue and technical cooperation between Afghan ministries and agencies, and development partners.

Source: <https://wadsam.com/afghan-businessnews/usaidsupports-narec-forum-to-resolve-ruralissues-in-afghanistan/>

**Economic growth.** The following projects were continued: Women in the Economy (July 2015 - June 2020, US \$71.5 million); Afghanistan Investment Climate Reform Program (March 2015 - March 2022, US \$13 million); Multi-Dimensional Economic Legal Reform Assistance Program (February 2018 - February 2023, US \$20 million).

Source: [www.usaid.gov/afghanistan/economicgrowth](http://www.usaid.gov/afghanistan/economicgrowth)

**Energy development.** Afghanistan's national utility company Da Afghanistan Breshna Sherkat (DABS) announced that a wind power project will be launched in Herat province. Costing US \$43 million, the project will produce 25 MW of electricity.

Source: <https://wadsam.com/afghan-businessnews/afghanistan-increases-use-of-renewableenergy-sources/>

**Infrastructure.** North-South Power Transmission Enhancement (2014-2021): USAID provided US \$104 million of this US \$216 million infrastructure project to supply electricity to one million people in 15 previously unserved areas in rural and urban Afghanistan. Construction of the transmission line and substations will accommodate both domestically produced power and imports from Afghanistan's northern neighbors.

Energy Supply Investment Program (2016-2020): USAID provided US \$40 million of this US \$75 million project to build a transmission line and substation from Doshi to Bamyan that will provide low-cost power to Bamyan and other provinces in central Afghanistan.

Kabul Managed Aquifer Recharge (2015-2020): USAID provided US \$7 million to ADB to pilot-test managed aquifer recharge and aquifer storage and recovery technologies as one solution to addressing the rapidly diminishing domestic water supply for Kabul City.



U.S. Geological Survey (USGS) Water Supply Data Monitoring and Analysis (January 2018 - December 2022, US \$1 million). USGS, through support from USAID, is building the capacity of the Ministry of Energy and Water (MEW) to improve management of the Kabul River Basin through increasing water-data availability and analysis.

Source:  
<https://www.usaid.gov/afghanistan/infrastructure>

**Women empowerment and gender.** Work was continued on gender based violence treatment and countering trafficking in persons.

Source:  
<https://www.usaid.gov/afghanistan/genderparticipation-training>

## China

The early March saw China's **"Two Sessions"** of the National Committee of the Chinese People's Political Consultative Conference and the National People's Congress. In 2018, China achieved a growth rate of 6.6% (the slowest year of growth since 1990). President Xi has again stressed how important it is to stick to the construction of an eco-civilization and the prioritization of ecology. Pollution control, as one of the three tough battles (the other two are preventing financial risks and reducing poverty) for the Chinese government, was further continued in 2019, with focus on war on water, air, and soil pollution. The Yangtze River Economic Belt (YREB) will still be the focus of the construction of eco-civilization, with the help from the legislation of the Yangtze River Protection Law. In this context, the [Action Plan for the Uphill Battle for the Conservation and Restoration of the Yangtze River](#) was issued. It proposes that over 90% of the dark and odorous water bodies will have been under control in the built areas of the cities at or above prefectural level in the Yangtze Economic Belt. YREB encompasses 9 provinces and 2 municipalities, involving 1/5 of China's total land area and supporting 600 million people with almost 40% of China's GDP.

Source:  
[www.chinawaterrisk.org/resources/analysisreviews/two-sessions-reform-transform/](http://www.chinawaterrisk.org/resources/analysisreviews/two-sessions-reform-transform/)

The Ministry of Ecology and Environment (MEE) released the **2018 State of Ecology and Environment Report** (SOEE) (May 29). This is the first SOEE report that looks at China's environmental status since the implementation of the [Water Pollution Prevention and Control Law](#) and the announcement of the MEE reform in March 2019.

Some key points of the report are:

- Central government upped funding of environmental protection and pollution control to ¥255.5 billion, which is 5x compared to the ¥49.7 billion in 2017;
- China has delineated ecological protection "red lines" for 15 provinces/municipalities;
- the rectification rate of problems in 1,586 water resource bodies has reached 99.9%;
- 1,009 out of 1,062 black and smelly water bodies in 36 major cities have been fixed; and
- 8% of provincial-level (or larger) industrial parks have built centralized wastewater treatment facilities and automatic monitoring devices.

As for water quality, the report shows some significant improvement in several water-related aspects but also emphasized that much efforts still needed to win the "war on pollution": groundwater worsened drastically: both groundwater and shallow groundwater quality have dropped significantly: with the proportion of groundwater stations with "good" and "excellent" quality plunging almost 3x compared to last year; whereas the proportion of shallow groundwater stations with "very bad" quality surged >3x. This may be rather reflecting the true state of groundwater as monitoring stations have up 2x from 5,100 to 10,168 stations. Last year, the monitoring of groundwater functions was dispersed across various ministries, but now under the ministry reform, MEE is fully in charge of monitoring the nation's ecological environment and responsible for supervising and preventing groundwater pollution. At the same time national surface water quality continues to improve across all Grades<sup>83</sup>. Water quality of key lakes & reservoirs has finally improved since its decline in 2015. The share of key lakes & reservoirs with Grade I-III improved from 63% in 2017 to 67% in 2018. The proportion of water bodies that are "unfit for human contact" (Grade IV-V+) also improved from 11% to 8%. The overall quality of China's Main River Basins has gradually improved from 2016 to 2018. Grade I-III water improved from 71.8% to 74.3%; Grade IV-V slightly improved from 19.8% to 18.9%; and Grade V+ improved from 8.4% to 6.9%. Southern rivers (Yangtze and Pearl) are doing relatively well and 5 Northern rivers (Yellow, Songhua, Huai, Hai, and Liao) continue to struggle in reaching the Water Ten target of 70% surface water

<sup>83</sup> In China, water quality is classified into Grades: from I to VI, with VI meaning the strongest pollution

meeting Grade III or better by 2020. Most likely the Yellow River will be the first to meet the target. By 2020, the Grade V+ surface water quality of the main river basins must also be controlled fewer than 5%. At present, only Yangtze and Huai Rivers have met this target (Pearl almost meets the target, currently at 5.5%). Yangtze is the only river that meets both “70% (Grade I-III)” and “<5% (Grade V+)” targets.

Source:

[www.chinawaterrisk.org/resources/analysisreviews/2018-state-of-ecology-environment-reportreview/](http://www.chinawaterrisk.org/resources/analysisreviews/2018-state-of-ecology-environment-reportreview/)

The National Development and Reform Commission and the Ministry of Water Resources presented **an action plan to tighten water consumption** (15 April) to improve efficiency in the use of natural resources and better protect the environment while boosting economic growth. China has water shortage. Each year, the country faces shortfall of 50 billion m<sup>3</sup> of fresh water. China's water resource per capita is only one-third of the world's average. Regional disparity has made it worse. Southwestern and southern parts of the country have rich water resources while one-fourth of provincial regions are facing severe lack of water. In industrial and agricultural production, more technologies can help save such resource. It also applies to China's urbanization process, as now only 11% of towns can process waste water. China lags behind leading economies in water-use efficiency. Every ¥10 thousand in industrial added value consumes 45.6 m<sup>3</sup> of water, double that for developed economies. Water conservation should be promoted from developing, using and protecting the natural resource with careful allocation, said E Jingping, minister of water resources. Projects that do not pass water conservation assessments will not be approved. Universities will join efforts to save water under a new evaluation system. By 2020, water consumption per ¥10 thousand (US \$1,487) of GDP is expected to drop by 23% from that in 2015, with a 20-percent reduction in using water to produce ¥10 thousand in industrial added value, according to the plan. In addition, China's overall water consumption will be constrained within 670 billion m<sup>3</sup> by 2022, with improved conservation. Furthermore, the figure will be controlled within 700 billion m<sup>3</sup> with water conservation and recycling at a world-leading level by 2035. The plan sets six key tasks, including control of overall water consumption, reducing agricultural, industrial and urban use and technological innovation. In the meantime, two measures will deepen reform in establishing the water price and cultivate a competitive service market. The plan encourages private capital to join and expand financing channels.

Source: [http://www.china.org.cn/china/2019-04/25/content\\_74720155.htm](http://www.china.org.cn/china/2019-04/25/content_74720155.htm)

**China spent a record** ¥726 billion (US \$104.46 billion) **on water conservation projects** in 2019, said a senior official with the Ministry of Water Resources. The country started the construction of 23 key water conservation projects and completed over 90% of the annual investment plan. China further improved drinking water quality in rural areas, which benefited 54.8 million people. The country also addressed the problem of excessive fluoride in drinking water for 6.15 million rural people. China will step up efforts to improve water conservation infrastructure such as farmland irrigation facilities in poverty-stricken areas in 2020, and push for the construction of key water conservation projects.

Source: [http://www.xinhuanet.com/english/2020-01/09/c\\_138691595.htm](http://www.xinhuanet.com/english/2020-01/09/c_138691595.htm)

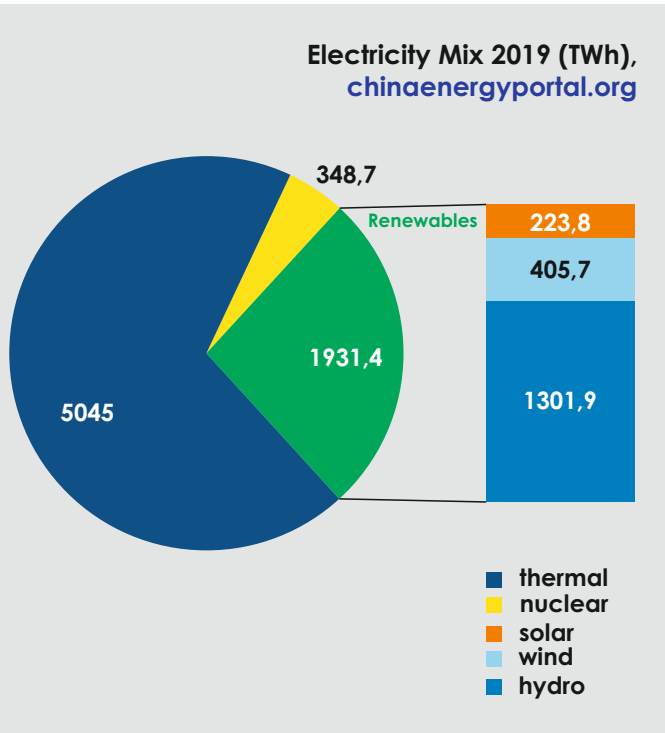
**China's Artificial Forest Area Ranks First in the World.** According to the NASA study (2019), China accounts for ¼ of the new plantation area from 2000 to 2017. Official data from the National Forestry and Grassland Administration shows that in the past two decades China has achieved double increase in forest area and forest stock volume. China also become the world's largest wood place. According to the 8<sup>th</sup> National Forest Inventory of China (2009-2013), the area of forest in China reached 208 million ha with the forest coverage of 21.63% and forest volume of 15.137 billion m<sup>3</sup>. Because of major environmental restoration projects, such as dust source area control around Beijing and Tianjin and rocky desertification comprehensive management project, now the area of desertification in China changed from the situation of annual average expansion of 3,436 km<sup>2</sup> in the 1990s to the annual average reduction of 1,980 km<sup>2</sup>. There is a historic transition from “desert invasion” to “forest invasion”.

Source: <http://en.people.cn/n3/2019/0226/c90000-9549924.html>

**Hydropower remains the main source of energy in China's national RES system**, followed by wind and solar power. According to China Energy Portal, in 2019 the share of renewable energy (including HPPs) in electricity production reached 26.4%. Hydropower generation increased by 5.7%, but mainly due to higher water content, as capacity growth was only 1.1% (4 GW). The rate of wind energy commissioning increased by 20%, demonstrating a revival after subsidies were terminated. Solar capacity growth slowed down, accounting for 15% of electricity generation growth (with only 26% increase in solar power generation). This in 2018 was caused by the decision of the Chinese Government to change the policy in the field of solar energy;

in 2019 it was aggravated by the delay in outlining the new rules for the sector, which was not made public until June.

Source: <https://chinaenergyportal.org/en/2019-electricity-other-energy-statistics-preliminary/>



**In 2019, the construction of the Wudongde Hydropower Station**, China's fourth-largest and the world's seventh-largest hydropower project, was continued. Spanning across the Jinsha River, the upper stretches of the Yangtze River in southwest China, Wudongde hydropower station has a maximum dam height of 270 meters and a total reservoir capacity of 7.4 billion m<sup>3</sup>. The hydropower station will be equipped with 12 hydro-generator units, each having a capacity of 850,000 kW. The total installed capacity of the station will be 10.2 million kW and the annual power generation is estimated at 38.91 billion kWh. The station is scheduled to start storing water in July 2020. The first generator will be put into use in August 2020, and all units will be operational by December 2021.

Source: [http://www.xinhuanet.com/english/2019-06/18/c\\_138153092.htm](http://www.xinhuanet.com/english/2019-06/18/c_138153092.htm)

**The world's tallest dam is to be built in Xinjiang.** China Gezhouba Group Co. Ltd. (CGGC) has signed an agreement to undertake the construction of a water control project at the upper reaches of the Aksu River in northwest China's Xinjiang Uygur Autonomous Region. CGGC inked a public-private partnership agreement worth ¥8.99 billion (about US \$1.26 billion) with local authorities for the Dashixia Water Control

Project, which requires a dam as high as 247 meters to tame the Aksu River. The damming of the Aksu River would need a wall height equivalent to an 80-floor building, which would create a reservoir with a storage capacity of 1.17 billion m<sup>3</sup>. It will be installed with a hydropower capacity of 750,000 kW and the ability to generate 1.89 billion kWh of electricity a year. The multi-functional water control project is expected to take eight and half years.

Source: [http://www.xinhuanet.com/english/2019-09/24/c\\_138419098.htm](http://www.xinhuanet.com/english/2019-09/24/c_138419098.htm)

**China Three Gorges rules out new domestic hydro projects.** In January, China Three Gorges Corp (CTGC), operator of the world's largest hydropower plant, announced that it is turning to projects offshore as domestic costs soar and space runs out on the country's crowded rivers. The company's vice-president informed that CTGC doesn't have any plans to build more hydropower projects in China but will develop more projects overseas, mostly in South Asia, Southeast Asia, Africa and Latin America.

Source: [www.reuters.com/article/china-hydropower-threegorges-idUSL3N1Z91QN](http://www.reuters.com/article/china-hydropower-threegorges-idUSL3N1Z91QN)

**In November 2019, the National Energy Administration of the People's Republic of China put up for discussion "Recommendations for promoting sustainable and healthy development of small hydropower"**. This document, aimed at restricting the development of small hydropower and streamlining the procedures for impact assessment and plant shutdown, is evidence of the tremendous progress in the environmental risk management system in China. The development of the document was preceded by a two-three-year summer campaign to "clean up rivers from harmful small hydropower", during which hundreds of HPPs were closed and demolished and thousands of HPPs were issued instructions to reduce the impact on river ecosystems and comply with environmental releases standards. Only in one Hubei province, according to its Water Management Service, 190 stations were liquidated, and 1,530 hydroelectric power plants received instructions. Many observers pointed out that this campaign is carried out without a clear plan and a real assessment of its environmental benefits.

Source (in Chinese): [www.chinapower.com.cn/focus/20191114/129028.html](http://www.chinapower.com.cn/focus/20191114/129028.html)

**In 2019, China experienced several weather disasters**, including five powerful typhoons. According to the National Bureau of Statistics of

China, natural disasters incurred ¥258.5 billion (US \$38 billion) losses in 2019. Water-related disasters hit the national economy most: floods caused a direct economic loss of ¥192 billion, oceanic disasters – ¥11.7 billion. The middle and lower reaches of China's Yangtze River suffered from the most severe drought in 40 years, with temperatures up to 3°C higher than normal in some regions in 2018. The total arable land affected by drought in the Yangtze's middle and lower reaches was 154% higher than in 2018. The drought was affecting local grain production, and had delayed rapeseed planting in the region. Government forecasters have attributed record high summer temperatures and rainfall throughout China to global warming.

**Sources:**

[http://www.stats.gov.cn/english/PressRelease/202002/t20200228\\_1728917.html](http://www.stats.gov.cn/english/PressRelease/202002/t20200228_1728917.html);  
[https://www.reuters.com/article/us-china-drought/chinas-yangtze-region-facing-severe-drought-affecting-production-report-idUSKBN1XG35I?mc\\_cid=200bb72f4f&mc\\_eid=db7dc5ba26](https://www.reuters.com/article/us-china-drought/chinas-yangtze-region-facing-severe-drought-affecting-production-report-idUSKBN1XG35I?mc_cid=200bb72f4f&mc_eid=db7dc5ba26)

## Other Asian Countries

Earlier in November, Malaysia renewed calls for Singapore to cooperate in revising a 1962 water supply agreement. According to Malaysia's Natural Resources Minister, Xavier Jayakumar, the water reserve margin in the state of Johor has fallen to 4% and may reach zero by 2020. The recommended margin is 10%. Under the 1962 Water Agreement, Singapore may extract 250 million gallons (946 million liters) a day from the Johor River. Singapore pays US \$0.01 for every thousand gallons (3,785 liters) of raw water and sells treated water back to Malaysia at US \$0.18 per thousand gallons. The agreement expires in 2061. Malaysia claims that the deal would need to be renegotiated. Singapore, meanwhile, contends that Malaysia lost the right to re-negotiate the price of water under the terms of the Agreement when it failed to do so in 1987. It claims that it effectively subsidizes the cost of treating the water it sells back to Malaysia. For Malaysia, there are several reasons for its position on the Water Agreement. The country's level of debt became more manageable in 2019, but remains high. The Malaysian Government hopes to boost revenue by renegotiating the terms of the Agreement and increasing the price of water sold to Singapore. Singapore, meanwhile, views the water dispute as an existential issue. The Water Agreement was formalized in the 1965 Separation Agreement, and Singapore views any breach of this agreement as a threat to its sovereignty. Furthermore, Singapore is highly reliant on Malaysia

for its water, receiving nearly half of its water supplies from its neighbor. Singapore has tried to diversify its water sources, by increasing the quantities of rainfall caught in reservoirs, recycling water and desalination. Nevertheless, its reliance on Malaysia and the impacts of climate change have put Singapore among the countries most likely to be water-stressed by 2040. Malaysia and Singapore have extensive and complex levels of economic interdependence. Both countries count the other as one of their largest trading partners and movement of people between the two countries is high. Singapore is also the second-largest contributor of foreign direct investment to Malaysia. Considering the interdependence between Singapore and Malaysia, it is unlikely that tensions over the Water Agreement will escalate much further than harsh words. As both countries seek to placate domestic interests, however, those tensions are likely to continue to strain their relationship.

**Source:** [www.waterpolitics.com/2019/11/20/water-disputebetween-malaysia-and-singapore/](http://www.waterpolitics.com/2019/11/20/water-disputebetween-malaysia-and-singapore/)

**In 2019, India has experienced increasingly extreme weather conditions leading to severe droughts and floods.** A debilitating heat wave in the summer coupled with a delay in the monsoon led to drought-like conditions in several parts of the country. An [analysis of the water levels](#) in 91 reservoirs across India as of June 15 showed that in 85 of them, the water level is [below 40%](#) of the capacity and in 65 it is below 20%. Then India received the [heaviest monsoon rainfall in 25 years](#). The monsoon normally begins in June and ends by September, but its delayed retreat in 2019 has sparked floods that [displaced or injured](#) at least 2.5 million people in 22 states and killed several thousand. Thanks to high water conditions the [Sardar Sarovar Dam](#) has achieved its full reservoir level of 138.68 metres for the first time since its height was raised in 2017. It is important to note that while many portions of India have received a lot of rain, some regions have actually [experienced a rainfall deficit](#). Water crises are unfolding all across India, a product of population growth, modernization, climate change, mismanagement and the breakdown of traditional systems of distributing resources. Nearly all of India's biggest cities, including New Delhi, the nation's capital, are rapidly [depleting their groundwater reserves](#), and 40% of India's people could lack drinking water by the end of the next decade. In the southern city of Chennai, India's fifth largest city, with a population of about 10 million people, drinking water reserves almost completely dried up in 2019. In the agricultural heartland of India's northern plains, farmers generally pay little or no-

thing for the groundwater they use or the energy needed to pump as much as they desire. That has led them to plant water-intensive crops, creating shortages, especially during lapses in the annual monsoons that endanger the country's food supply. Various Indian states are locked in legal and political battles with one another over the control and use of water. Beset by the multitude of water problems, Prime Minister Narendra Modi began his second term recently by appointing a ministry of water, combining previous ministries that oversaw wetlands and riverways development and drinking water and sanitation. The Prime Minister also launched a [plan \(US \\$842 million\) to tackle water shortages](#) in the country's seven heartland states. The plan would help replenish groundwater (60% of the irrigation for agriculture comes from groundwater) and boost overall availability in Rajasthan, Karnataka, Haryana, Punjab, Uttar Pradesh, Madhya Pradesh, Maharashtra and Gujarat states, which produce staples such as rice, wheat, sugar and oilseeds. Modi also exhorted farmers to increasingly adopt drip and sprinkler irrigation and use water-management techniques as well as eschewing water-guzzling crops.

**In March 2019, India Cabinet approved measures to promote hydropower sector.** These include declaring large hydropower projects as renewable energy source and part of non-solar renewable purchase obligation as well as providing budgetary support for flood moderation cost and enabling infrastructure cost and tariff rationalization measures to reduce tariff and thus the burden on the consumer. India is endowed with large hydropower potential of 1,045,320 MW of which only about 45,400 MW has been utilized so far. Only about 10,000 MW of hydropower has been added in the last 10 years. The hydropower sector is currently going through a challenging phase and the share of hydropower in the total capacity has declined from 50.36% in the 1960s to around 13% in 2018-19.

Source: <http://pib.nic.in/PressReleaselframePage.aspx?PRID=1567817>

**111 National Inland Waterways have been declared on rivers, canals, creeks, estuaries in 24 states and 2 Union Territory of India with the implementation of National Waterways Act, 2016.** National waterways have been proposed with the claim that inland water transport is a cost-effective, environmental friendly and safe mode for the transport of bulk and hazardous goods. To make people more informed on various environmental and social impacts of the development and operationalization of waterways on the Indian rivers, Manthan Research and Social Development Society started from 2019 providing

monthly updates on National Inland Waterways of India.

Source: [www.manthan-india.org/monthly-updates-on-national-inland-waterways-of-indiaupdate-15-developments-in-november-2019/](http://www.manthan-india.org/monthly-updates-on-national-inland-waterways-of-indiaupdate-15-developments-in-november-2019/)

**Prime Minister and Chief Justice of Pakistan Fund for Diامر Bhasha and Mohmand Dam raised Rs12 billion (US \$75 million) by the end of 2019.** The Chief Justice of Supreme Court established a Supreme Court of Pakistan Diامر Bhasha and Mohmand [Dams Fund](#) to raise funds for the construction of these dams (10 July 2018). The Court supervises the Fund and its Registrar operates its account directly. Later, the Prime Minister of Pakistan announced to join efforts with the Chief Justice of Pakistan for this cause. The fund was renamed accordingly. [Some analysts](#) criticised the establishment of the dam fund because it fell outside the normal boundaries of jurisprudence, and contributions are not always voluntary (the salaries of government servants and army personnel were subjected to deductions for the dam fund), and in some instances, the donations were linked to the outcome of legal proceedings.

Sources: [www.supremecourt.gov.pk/dam-fund-statistics/](http://www.supremecourt.gov.pk/dam-fund-statistics/), [www.dawn.com/news/1458849/end-the-dam-fund](http://www.dawn.com/news/1458849/end-the-dam-fund), [www.lowyinstitute.org/the-interpreter/pakistan-wrongheaded-crowdfund-mega-dams](http://www.lowyinstitute.org/the-interpreter/pakistan-wrongheaded-crowdfund-mega-dams)

**Mongolia and Russia signed Agreement for Cooperation in Electricity Power,** which makes new dams along the Selenge River basin in Mongolia unnecessary, may enable faster deployment of renewable energy and includes environmental safeguards and basis for equitable energy trade. Rivers without Boundaries Coalition has been promoting such solutions for 6 years.

Source: [www.transrivers.org/2019/2922/](http://www.transrivers.org/2019/2922/)

**World Bank Mining Infrastructure Investment (MINIS) project in Mongolia has closed** and two dam planning objectives have been officially removed from it in fall 2019. Consequently the Regional environmental assessment of hydro-power options is put on hold indefinitely.

Source: [www.worldbank.org/en/country/mongolia/brief/mongolia-mining-infrastructure-investment-support-project](http://www.worldbank.org/en/country/mongolia/brief/mongolia-mining-infrastructure-investment-support-project)

## Large River Basins in South Asia

### Indus River Basin

**In 2019, the International Centre for Integrated Mountain Development (ICIMOD) released the first comprehensive report on the Hindu Kush Hi-**

**malayan (HKH) region**, and it contains some very worrying news for the Indus basin. The report looked at 16 components of change in the HKH region, filling in a gap left by Intergovernmental Panel on Climate Change (IPCC) reports that had limited information from the region. One of the areas of key concern was the cryosphere, or ice coverage, in the area, which is home to the most glaciers after the Polar Regions. According to the report, 36% of the volume of these glaciers will be gone by 2100 if the world manages to keep warming below 1.5 °C. If this temperature increase hits 2 °C, 49% of the volume of these glaciers will be gone. The retreat of these glaciers will have an immediate impact on the 240 million people that live in the mountains. Given that poverty rates in these regions is 33%, significantly higher than the overall 25% for the eight countries that border the region, this will be a disaster in itself. The more complex, and problematic, issues will be downstream to these regions, inhabited by 1.65 billion people, and one of the basins most impacted will be the Indus – that straddles India, Pakistan and Afghanistan. One of the reasons is that the Indus River is the one most dependent on snowmelt and glacier melt contributing close to 80% of its water flow. As the glaciers retreat at a sharper pace, this basin will have more water flowing in, but in an increasingly unpredictable manner. The Indus region is one of the areas of most concern for rainfall reasons. Although the science on the western disturbance, which affects the South Asian monsoon, remains unclear, it is already evident that rainfall patterns have become more uneven, with an increase in extreme weather events.

The Indus basin is already one of the worst affected by extreme weather events in the HKH region, with the most people killed from 1980 to 2015. It is also one of the areas where a number of hydropower projects and large dams are either planned, or being built, including key hydropower projects in Pakistan supported by China under the China-Pakistan Economic Corridor project. Sustained, and even increased, water flow in the rivers until at least 2050 will mean that there will be little rationale to reassess these dam projects if they are based only on narrow economic rationale. The variation of water flows, in fact, will boost those arguing that large storage projects are needed to stabilize water availability over the year. Unfortunately the history of hydropower projects in South Asia – and elsewhere – has been marked by a lack of regard for environmental safeguards. Moreover, in India alone, indigenous communities, accounting for only 8% of the population, have been 40% of those displaced by large dams.

Compounding the problem for the Indus basin is the conflictual relationship between the four countries that share it: China, India, Pakistan and Afghanistan. Given the stark threat to the whole basin, and the people that live within it, development plans for the region would ideally incorporate findings for the whole area, as well as coordinating disaster management plans. While people have called for the expansion of the Indus Waters Treaty to deal with these issues, with the treaty itself under strain, there seems to be little scope for such an understanding to develop. Unfortunately one of the other issues that the report makes clear is that geographically precise information from mountainous regions remains sparse. This is because the decisions for mountain areas are still largely made by policymakers in the plains. Until and unless that changes, the Indus will continue to be a river of disasters.

Source:

[www.waterpolitics.com/2019/02/05/theindus-a-river-of-growing-disasters/](http://www.waterpolitics.com/2019/02/05/theindus-a-river-of-growing-disasters/)

**In early 2019, India and Pakistan rekindled the cooperative spirit of a river-sharing treaty that is nearly six decades old.** A three-member team of Pakistani experts visited India to inspect hydropower projects under the Indus Water Treaty. They called the visit very successful and invited the Indian experts to visit Pakistan's dam on the Indus River.

Source: [www.circleofblue.org/2019/world/whatsup-with-water-brazils-water-after-rupture-of-miningwaste-dam-andmore/?mccid=be7d881c5a&mceid=db7dc5ba26](http://www.circleofblue.org/2019/world/whatsup-with-water-brazils-water-after-rupture-of-miningwaste-dam-andmore/?mccid=be7d881c5a&mceid=db7dc5ba26)

## Ganges River Basin

**A trilateral agreement to export hydropower from Nepal to Bangladesh via India.** In December, the Bangladeshi government and Indian Company GMR, developer of the 900-megawatt Upper Karnali Hydro Electric Project (UKHEP) in the western Nepal, have finalised the power purchase agreement rate to purchase 500 MW of energy from Nepal. As per the [decision](#) of the Cabinet Committee on Public Purchase, Bangladesh will import the electricity through Indian firm GMR at a tariff rate of US \$7.72 cents per unit for a period of 25 years. UKHEP will be the first private Nepal-based company to export hydropower to Bangladesh via India as per a trilateral agreement. Meanwhile environmentalists oppose the construction of the UKHEP on the main stem of the Karnali, the only major river from the Nepal Himalaya that remains free flowing. They call for the develop-

ment of sustainable hydropower in far-western Nepal, including the Karnali Basin, but NOT on the main stem of the river, given that there are multiple sites on tributaries in the Basin where hydropower can be developed both to meet local needs and for export (see "[2019 Karnali Declaration](#)").

**Sources:**

<https://thehimalayantimes.com/business/upper-karnali-power-purchase-pact-final/>,  
[www.transrivers.org/2019/2915/](http://www.transrivers.org/2019/2915/)

**In 2019, Nepal and India inaugurated the construction work on new Gandak Waterways.** Development of National Waterway-37 (Gandak River) from its confluence with river Ganga at Hajipur to Triveni Ghat (Bhaisalotan Barrage, Valmikinagar) will be the first of its kind to link Nepal to Bay of Bengal through Ganga water ways. This project is a part of India's the 2016 National Waterways Act, which raises [concerns](#) in India that the interventions for the conversion of rivers into waterways will need huge financial resources, and have the potential of threatening the existing nature and morphology of these rivers, with large impacts on ecology and local communities.

### Mekong River Basin

The Mekong is reeling from the combined onslaught of climate change, sand-mining, and incessant damming of the river, which combined can cause the worst drought recorded in over 100 years in July.

The Mekong originates in the Tibetan Plateau and flows through six countries, including China, Thailand, Laos and Vietnam. During the drought in China and Laos, the upstream hydroelectric dams put even more pressure on the river, holding water. In October 2019, Laos unveiled a new dam in the country's north. The [1.3-gigawatt Xayaburi dam](#) sits on the Mekong River. Laos plans to build nearly a hundred like it by 2020 – many with direct funding and support from China – in a bid to become "the battery of Asia," exporting two-thirds of the energy it will generate from hydropower. Despite the arrival of the rains, according to experts, significant damage has already been caused. Fish stocks have shrunk, given that there once have been the largest freshwater fisheries in the world with \$11 billion in wild-capture fish, excluding fish farms. The water level in the Tonle Sap was reduced to unprecedented shallow areas with one floating village almost completely dried up. Many fish died because of the shallow water, hot temperature, and toxic water resulting from

lack of oxygen. The conclusions of the Mekong River Commission, which is composed of Laos, Cambodia, Thailand, and Vietnam, among many alarming conclusions, found that there would be a 35-40% reduction in fish biomass by 2020; moreover, hydropower development through 2040 will eliminate migratory fish. Mekong provides food security through fishing and wet rice growing for about 60 million people living in the lower Mekong basin in Cambodia and Vietnam. Although the season of monsoons in this region lasts from late August to October, experts are not sure that a rise in water level (even if the rains can fill the river) will help quickly restore the volume of fish resources. Environmentalists hope that the Mekong can still be saved by abandoning some dams and focusing on alternative energy. However, for this to happen, the states through which the Mekong flows must agree among themselves and solve the problem by common forces. However, so far each country is trying to solve its own problems without thinking about the future of the great river. For example, it was [suggested](#) that moving from hydro to solar could protect the Tonle Sap Lake, the world's largest freshwater fishery. Basin-wide water-energy planning and a deeper incorporation of non-hydropower renewable energy sources into Cambodia's future power mix can avoid upstream fragmentation of Tonle Sap and Mekong Basin connectivity and preserve the annual monsoon pulse, which underpins the unique conditions that make the Tonle Sap the world's largest freshwater fishery.

**Sources:**

<https://thediplomat.com/2019/08/something-is-very-wrong-on-the-mekong-river/>;  
[www.chinadialogue.net/article/show/single/en/11126-Sustaining-the-heartbeat-of-the-Mekong-Basin](http://www.chinadialogue.net/article/show/single/en/11126-Sustaining-the-heartbeat-of-the-Mekong-Basin)

**Indonesia: project threatening Tapanuli orangutan suspended by global protests.** The Hydroelectric Dam Project in Batang Toru of Indonesia is under construction power plant project funded by the Bank of China and built by Sino-hydro, as part of China's BRI Initiative. Environmentalists expressed concerns over its variety of negative environmental and social impacts, including dooming a newly discovered orangutan species to extinction and asked the Bank of China reconsider the project. The Bank promises to evaluate the project very carefully and make prudent decisions by duly considering the promotion of green finance, the fulfilment of social responsibility as well as the adherence to commercial principles.

**Source:** [www.transrivers.org/2019/2576/](http://www.transrivers.org/2019/2576/)

**Tampur Hydro Dam: Indonesian court cancels dam project in last stronghold of tigers, rhinos.** A court in Indonesia's Aceh province has ordered an end to a planned hydroelectric project in Sumatra's unique Leuser Ecosystem. Environmental groups filed a lawsuit against the Aceh government and the dam's developer earlier 2019 over potential environmental destruction and violation of zoning laws. The area is the last pla-

ce on Earth that's home to wild tigers, rhinos, orangutans and elephants – all critically endangered species whose habitat would be flooded and fragmented by the dam and its roads and power lines.

Source:

<https://news.mongabay.com/2019/09/indonesian-court-cancels-dam-project-in-last-stronghold-of-tigers-rhinos/>

## 11.3. America

In 2019, within the framework of the Columbia River Treaty between US and Canada **negotiations regarding a modernized treaty**, which started in 2018, **were continued**. Particularly, meetings were held on 27-28 February in Washington D.C. (USA), 10-11 April in Victoria B.C., capital of British Columbia (Canada), 19-20 June in Washington D.C., and 10-11 September in Cranbrook (Canada). The ninth round of talks was scheduled for November in US but was postponed until early 2020. Negotiators discussed ecosystem cooperation, flood-risk management and hydropower coordination, as well as adaptive management. The negotiators have agreed to conduct technical work between negotiating rounds, to support the progress of discussions. Negotiations in June were the first meeting where Canadian Columbia Basin Indigenous Nations participated as official observers, following Foreign Affairs Canada's historic announcement that representatives of the Ktunaxa, Okanagan and Secwepemc Nations will now participate as observers at the Canada-U.S. Columbia River Treaty negotiations. The Columbia River Treaty is seen around the world as a model of transboundary cooperation. Flood risk and hydropower management under the 1964 Treaty benefited millions of people on both sides of the U.S.-Canada border. The Treaty also maintains river ecosystem.

Source:

<https://engage.gov.bc.ca/columbiarivertreaty/>

**Drought control in the Colorado River basin** (US-Mexico). On 20 May 2019, the Department of the Interior, Bureau of Reclamation and representatives from all seven Colorado River Basin states signed completed drought contingency plans for the Upper and Lower Colorado River basins. These completed plans are designed to reduce risks from ongoing drought and protect the single most important water resource in the western United States. The Colorado River, with its system of reservoirs and water conveyance infrastructure, supplies water for more than 40

million people and nearly 5.5 million acres of farmland across the western United States and Mexico. The reservoirs along the river have performed well-ensuring reliable and consistent water deliveries through even the driest years. But, after 20 years of drought, those reservoirs are showing increasing strain; Lake Powell and Lake Mead, the two largest reservoirs on the system and in the United States, are only 39% and 41% full, respectively. And, while the basin experienced above-average snowpack in 2019, the total system storage across the basin began the water year at just 47% full. In addition to the voluntary reductions and other measures to which the basin states agreed, Mexico has also agreed to participate in additional measures to protect the Colorado River Basin. Under a 2017 agreement, Minute 323 to the 1944 U.S. – Mexico Water Treaty, Mexico agreed to implement a Binational Water Scarcity Contingency Plan but only after the United States adopted the Drought Contingency Plan.

Source:

<https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=66103>

**In the United States, Central and Middle America was overwhelmed by floods in spring and summer 2019.** Months of above-average rainfall have made rivers too deep and fast-moving to safely navigate, severely restricting normal shipping activities. The Arkansas River has been closed to traffic. So has the Illinois River, a critical conduit to Chicago and the Great Lakes. The New York Times reported that even if the rivers reopen, the impact on the economy could last. The disruption to supply chains, inventories and transportation could mean higher prices and limited supplies for consumers this summer and fall.

Source:

<https://www.circleofblue.org/2019/world/whats-up-with-water-global-rundown-06-17-18/?mccid=305c1edf1c&mceid=db7dc5ba26>



**The Michigan Department of the Attorney General** unexpectedly **dismissed criminal charges** in eight cases **linked to the Flint water crisis**. Many Flint residents, feeling betrayed by a system that supplied them with lead-tainted water, were stunned and dismayed by the development. Prosecutors for the new administration dropped all remaining charges against officials who were accused of mismanaging the city's water and mishandling the crisis that followed. The Flint Water Prosecution team says a more thorough investigation will now be conducted, adding "all available evidence was not pursued" by the previous team of prosecutors. Dana Nessel, Michigan's attorney general, supported the decision to drop the charges. But she said, "I want to remind the people of Flint that justice delayed is not always justice denied."

Source:

<https://www.circleofblue.org/2019/world/whats-up-with-water-global-rundown-06-17-18/?mccid=305c1edf1c&mceid=db7dc5ba26>

**In 2019, U.S. annual wind generation exceeded hydroelectric generation for the first time. Wind is now the top renewable source of electricity generation in the country.**

Source:

<https://www.eia.gov/todayinenergy/detail.php?id=42955>

**On 25 January, a dam connected to an iron ore mine, located in a large town in southeastern Brazil, collapsed.** More than 200 people died. The dam is owned by Vale, the same company that was involved in the 2015 Mariana dam disaster. Both dams were made of compacted layers of mining waste – this is the cheapest technology. In addition to deaths and destruction, this tragedy significantly worsened the environmental situation in the region. Toxic waste completely destroyed the ecosystem of the Paraopeba River, made water unsuitable for drinking, and killed hundreds of animals. Due to the mud ingress into the river, the level of iron increased a hundred times and aluminum – a thousand times. In addition, mercury, which is not used for iron extraction, was found in water. According to one of the versions, this happened because the disaster affected the former gold deposits. Contamination is observed for 150 km. Iron mining industry waste was also found in the neighboring larger San Francisco River. The tragedy in Brumadinho is called the most terrible environmental disaster in the history of Brazil and the largest in the world due to the collapse of tailings dams. The reasons for the breakthrough are still being clarified. The dam in Brumadinho was inspected a month before the tragedy, and the company was already informed that it was under risk.

Source (in Russian):

<https://lenta.ru/articles/2019/06/26/brazil/>

**In the period from late February to early March, two icebergs that cover thousands of square kilometers broke off** from Chile's Grey Glacier. The dimension of the first iceberg is 8.8 ha, the size of 12 soccer fields, and detached on 20 February, while the second one, which broke off on 7 March, was of 6 ha. This means that only 15 days have passed from one break to the other. Even if the detachment of ice from glaciers is a natural phenomenon, what alarms experts is the increased frequency of these events. In fact, the latest detachment of ice from Grey Glacier took place in November 2017, and it was an even larger iceberg. But the other significant ruptures date as far back as the early 1990's. Scientists are blaming these ever more frequent events on a changing climate. In fact, after 2018 as the fourth hottest year ever in a row, 2019 has started in the same trajectory, with the austral summer setting new records. Even Patagonia had hot temperatures: for the first time in history the town of Puerto Natales, on the southern tip of the country, exceeded 30°C. According to experts, this abnormal trend has weakened the glacier's walls causing the breaks. The glacier, a 270-square-kilometre giant, has lost two kilometers over just 30 years. These phenomena seem to be part of a downward spiral: rising temperatures and increased rainfalls speed up the melting of ice, which in turn increases the lake's water level and, at the same time, reduces the ability of the glacier to reflect sunrays, thus exacerbating the problem. It's a vicious cycle that not only affects this part of national park but also other Chilean glaciers, which cover more than 20,000 km<sup>2</sup> of land in the country and 80% of which have retreated in the past decades due to global warming according to the United Nations.

Source: [www.lifegate.com/people/news/icebergs-greyglacier-patagonia-chile](http://www.lifegate.com/people/news/icebergs-greyglacier-patagonia-chile)

**The 2019 Amazon rainforest wildfires** season saw a year-to-year surge in fires occurring in the Amazon rainforest and Amazon biome within Brazil, Bolivia, Paraguay, and Peru. The main causes of the fires were slash-and-burn approach to deforest land for agriculture and effects of climate change and global warming due to unusually longer dry season and above average temperatures around worldwide throughout 2019. It is estimated that over 906,000 ha of forest within the Amazon biome has been lost to fires in 2019. The fires and the deforestation in the Amazon add another threat to a river system and aquatic ecosystems that are already under major pressure from the building of new dams, mining, and other activities.

Source:

[www.nationalgeographic.com/environment/2019/09/amazon-fires-brazil-threaten-fish/](http://www.nationalgeographic.com/environment/2019/09/amazon-fires-brazil-threaten-fish/)

## 11.4. Australia and Oceania

**Based on its new assessments published in January 2019, the South Australian Murray-Darling basin royal commission recommended a complete overhaul of the Murray-Darling Basin Plan, including reallocating more water from irrigation to the environment.** The report also found commonwealth officials had committed gross maladministration, negligence and unlawful actions in drawing up the multibillion-dollar deal to save Australia's largest river system. The 746-page report contained 111 findings and 44 recommendations. The South Australian Murray-Darling basin royal commission found the original plan ignored potentially "catastrophic" risks of climate change and called for them to be central to a rewrite of the plan. The Australian Conservation Foundation urged governments to ensure that the plan complied with environmental obligations of national water law and took account of climate change science. The findings of the royal commission fit a consistent pattern of behavior from Australian governments that has resulted in environmental disaster and the catastrophic loss of wildlife. The investigation into the plan, prompted by allegations of water theft by New South Wales cotton farmers, recommended major reform, including resetting water-saving limits, repealing the outcome of the northern basin review, dumping major projects, like the Menindee Lakes project, proposed by NSW, and new measurements for water on floodplains. He also called for the states to review their water resource plans to expressly recognize and authorize the taking and use of water by indigenous people in exercise of native title rights.

**Source:** <https://www.theguardian.com/australia-news/2019/jan/31/murray-darling-basin-royal-commission-report-finds-gross-maladministration?mccid=2d5c8bc37f&mceid=db7dc5ba26>

**The National Water Grid Authority** commenced operation on 1 October 2019, delivering on the Government's election commitment of 30 April 2019. The Authority will deliver the Government's commitment to invest US \$100 million into bringing world best science together to identify opportunities to ensure water supply and reliability. The Authority will also deliver the US \$3.5 billion commitment to identify and build new water infrastructure through the US \$1.5 billion the [National Water Infrastructure Development Fund](#) and the US \$2 billion the [National Water Infrastructure Loan Facility](#). In 2019, nearly US \$1.5 billion is already committed from these funds to finance the construction of 21 water infrastructure projects.

**Source:** [www.nationalwatergrid.gov.au/](http://www.nationalwatergrid.gov.au/)

**In 2019, much of the east coast in Australia was gripped by drought** that began more than two years ago. The dry conditions are worst in Queensland, the biggest beef-producing state, but extend into much of New South Wales. The situation is much better in Western Australia, where the wheat crop had good late rain and is likely to be on a par with the bumper season last year.

**Source:** [www.aljazeera.com/ajimpact/globalweather-chaos-shrivelling-asias-crop-production190730032441907.html](http://www.aljazeera.com/ajimpact/globalweather-chaos-shrivelling-asias-crop-production190730032441907.html)

**Bush fires in Australia and their impact on freshwater ecosystems and drinking water.** Bush fires have been raging in the southeastern states of New South Wales and Victoria since September 2019. Scale of fires is significantly higher than average during the annual summer drought season in Australia from December to March. More than 38,000 square miles, an area the size of South Carolina, have burned. At least 28 people have died and some 2,000 houses in rural towns have been destroyed. Australian authorities declared a state of emergency. Australia's meteorologists had been predicting a record fire season for months. The weather watchers saw early in the year that Australia faced a fire-raising combination of natural rainfall cycles – notably fluctuations in sea temperatures in the Indian Ocean that brought high temperatures and drought to southeast Australia this year – and a very unnatural trend toward a hotter and drier climate. Australia is among the countries most exposed to the gathering pace of planet-wide warming. In 2019, Australia experienced its highest recorded temperatures, 1.5°C above the late 20<sup>th</sup> century average, and 2°C above the early 20<sup>th</sup> century average – twice the global increase. The year also saw the six hottest days ever recorded in Australia, maxing out at 49.9°C. Higher temperatures are ensuring that vegetation dries out faster and further in droughts, creating extreme fire risk. And the droughts have come. Australia's average rainfall in 2019, at 10.9 inches, was 40 percent below the late 20<sup>th</sup> century average and 12 percent below the previous lowest. The resulting fires far exceeded in extent Australia's most deadly bushfire disaster in February 2009, when 173 people died but only 1,700 square miles burned. Scientists are concerned of potentially [dire impacts on waterways from the bushfire crisis](#). The aftermath of the fires could bring devastation to freshwater animals and plants, as well as drinking water catchments. This is because rain inevitably washes the ash and eroded soil from



matthew abbott @mattabbottphoto

burnt forests into rivers and streams, shifting the bushfire impact to crucial freshwater ecosystems. As the water fills up with fine sediment and foreign, nutrient-rich material, the water quality can drop very quickly – and stay that way for a long time. Freshwater animals lose oxygen and die because as soon as a fire has passed and the ash settles on rivers and lakes, bacteria in the water will start consuming the carbon in that ash. Changes in the turbidity, or amount of sediment in the water, are another factor that can threaten aquatic species. Some research has also shown that fire mobilizes mercury in runoff.

**Sources:** <https://e360.yale.edu/features/long-shaped-by-fire-australia-enters-a-perilous-new-era>; [www.abc.net.au/news/science/2020-01-09/freshwater-ecosystems-water-catchment-bushfire-impact/11850826](http://www.abc.net.au/news/science/2020-01-09/freshwater-ecosystems-water-catchment-bushfire-impact/11850826); [www.nationalgeographic.com/science/2020/01/australian-fires-threaten-to-pollute-water/](http://www.nationalgeographic.com/science/2020/01/australian-fires-threaten-to-pollute-water/)

**The Warragamba Dam-raising project.** A group representing 20 NGOs and environmental bodies from across Asia has made a submission to the New South Wales parliamentary inquiry into the project, which would [raise the Warragamba Dam wall by 14 metres](#) that threatens the Blue Mountains World Heritage Area. The plan has drawn criticism from traditional owners and environmentalists who say valuable sacred sites and objects, and flora and fauna, will be destroyed by a higher water level.

**Source:** [www.abc.net.au/news/2019-10-11/warragamba-dam-company-smec-accused-of-abusing-indigenous-rights/11589222](http://www.abc.net.au/news/2019-10-11/warragamba-dam-company-smec-accused-of-abusing-indigenous-rights/11589222)

**Solomon Islands secures US \$200 million of international funding for the most expensive small hydropower plant project**, the cost of which is US \$16 thousand per 1 kW (for comparison, solar photovoltaics costs an average of US \$1.5 thousand per 1 kW). The 15MW [Tina River Hydropower Project](#) is expected to bring down Solomon Islands' reliance on imported diesel by nearly 70%, apart from lowering the prices of electricity. The total project cost is US \$240 million.

**Source:** [www.nsenergybusiness.com/news/solomon-islands-tina-river-hydropower/](http://www.nsenergybusiness.com/news/solomon-islands-tina-river-hydropower/)

**Forbes (USA): 'nuclear coffin' is likely leaking waste into the pacific.** The United States conducted 67 nuclear weapon tests from 1946 to 1958 on the pristine Marshall Islands. In 1977, the United States worked to clean up the radioactive waste left strewn across the Marshall Islands. The US used a crater from an especially large nuclear bomb test to stash away the radioactive soil. Today, there are growing concerns that the site is leaking one of the most toxic substances in the world, the radioactive isotope plutonium-239, a byproduct of nuclear bombs that decays with a half-life of 24,100 years.

**Source:** [www.forbes.com/sites/trevornace/2019/05/27/fears-grow-that-nuclear-coffin-is-leaking-waste-into-the-pacific/#65396b8a7073](http://www.forbes.com/sites/trevornace/2019/05/27/fears-grow-that-nuclear-coffin-is-leaking-waste-into-the-pacific/#65396b8a7073)

## 11.5. Europe

### 11.5.1. Western and Southern Europe

On 11 December, the European Commission presented its [European Green Deal](#) to boost the efficient use of resources by moving to a clean, circular economy, stop climate change, revert biodiversity loss, and cut pollution. The European Green Deal covers all sectors of the economy, notably transport, energy, agriculture, buildings, and industries such as steel, cement, ICT, textiles and chemicals. Among the main points of the Commission's plan are:

- net-zero GHG emissions by 2050, i.e. Europe's "climate-neutrality";
- creating a toxic-free environment by 2050;
- ecosystems and biodiversity, including presentation of the new Biodiversity Strategy;
- new Strategy for a "greener and healthier agriculture" system, covering the entire cycle of food production and consumption;
- research, development and innovation, with research aimed at developing environmentally friendly technologies (35% of research funding), and research under flagship projects focused primarily on environmental issues; etc.

In December 2019, the European Council and the European Parliament reached political agreement on the text of a proposed Regulation on the Establishment of a Framework to Facilitate Sustainable Investment – the so-called "**Taxonomy Regulation**". The Taxonomy Regulation will establish an EU-wide classification system (or taxonomy) intended to provide firms and investors with a common framework for identifying to what degree economic activities can be considered to be "environmentally sustainable". A coalition of NGOs issued a [Joint Statement – Ten Priorities for the Taxonomy Consultation](#) calling the drafters of technical documentation to remove from the EU Taxonomy activities that threaten freshwater ecosystems, World Heritage and global conservation efforts.

Sources: [www.ashurst.com/en/news-and-insights/legal-updates/agreement-reached-on-the-final-text-of-the-eu-taxonomy-regulation-summary/](http://www.ashurst.com/en/news-and-insights/legal-updates/agreement-reached-on-the-final-text-of-the-eu-taxonomy-regulation-summary/); [www.transrivers.org/2019/2837/](http://www.transrivers.org/2019/2837/)

**Summer 2019 in Europe saw anomaly heatwaves.** High temperatures were recorded in June

and July. The Czech Republic, Slovakia, Austria, Andorra, Luxembourg, Poland and Germany all set [new monthly records](#), while France recorded [its highest ever temperature](#) of 45.9 °C. Out of Spain's 50 regions, 40 are under a weather alert, with seven at "extreme risk." A record-breaking heatwave is scorching parts of Europe, sparking wildfires and prompting water restrictions. Farmers, private households and wildlife around Europe are suffering in a drought following last month's record temperatures that scorched much of the continent. In Germany, low water levels forced authorities to cut back on boat travel on the Elbe and Oder rivers. The Rhine River is a key conduit for commerce in Europe, and it is once again facing a traffic shutdown [due to low water levels](#). Last year, boat traffic on the Rhine stopped for the first time in living history as low glacier melt and drought made the shipping lanes too shallow. Last year's low water levels were partly to blame for a contraction in Germany's economy. Experts warn that the exceptional temperatures in Europe are "absolutely consistent" with weather patterns predicted due to greenhouse gas emissions. Several parts of the continent endured extreme temperatures last summer as well. A German climatology institute reported that Europe's five hottest summers in the past 500 years have all occurred in the 21<sup>st</sup> century!

**The first ever Europe-wide inventory of hydropower plants** released in December 2019 shows rivers to be saturated with hydropower dams and thousands more on the cards. The study finds that Europe is already saturated with 21,387 hydropower plants; despite this, 8,785 additional plants which are planned or under construction; 28% of all planned hydropower is in protected areas (33% in the EU); 91% of the plants recorded by the study are small plants, which produce negligible amounts of energy (less than 10MW).

Source: [www.wwf.eu/?uNewsID=356638](http://www.wwf.eu/?uNewsID=356638)

In a historic moment for Europe's rivers, the **first breach was made on 12 June in the 36-metre high Vezins Dam** – kick-starting the biggest dam removal in the continent so far. This landmark event is part of a long-term project to free the Selune River, and bring salmon, eels and other wildlife back to the river and the famous bay of Mont-Saint-Michel – a UNESCO world heritage site and one of Europe's prime tourist attracti-

ons. The dismantling of the Vezins dam – as well as another old obsolete dam, La Roche Qui Boit – will open up 90 km of the Selune River, improving water quality, allowing migratory salmon to return to their ancient spawning grounds, and benefiting people and nature all along the river. Artificial barriers (dams) are one of the biggest threats to river ecosystems, resulting in fragmentation and loss of habitat connectivity. They stop the natural flow of sediments downstream and prevent migratory fishes from travelling up- or downstream to complete their lifecycles. These impediments often lead to the decrease or decimation of native fish populations. As prescribed by the EU Water Framework Directive (WFD), each of Europe's rivers must attain a 'good' ecological status and yet 40% of rivers fall short. Removing old or obsolete dams is a highly effective way for Member States to meet their commitments under the WFD, as it helps to restore a river's connectivity, and facilitates the achievement of good or high status of that river or associated water bodies. It also restores biodiversity and fish stocks. In fact, many countries in Europe are now removing dams as the economic, environmental and social benefits of doing so far outweigh the alternative of restoring the dam. It is estimated that over 3,500 barriers have been removed across Europe including the biggest dam removal in Spain last year and an ongoing historical river restoration project in Estonia that will remove 8-10 dam and open up 3,300km of river basin.

#### Sources:

[https://wwf.panda.org/our\\_work/our\\_focus/freshwater\\_practice/freshwater\\_news/?347515/Biggest-dam-removal-in-Europe-begins](https://wwf.panda.org/our_work/our_focus/freshwater_practice/freshwater_news/?347515/Biggest-dam-removal-in-Europe-begins);  
[www.transrivers.org/2019/2698](http://www.transrivers.org/2019/2698)

**Hundreds of new hydropower projects are planned in the Western Balkans**, as investors sought to take advantage of the huge and relatively untapped water resources in the region. Now, however, public sentiment is turning against these investments and several have been cancelled or put on hold. In the latest development at the end of February, after [thousands of people protested in the Kosovan city of Peja](#) over plans for a series of hydropower plants on the Lumbardhi River, Prime Minister of the country ordered an immediate halt to construction pending a comprehensive assessment of the scale and impact of the project. Around 6,000 people protested in the Serbian capital Belgrade on January 27 over concerns that the planned construction of hundreds of hydropower plants in the country will damage the environment. The Serbian authorities plan to build more than 850 hydropower plants, about 200 of which will

be within nature reserves such as national and natural parks. Governments in the region are in a tricky situation. As members of the Energy Community, the EU aspiring Western Balkans countries have adopted targets to boost the share of renewables in their energy mix as part of their ongoing integration with EU energy policy. Their starting positions are mixed: Albania outstrips all EU member states since virtually all of the energy it produces is already from hydropower, a renewable resource. Several of the Western Balkans states rely heavily on coal, which has raised concerns about the polluting impact on the region and the wider continent, and there are numerous new coals fired power plants, most of them Chinese funded, in the works. Yet environmental groups say the shift towards more hydropower investment is also problematic, especially when new dams are built in until now untouched rivers. A study published by environmental NGOs claims three quarters of the rivers in the Balkans are ecologically so valuable, they should be completely off limits for hydropower development. While the region could further develop its hydropower potential, it is not reliable enough to guarantee the countries meet their annual power generation needs. Perhaps the most promising opportunity lying ahead is regarding other renewable energy sources. Overall, progress in investing into new forms of renewable energy in the region has been slower than expected.

Source: [www.transrivers.org/2019/2561/](http://www.transrivers.org/2019/2561/)

**In 2019, flooding in Venice was the worst one for the last 148 years.** As a result of heavy rains on 17 November, the water in the city rose to 1.5 m, exceeding 1.4 m for the fourth time during the week. Since records began in 1872, that level has never been reached even twice in one year. Flood levels were the second-highest ever recorded, peaking at 187 centimeters (74 inches), just shy of the 194 centimeters recorded in 1966. The flooding inundated over 80% of the historic city. In December, the city was hit by a new flood. Damage from the worst flooding for the last 148 years was € 1 billion. In 2003, construction began on the MOSE Project (system of inflatable gates that would block incoming storm surges), which was scheduled to be completed in 2012. However, cost overruns have tripled the price of MOSE, and the project has been beset by prolonged delays and corruption.

Sources: <https://www.dw.com/en/venice-third-exceptional-flood-makes-week-worst-on-record/a-51286635>;  
<https://www.bbc.com/news/av/world-europe-50814519>

## 11.5.2. Eastern Europe and Caucasus

### Armenia

Amendments were made in the Armenian Water Code that introduced a ban on building small hydropower if 10 EIA criteria set by the National Government were not met. Also, those amendments set that licenses for small hydropower will be suspended if water diversion through diversion tunnels exceeds 40% and if river water level lowers below an acceptable limit. The Armenian Government approved the Concept and **Program for Water Saving Technology** to ensure efficient water management in the country (January 17).

**International cooperation.** An [Agreement](#) was signed between the Government of Armenia and the German KfW Bank for the restoration of the Kaps reservoir for a total of €21.2 million. An investment Agreement was signed with the “Veolia Jur” company for modernization of the water supply network in Armenia for 2.7 billion dram in 2019.

**Environment.** The Government of Armenia approved the EU's grant of €5 million for solution of environmental problems around Sevan lake and [applied](#) to UNESCO with a proposal to give Sevan the status of biosphere reserve to allow for measures for lake's environmental improvement. For forming a single chain in the production of fish and fish products and for more active water recycling it was [decided](#) to regulate water supply of fish farms in the Ararat Valley and use a closed water supply cycle.

A decision was made by the Government of Armenia to establish an Environmental monitoring center on the base of public non-profit organizations that carried out monitoring at the ministries of environment, agriculture and emergencies.

The 22<sup>nd</sup> telethon of the All-Armenian Fund “Ayastan”, which was organized under the slogan “For our home Armenia: life-giving water and sun for communities”, collected more than \$10.2 million for a water supply project and a solar energy program to be implemented in Nagorny Karabakh and three provinces of Armenia – Shiraka, Lori and Tavusha.

**Sevan HPP**, the head plant of the Sevan-Razdan hydropower cascade, passed 70 years of its operation in 2019.

### Azerbaijan

In 2019, the water supply and sewage systems started to be reconstructed in the cities of Gakh,

Goradiz, Yevlakh, Neftchala, Mingyachevir, Salyan, Shamkir, Sheki, Shervin, as well as in Sabunchi and Khazar districts of the Baku city. Water supply and sewage systems were put into operation in the cities of Agdash and Gabala. In total, in 2019 it was planned to drill more than 300 subartesian wells to provide population with drinking water in 254 settlements, 41 cities and districts comprising about 736,000 people and supply irrigation water to 80,000 ha.

Construction of a new wastewater treatment plant in the settlement of Pirshagi was completed with the purpose of preventing discharge of wastewater generated over the vast territory in the northeast of the Absheron peninsula into the Caspian Sea. Construction of the largest Shamkirchai water treatment plant, with the total reservoir volume of 165 Mm<sup>3</sup> was also finished. The plant will supply with water over 300,000 people in Gyandja, Shamkir and Samukh towns and adjacent villages and will process 140,000 m<sup>3</sup> a day. Appropriate work was done for the reconstruction and increase of flow capacity of the Absheron main canal and the improvement of irrigation water supply to agricultural land in Shamakhi district and Nakhchivan Autonomous Republic.

Production processes in “NereMIZ” fish hatchery were organized in Pirallakhi district as part of the Nerekend fish-breeding project. Initially, the annual production capacity of the hatchery on the total area of 6 ha was to be 100 tons of sturgeon, 25 tons of sterlet and 4 tons of caviar. At the end of 2019, fish farms released into republican rivers and lakes 131.7 million of young fish, including 0.3 million of sturgeon and 0.2 million of young salmon.

The State Agency for Alternative and Renewable Energy has developed projects of the total cost of \$1.2 billion for the construction of two wind stations in the Azerbaijan part of the Caspian Sea.

A one-day environmental campaign was organized for planting 650,000 trees on the occasion of the 650-anniversary of poet Imadeddin Nasimi. Tenth jubilee environmental exhibition – Caspian Ecology 2019 – was held in Baku on November 13-15.

### Belarus

The Law “**On peatland protection and use**” (No. 272-3) was adopted in the Republic on 18 December 2019. The Law sets the legal framework for the protection and sustainable use of mar-

shes, conservation and restoration of their biospheric functions, meeting of economic and other types of demand of the present and future generations for these resources, and enforcement of the citizens' right for favorable environment and nature use.

**Drinking water supply and sewerage.** A new version of the Law "On drinking water supply" was adopted (09.01.2020) and the State Production Association "Belvodokanal" was established (16.01.2019) in the structure of the Ministry of Housing and Utilities. The Association will follow the common economic, technical and technological policy in the area of water supply and sewerage, including development of the National strategy for the improvement and development of drinking water supply and sewerage systems in the Republic of Belarus until 2035. The [credit agreement](#) was signed with EBRD for allocation of a sovereign loan of up to €26.8 million to upgrade and reconstruct waste treatment facilities in the cities of Kletsk, Lyuban, Fanipol, Baranovichi, Bereza, Zhlobin and Shklov to meet the corresponding national standards and the standards of the EU. Also, a credit agreement for €15.5 million was signed for implementation of the investment project "Clean water of the Vitebsk province" (2019-2022), which provided for the construction of 80 water supply objects.

**SDGs.** In 2018, the Belarusian Statistical Committee drafted a Roadmap for the development of statistics on SDG, and the National [platform](#) for reporting indicators of SDGs was established in 2018-2019. The Republican Central Research Institute for Integrated Water Use (RUP "CNIKIVR") with the support of the EUWI+ Project adapted methods for development and calculation of indicators on SDG 6.3-6.5, integrated the methods into the automated information system of the State Water Cadastre, and developed proposals for integration of SDG 6 into national strategies and programs related to water use and protection. Development of river basin development plans was continued for the Dnepr, Western Dvina, Western Bug, Neman and Pripyat rivers to set measures for environmental improvement in the water sites, while meeting the water use requirements (balancing water conservation and use).

The Republic of Belarus was elected the chairman of the **Protocol on Water and Health** to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes for the period of 2020-2022 (Meeting of the Parties to the Protocol, November 19-21). At present, as part of the EUWI+, the country updates national targets that are to be approved in 2020.

**Transboundary cooperation.** In September 2019, within the framework of the Inter-governmental Agreement between Belarus and Ukraine on **transboundary water sharing and protection**, the Belarusian Ministry of Natural Resources and Environmental Conservation and the Ukrainian State Agency for Water Resources signed a new Technical Protocol on exchange of information on transboundary surface water and groundwater quality, agreed upon the program for monitoring, analysis and assessment of transboundary water and their quality dynamics. The documents are aimed at extending the sphere of joint monitoring. The lists of hydrochemical, hydrobiological, hydrogeological, hydromorphological and radiation indicators for transboundary water observations and of agreed criteria for observation data processing and assessment were supplemented.

The international project "Fostering multi-country cooperation over conjunctive surface and groundwater management in the **Bug and Neman Transboundary Rivers Basins** and underlying aquifer systems" was approved and to be started in 2020-2021 in Belarus, Lithuania, Poland and Ukraine. The total project financing cost is \$12 million.

#### Symposiums, conferences and forums

1<sup>st</sup> National Sustainable Development Forum (January 24, Minsk);

International Conference "Modern Trends in Water Supply and Sanitation Development dedicated to the 145<sup>th</sup> anniversary of Minskvodokanal water services company" (February 13-14, Minsk);

International Scientific-Practical Conference "Nature Management and Environmental Risks" dedicated to the World Environment Day (June 6, Minsk);

XV Republican Ecological Forum "Sustainable Development of Small Cities: Global Challenges and Local Solutions" (June 7-8, Novogrudok);

XXIV Belorussian Energy and Environmental Forum (October 8-11, Minsk).

#### Georgia

A number of agreements were reached for implementation of **irrigation, water supply and sanitation, and hydrotechnical construction projects** in 2019. In particular, a grant agreement was signed with the Government of Japan for

implementation of the \$61,000-cost project for rehabilitation of irrigation canals and improvement of water and road infrastructure in the Goriy municipality; a Memorandum of Understanding was signed with the South Korean company Korea Hydro&Nuclear Power for joint development of 192.5 MW hydropower project to be constructed in 2021-2026 on the Tskhenistsqali River; an Agreement was concluded with the German Bank of Reconstruction for financing, in the amount of €50 million, of water supply and sanitation project for villages in Kobuleti, Khelvechauri, Khulo, Shuakhevi and Keda districts, as well as the €120 million-credit agreement for the second phase of energy sector reformation and water supply infrastructure modernization in Batumi.

**Emergencies.** Heavy rains hit Georgia in May 5 and caused largest floods over last decades. Three rivers (Alazani, Stori and Chichakvi) overflowed their banks. The resulting damage is estimated at \$1.8 million. Shower in May 6 caused substantial rise in water level in the Alazani and Inaboti Rivers that led to flooding of more than 1,000 ha. Agriculture was damaged seriously – many vineyards, orchards and vegetable gardens became submerged. Electricity supply of several settlements was broken. The intense rainfall has also led to major floods along other rivers. In particular, on the Nenskra River that resulted in submerging of Mestiyachala HPP-1 building, destruction of a bridge and the catering building; on the Cholshura River, causing damage to roads, bridges and agricultural land.

To improve resilience of population and territories to emergencies, a seven-year Program for **adaptation to climate change** started to be implemented. Particularly, as part of the Program, it is planned to install early warning systems in 11 large river basins.

## Moldova

In 2019, the Government of Moldova approved a **draft law on the formation of the State Water Cadastre** and adopted a standard statute on the establishment and activity of a district river basin committee. It is supposed that all water data in the Republic will be integrated into a single information system. The State Water Cadastre will include most complete information on surface and groundwater sources, the data on water quality and pollution sources, and the data on hydraulic structures.

Agreements were reached with some of EU countries and international organizations on **financing water supply and irrigation projects**, particularly: with the German Government on

the Water Supply and Sanitation Project in Ka-gula district; with the Government of Romania on the projects allowing for removal of direct groundwater pollution sources by dismantling damaged and abandoned artesian wells; implementation of adaptation measures in the Byk River Basin; restoration and maintenance of lake ecosystems in Prutului-de-Jos district, which is a part of wetlands enlisted in the Ramsar Convention; and, with the Long-term Development Fund for Moldova on the projects of irrigation system repair and irrigation expansion along the Dniester and Prut Rivers.

An agreement was reached with the Ukrainian Government to suspend construction of the **hydropower cascade along the Dniester River** until the strategic environmental assessment is made in the transboundary context of the “Master plan for multipurpose use of hydropower resources in Ukraine”.

The four-year EU-financed regional project “EU4Environment” was launched. The aim of the project is to assist the Eastern Partnership's countries in preserving and using sustainably the natural capital, improving the natural environment, increasing wellbeing and promoting economic growth.

The International Association of River Keepers “Eco-TIRAS” in partnership with the Institute of Zoology and in collaboration with the Faculty of Natural Geography of the Pridnestrovian State University named after TG Shevchenko organized a conference with international participation “[The Impact of Hydropower on River Ecosystems](#)” (October 8-9, Tiraspol). The Conference was focused on the Dniester River Basin. In the course of the Conference, the participants noted the key role of hydro construction in the ongoing changes in hydrological regime of the rivers and the needs of river ecosystems for water; the need to harmonize and unify approaches of the riparian countries in the Dniester basin to regulation of industrial and recreational fishing in the Lower Dniester basin and the need to transfer to integrated flood management; recommended the riparian countries to expand the network of gauging stations for monitoring the hydrological, temperature and hydrochemical regimes of the river and ensure free availability of information received online, etc.

## Russia

### Latest developments in legislation

**Amendments** were made in the **Water Code of RF** concerning the development of a register of unscrupulous water users and water use cont-



ract bidders and the related **Rules for maintenance of the register of unscrupulous water users and water use contract bidders** were approved. The register will include information on water users, whose water use rights were terminated forcibly because of improper use of a water object or the use of a water object in breach of RF laws, as well as on winners of the tender for the right to conclude a water use contract, who resisted concluding the water use contract. After two years since the information has been inputted into the register, this information can be removed from it. The register is to be maintained by the Federal Agency of Water Resources which is obliged to show information from the register on its official website.

A new **Federal program for eradication of water scarcity** was drafted. The Program will cover 7 territorial entities of the Russian Federation: Stavropolie, Crimea, Sevastopol, Ingushetia, Dagestan, Kalmykia, and the Sverdlovsk region.

**Convention on the legal status of the Caspian Sea** (signed in Aktau on 12 August 2018) was ratified. The Convention sets out fundamental political-military principles of interactions between Kazakhstan, Iran, Turkmenistan, Russia and Azerbaijan in the use of the Caspian Sea for peaceful purposes.

**The procedure was approved for development, setting and revision of standards of natural environment's chemical and physical quality**, including surface water and groundwater. This would allow for developing a system of quality standards for individual parts of the natural environment and facilitate implementation of federal projects, such as "Clean air" and "Clean water" under the national "Ecology" project (PP RF No. 149 of 13.02.2019).

**Amendments were made to the Code of administrative violations** (FZ RF No.57-FZ of 15.04.2019), according to which liability is set for administrative violation of the rules of water conservation and water use when mining mineral resources, turf, rotten slime in water bodies and during construction and operation of underwater and above-water structures, in process of fishing, navigation, oil pipe and other pipeline laying and operation, bed deepening, blasting and other operations or during construction and operation of dams, harbor or other facilities, as well as in case of violation of the operation rules of water-management or water-protective structures and facilities. Administrative charges were increased for officers for discharge of hazardous substances into water. The increase in charges should bridge disproportionate sanctions for pollution of air, water, and land.

## Implementation of State programs

As part of the **Federal Special Program "Water Development in the Russian Federation in 2012-2020"**, construction of 12 protective engineering structures was completed in 2019. The number of protected population achieved more than 4,800. Completion of 55 projects allowed for increasing capacities of treatment structures by 203 Mm<sup>3</sup>/year and reducing the discharge of polluted water almost by 10 Mm<sup>3</sup>/year. The following events were also organized in 2019 under the Program: 6<sup>th</sup> All-Russian competition of children drawings "Colorful drops", where over 8,000 children took part from 80 regions of the country; 3<sup>rd</sup> All-Russian environmental quest for students "Water of Russia" that promoted reduced water consumption in 30 higher educational institutions; and, Russia-wide interactive environmental lesson "Water of Russia: Clean water laboratory", which was visited by over 100,000 students. **In 2019, changes were made in FSP**; in particular, resources of the Program were revisited for 2019-2020, taking into account measures to be undertaken to: restore water bodies; ensure efficient water use and sustainable operation of water infrastructure in the Lower Volga; preserve a unique system of the Volgo-Akhtuba floodplain; restore water bodies under the federal projects "Environmental improvement of the Volga" and "Preservation of unique water bodies".

A number of federal projects were implemented as part of the **National "Ecology" Project**:

- **federal project "Clean water"**, which assessed the status of centralized water supply and water preparation systems for their correspondence to standards of quality and safety of drinking water supply;

- **federal project "Environmental improvement of the Volga"**, which for the threefold reduction of a portion of raw sewage discharged into the Volga River by 16 territorial units of RF, assessed sewage treatment systems and helped to approve regional programs for construction and modernization of treatment plants. As a result of measures taken to ensure sustainable functioning of water infrastructure in the Lower Volga and preserve a unique system of the Volgo-Akhtuba floodplain, 3.54 km-long water bodies in the Lower Volga were cleaned, 251.1 ha of water bodies were restored, and 9 discharge facilities were put into operation prior to the scheduled date;

- **federal project "Preservation of unique water bodies"**. For environmental improvement

of lakes and reservoirs, in 2019, conservation efforts were taken and resulted in more than 3,300 ha of restored water bodies, 21.04 km of cleaned irrigation and drainage canals, and 370.5 km of cleaned river channels. The **All-Russian water body cleaning action “Water of Russia”** was organized as a series of eco-marathons, which started in Nizhniy Novgorod in May and finished in Crimea in October. The ecological baton encouraged 8,643 voluntary activities in 85 regions and showed a new record result: over 24,200 km of coastline was cleaned from trash by approximately 940,000 volunteers. In addition, more than 20% of activities promoted waste sorting. As a whole, 10 eco-marathons took place with the support of the Ministry of Natural Resources and Environment of the Russian Federation, the Water Industry Development Center, the Federal Agency “Rosvodresursy” and the Russia’s EKA ecological movement.

Source: [www.mnr.gov.ru/docs/openministry/report/](http://www.mnr.gov.ru/docs/openministry/report/)

### Hydrotechnical construction and reconstruction

The 320 MW **Nizhne-Bureya HPP** was put into operation **in the Amur province**. Given the water regime of the Bureya River, it is expected that the plant will generate 1.67 billion kWh annually. A contract was signed between the PAO RusHydro and the Hevel Group for the construction of the 1,275 kW **solar station** in the area of the Nizhne-Bureya HPP to generate 1.4 million kWh annually. The solar station will allow for reducing the costs of electricity for operation of the Nizhne-Bureya HPP, thus increasing the net electricity supply and improving performance of the HPP.

Innovative equipment – a phase-shifting transformer – allowing for shifting generated capacity to less loaded lines was put into operation at the **Volzhskaya HPP**. It should reduce six times the costs related to connecting increased capacity of HPP to the energy system. The economic effect will exceed 3 billion rouble.

**Construction of small HPPs: Krasnogorsk SHPP-1 and SHPP-2; Belopozhsk SHPP-1 and SHPP-2).** In 2019, RusHydro and the Karachayev-Cherkessian Republic signed an Agreement on the construction of Krasnogorsk small HPPs along the Kuban River downstream of the active Zelenchuk HPP. The capacity of each of small HPP will be 24.9 MW, and the average annual generation will be 83.8 million kWh. The plants are to be put into operation in 2021-2022. To bypass current restrictions on the capacity of small HPP (25 MW) and get state subsidies for re-

newables, RusHydro used the unconventional design, which provided for installation of two blocks with energy equipment, 24.9 MW each, in one dam. Similar scheme was earlier applied by NordHydro when designing Belopozhsk small HPPs along the Kem River in Karelia. Construction of those HPPs was to be completed in 2019. However, putting into operation of those plants is questionable even for 2020. This controversial project in Karelia was financed for the first time by the BRICS Bank in Russia. For avoiding “double HPP” in one dam in the future, appropriate changes were made in the Agreement (in early 2020) on joining to the wholesale electricity market trading system when increasing the maximum permissible capacity of small HPPs but not higher than 50 MW in total.

Source: <https://peretok.ru/articles/generation/21889/>

**Dam breakage in Siberia.** The dam at an artisanal gold mine along the Seiba River in Krasnoyarsk region burst on October 19, 2019. 17 people died, 27 people were injured. The Seiba and the Sisim rivers have become heavily polluted with copper and lead. [Environmentalists](#) have for years tried to draw the attention of authorities to bad mining practices in the Krasnoyarsk region.

**In February 2019, generation of the Bureya HPP was restored after elimination of the landslide in the Bureya River.** On December 11, 2018, the Bureya reservoir was split into two parts by rock-fall due to largest landslide in Russia. The reservoir lost 28% of its useful capacity, and river streamflow was blocked. This caused the risk of flooding for settlements located upstream of the rock-fall.

Source: <https://regnum.ru/news/economy/2571632.html>

It was decided to **keep the level of the Cheboksar reservoir at 63 m** and not to increase it to the design value of 68 m under public pressure.

Source: <https://regnum.ru/news/economy/2577837.html>

**Summer flood in Irkutsk province and further actions of Russian authorities.** As a result of high flow in Irkutsk province in June and July, 137 settlements were flooded and over 47,000 people became victims of the flood. Severe damage was recorded in Tulun and Nizhneudinsk cities. In September, the Russian Government corrected the procedure for mapping flooded and water-logging zones. Mapping of flooded zones is needed not only for elimination of negative effects

of the flood in Irkutsk province but also for further development of damaged territories.

Source: <https://sia.ru/?section=18204&id=455>

**President's orders concerning Baikal.** On the 12<sup>th</sup> of September, the Russian President approved the list of orders drafted after the audit of compliance with the legislation on preservation and environmental improvement of Lake Baikal and instructed the Government to start executing the orders before January 2020. In October 2019, the Baikal interregional environmental prosecutor stated that virtually the orders have not been implemented. Thus, the Investigative Committee was requested to inspect actions taken by responsible bodies.

Source: <https://iz.ru/935722/2019-10-24/v-prokurature-zaiavili-o-nevypolnenii-poruchenii-putina-po-okhrane-baikala>

**Construction of bottling plant at Lake Baikal by Chinese AquaSib was halted.** After public outcry organized by the civil movement "Save Baikal" and the community organization "Eco-zaschita 365", the Court of Irkutsk annulled positive findings of the state environmental expertise of the construction. The protest campaign drew attention to other environmental problems of Lake Baikal: consequences of large scale tourism development, wastes, discharge of untreated industrial and municipal sewage, deforestation, and leakage of toxic substances from paper mill.

Source: [www.interfax.ru/business/677206](http://www.interfax.ru/business/677206)

**Environmentalists applied to UNESCO in the context of Baikal preservation and potential hydropower development at Selenga's tributary in Mongolia.** The application concerning Lake Baikal was driven by the proposed amendments of the Federal Law on Baikal preservation and of the Forest Code that would allow for transfer of land of the forest fund to other categories and for massive sanitation of forests in the central environmental zone of Baikal, as well as for construction of treatment plants and eutrophication of the Lake. The second application refers to the proposed Mongolian Shuren and Orkhon HPP under the MINIS Project and Egjin-Gol HPP beyond the Project.

Source: <https://ircity.ru/news/35931/>

**Natural reserve system** – A number of national parks, such as Zigalga (Chelyabinsk province), Koigorod (Republic of Komi), Samur (Republic of Dagestan), Tokinsko-Stanovoy (Amur province), and Kytalyk (Yakutiya) were established in

2019. **The area of the "Leopard's land" national park in Primorsk region was extended.** The "Dvinsko-Pinezhskiy" sanctuary was established in Arkhangelsk province. However, challenges were faced as well: plans on the establishment of designated conservation areas (DCA) of federal importance were failed; attempts were continued to soften laws on DCA and withdraw the latter and protected zones, including those included into the list of UNESCO World Heritage (Yugyd Va national park, Pribaikalie national park, Yuzhno-Kamchatskiy park and others).

Source: <https://greenpeace.ru/expert-opinions/2020/01/09/zapovednaja-sistema-rossii-2019-radosti-i-pechali/>

In the International Year of Salmon-2019, a unique publication "The Amur Fish" has come out in Vladivostok with support of WWF-Russia. The Amur River is home to 139 fish species including migratory salmon and kaluga – the largest sturgeon species in the world.

**The Russian Government re-considered small hydropower in renewables plan 2025 in favor of solar and wind power.** According to the Governmental Decree, 3.94 GW of green power is to be put into operation and new small hydropower is to be reduced over 2019-2024.

Source: <https://peretok.ru/news/generation/20875/>

**The only world's floating nuclear heat and power plant was put into operation in Chukotka Autonomous Region in December 2019.** The plant is comprised of the coastal infrastructure and the floating "Lomonosov Academician" energy unit, which has been built for over 10 years. The power capacity of the plant is 70 MW, while the heat capacity is 50 Gcal/hr. This is sufficient to supply a city with population of about 100,000.

Source: [www.vedomosti.ru/business/articles/2019/12/19/819169-rossii-zarabotala-plavuchaya-stantsiya](http://www.vedomosti.ru/business/articles/2019/12/19/819169-rossii-zarabotala-plavuchaya-stantsiya)

**International cooperation. 6<sup>th</sup> meeting of the Water Working Group at the Russia-Iran Joint Commission on Economic and Trade Cooperation** (June 16-17, Tehran). The participants exchanged information on public policy and regulation in the sphere of environmental protection and nature management, addressed water-related issues, including integrated water resources management and water governance, water supply and sanitation, and reiterated their interest in developing bilateral cooperation in the area of efficient water use.

## Symposiums, conferences and forums

**21<sup>st</sup> International Scientific and Industrial Forum** “Great Rivers (environmental, hydrometeorological, and energy security)”. An action for cleaning water bodies and their banks – Water of Russia – was started. Following the Forum, the Resolution “Sustainable regional development in great river basins” was adopted (May 14-17, Nizhny Novgorod);

**3<sup>rd</sup> Russian Water Congress** – “Russia’s water resources for achievement of national development goals and strategic objectives” (June 24-26, Moscow);

**2<sup>nd</sup> International Young Water Leader Summit (IYWLS)** under the auspices of the [Baikal International Ecological Water Forum](#). The main theme of the Summit was the “Role of youth in achieving sustainable development goals as a driver of the 2030 Program success”. Following the Summit, the Baikal Declaration was signed (September 19-20, Irkutsk);

**15<sup>th</sup> International Symposium and Exhibition “Clean Water of Russia-2019”**, the main theme of which was water security as a factor of sustainable development. During the Symposium, the NWO EECCA Conference “Science and Innovations for Water Security” was held. Following the Conference, the collection of papers was published (September 23-24, Yekaterinburg);

**1<sup>st</sup> International Sustainable Development Forum “The Common Future”** under the general theme “Success criteria and measurement tools towards the achievement of Sustainable Development Goals” (November 25, Moscow);

**1<sup>st</sup> All-Russian Junior Water Forum**, upon conclusion of which it was decided to establish regional junior water communities (November 24-26, Moscow);

**International Conference “Water Resources – the Basis of Sustainable Development of Inhabited Area in Siberia and the Arctic in XXI Century”** (March 22, Tyumen).

## Jubilees

**In September 2019, the Federal State Enterprise – Russian Research Institute for Integrated Water Management and Protection celebrated its 50-year jubilee.** The Institute has considerable experience in the development and formulation of a conceptual framework of water manage-

ment and of national water governance improvement strategy and largely contributed to the formation of the school of water sciences. Relying on experience gained in the research on Siberian river transfer, the Institute was actively involved in the development of Master Plans for integrated water management and protection and prepared such Master Plans for 14 river basins (See details in [“Science and Innovations”](#)).

## Ukraine

**Ukraine and Belarus agreed to cooperate on the development of the E40 Waterway.** The idea of constructing a shipping route for transportation of goods from Belarus to the ports in the Black Sea, the Mediterranean Sea, and the Caspian Sea has been considered for the last 8 years. In 2019, this issue was included into priorities of the 2030 National transportation strategy of Ukraine and was voiced by the Heads of Belarus and Ukraine in Zhitomir on the 4<sup>th</sup> of October. The construction project will involve building a port in Nizhniye Zhary at the border of the both states and deepening the Pripyat River. A number of environmental organizations from Belarus, Ukraine, Poland and Europe as a whole oppose the construction of the waterway. They argue that river channel straightening and construction of hydraulic structures would destroy the unique river ecosystem of the Pripyat, the Bug, the Vistula and the Dnieper. The radioactive pollution that would be caused by deepening operations also poses a risk for Ukraine.

Source: <https://bahna.land/ru/reki-i-ozera/lukashenko-i-zelenskij-obsudili-smert-polesya?>

**17 sustainable development goals for Ukraine** until 2030 were approved and included among others the following goals: ensure availability and sustainable management of water and sanitation for all; take urgent action to combat climate change and its impacts; conserve and sustainably use the oceans, seas and marine resources for sustainable development (Presidential Decree #722 of 30.09.2019).

**International cooperation.** An inter-governmental credit agreement (€64 million) was signed with France for water supply system reconstruction in Mariupol city and a Memorandum was signed between the Ukrainian Ministry of Ecology and EBRD to develop the mechanism ensuring sustainable development of irrigated agriculture in Ukraine, including modernization of the Lower Dniester irrigation system.

**Environment.** In July 2019, Ukrainian environmentalists recorded the catastrophic shallo-

wing of the deepest and largest karstic-origin lake in Ukraine – Svitiaz, one of 7 natural wonders of the country.

10 old dams and bay bars were dismantled along the Kogilnik, the Kagach and the Sarata Rivers in the territory of the Danube biosphere reserve in Odessa province. This work was finan-

ced under the project “Restoring the Wetlands and Steppes of the Danube Delta Region”.

[XVII International Trade Fair “AQUA UKRAINE – 2019”](#) took place in Kiev on 5-7 November. It is annually held in Ukraine to introduce the best world standards and advanced achievements in the water sector. The number of visitors exceeded 8,500 from over 10 countries.

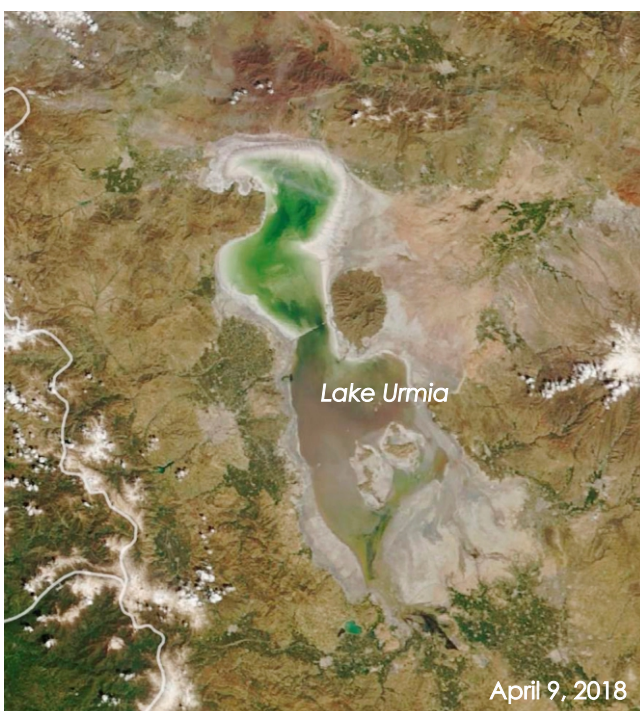
## 11.6. Middle East

Turkey will start **filling the Ilisu dam on the Tigris River in June 2019**, President Tayyip Erdogan said, despite protests from Iraq. In fact, the gradual filling of the reservoir began in July 2019, but it was not announced publicly. The dam, which has been approved by the Turkish government in 1997 and will generate 1,200 MW of electricity, is a key part of Turkey's Southeastern Anatolia Project, designed to improve its poorest and least developed region. The dam has been criticized for its impact both in Turkey and downstream in Iraq. The Iraqi government says it will create water shortages by reducing flow in one of two rivers which the country depends on for much of its supplies. Around 70% of Iraq's water flows from neighboring countries, including the Tigris and Euphrates, which run through Turkey. In Turkey, the Ilisu dam will displace 50 thousands of people and submerge Hasankeyf dating back 12,000 years. Turkey briefly started filling the dam in June 2018, but it halted temporarily after complaints from Iraq about reduced water flows at the height of summer. Iraq's water shortages have

led it to take measures such as bans on rice planting and have driven farmers to leave their land. Campaigners unsuccessfully challenged the dam project at the European Court of Human Rights on grounds it would damage the country's cultural heritage and violate the right to education. The court dismissed the case in February 2019, saying heritage protection is the responsibility of Turkish authorities and it had no jurisdiction.

Source: [www.reuters.com/article/us-turkey-dam-erdogan/erdogan-says-turkey-will-start-filling-ilsu-dam-in-june-idUSKCN1QO1V5](http://www.reuters.com/article/us-turkey-dam-erdogan/erdogan-says-turkey-will-start-filling-ilsu-dam-in-june-idUSKCN1QO1V5)

In September 2019, **water level in Urmia Lake has increased by 75 centimeters**, i.e. two billion cubic meters compared to the same month in the year before. In June, the surface area of Urmia Lake increased by 829 square kilometers, thanks to the two-month-long springtime showers that began pouring across the country in March. Located between the provinces of East and West Azarbaijan, Urmia Lake is a closed wa-



ter body fed through 21 permanent and 39 seasonal rivers. It was Iran's largest inland body of water less than 20 years ago; however, it began drying up in the mid-2000s. According to international statistics, the lake lost about 80% of its waterbed by 2015. Several dams constructed near the lake have choked off the water supply from the nearby mountains, contributing to the depletion of the lake. The construction of a 15-km causeway between Urmia and Tabriz has also exerted a severe impact on the reservoir. Now that the lake has been revived by the help of the mother nature, the officials have geared up to implement the long-awaited plans, including water transfer both from domestic and foreign bodies, in order not to let the lake dry up again. Particularly, facilities have been built for the transfer of 0.6 km<sup>3</sup> from the transboundary Little Zab River, where the largest HPP in Iraq Kurdistan stands.

Sources: [www.waterpolitics.com/2019/10/14/irans-urmialake-water-level-improves/](http://www.waterpolitics.com/2019/10/14/irans-urmialake-water-level-improves/);  
<https://earthobservatory.nasa.gov/images/144848/reviving-the-shriveled-lake-urmia>

**In November 2019, Jordan's king Abdullah II announced that two pieces of land leased by Israel would be returned to the "full sovereignty" of Jordan as the two countries marked a chilly 25<sup>th</sup> anniversary of their landmark peace agreement.** According to the peace treaty inked by Jordan and Israel on October 26, 1994, the two territories of Baqoura (Naharayim) and Ghamr (Zofar) were leased to Israel for a 25-year renew-

able period. Under the agreement, the lease is automatically renewable unless either side gives a year's notice to terminate it. The deal allowed the Tel Aviv regime and Israeli farmers to use the two areas in the fertile Jordan Valley – which are recognized Jordanian territory. In exchange, Israel agreed to supply Jordan, which is suffering from a severe water crisis, with 45 million m<sup>3</sup> of water every year. In October 2018, King Abdullah II said Amman has already notified Israel that it will not extend the lease, stressing that the two border areas "are Jordanian land and will remain" part of the Arab country. The decision came amid growing public pressure for Jordan to reclaim the lands. At the time, Israeli Agriculture Minister Uri Ariel threatened that water supplies to Amman would be reduced from four to two days a week if Jordan terminated the agreement of the 1994 peace treaty.

Source: [www.presstv.com/Detail/2019/10/26/609595/IsraelJordan-King-Abdullah-II-water-deal-Ariel-Sharon](http://www.presstv.com/Detail/2019/10/26/609595/IsraelJordan-King-Abdullah-II-water-deal-Ariel-Sharon)

**The 1<sup>st</sup> Mesopotamia Water forum** took place on April 6-8, 2019 in Sulaymaniyah, Kurdistan Region of Iraq. The activists working in Syria, Iraq, Turkey and Iran discussed water crisis in the region and denounced the grave impacts of dams and other water infrastructures on social structures, river ecosystems, cultural heritage, and local economies.

Source: [www.transrivers.org/2019/2613/](http://www.transrivers.org/2019/2613/)



