



Section 11

Key Water Developments

11.1. Africa

In 2018, certain progress was made in talks on the Grand Ethiopian Renaissance Dam on the Nile River, which is the source of tension between Egypt, Sudan, and Ethiopia. It has been agreed that regular tripartite meetings will be conducted between the three countries' ministers, and a tripartite fund will be established, named the "Tripartite Infrastructure Fund". In addition, Egypt, Sudan, and Ethiopia will jointly establish the "National Independent Scientific Research Study Group," which aims to "discuss means of enhancing the levels of understanding and cooperation among the three countries with regard to the GERD." Primarily, this will address the "equitable and reasonable utilization of shared water resources while taking all appropriate measures to prevent the causing of significant harm."

Talks have been held between Egypt, Ethiopia, and Sudan since the construction began, and in recent months have ended in deadlock. Egypt has criticised the dam's construction, which Ethiopia has been undertaking since 2011, arguing that it will reduce the country's access to the river's water – something it considers a historical, legitimate right. Egypt maintains that any negotiation must guarantee its 66 per cent historical rights with a veto power. Sudan, on the other hand, holds 22 per cent of the water rights, according to the 1959 colonial agreement. Ethiopia, although the source of 86 per cent of the river's water, was excluded from this deal. Both Egypt and Sudan, however, have now expressed their support for the construction, which aims to produce 6,000 megawatts of hydroelectric power – equal to six nuclear-powered plants.

Source: <https://egyptianstreets.com/2018/05/17/breakthrough-for-grand-ethiopian-renaissance-dam-talks/>

The Democratic Republic of Congo, DRC and the consortium of China Three Gorges Corporation and Spanish Actividades de Construcción y Servicios SA signed a contract for construction of the Inga III Hydroelectric Dam on River Congo (October 16, 2018). The 11,000-mega-watt Inga III project is worth \$14 billion. Inga III Hydroelectric Dam is a third stage of the multilevel cascade of eight stations Grand Inga, whose generation capacity is estimated at 40 GW, over twice the power generation of the world's largest Chinese Three Gorges Dam. As estimated by the World Energy Council, the total cost of the Grand Inga with all necessary transmission networks will be \$80 billion. (To compare, the estimated cost of the currently most costly hydro-electric project, Three Gorges Dam on the Yangtze River, was \$25 billion).

About half of generated power will be exported, while the other half will be used to meet internal needs, including for the national mining sector and population. The project is to increase power generation in DRC 16 times. Currently, only 15% of population has permanent access to electricity. South Africa and Nigeria will get an additional source of energy. Non-governmental groups express concern over lack of transparency and democratic oversight of the Inga III hydropower project in terms of its impact on environment and local communities.

Source: <https://allafrica.com/stories/201810190512.html>, www.transrivers.org/2018/2381/

Lake Turkana National Parks (Kenya) inscribed on List of World Heritage in Danger. The World Heritage Committee decided so on 24th of June in view of its concern about the changes affecting the hydrology of the Lake Turkana Basin, notably the disruptive effect of Ethiopia's Gibe III dam with a design capacity of 1.87 GW.

Source: <http://whc.unesco.org/en/news/1842>

Construction of the 2,100-MW hydroelectric project is planned on the Rufiji River in the Selous Game Reserve, a Unesco World Heritage site celebrated for its animal populations. Tanzania's Government has signed a deal with Arab Contractors Company and Egyptian Elsewedy Electric Company for the design and construction of a dam with a height of nearly 134 m and the appurtenant structures for the hydropower plant with a gross output of 5,920GWh. The federal budget proposal earmarked \$307 million for the project. This amount is more than 40% of the Tanzania's national budget.

Source: www.ruscable.ru/news/2018/11/23/V_Tanzanii_plani_ruetsya_postroity_GES_moschnostyu/



South Island of Lake Turkana, Kenya © Doron / Doron

The Near East and North Africa region is not only highly prone to drought, but also one of the world's most water-scarce areas, with desert making up three quarters of its territory. The region's technical, administrative, and financial capacities to deal with drought are inadequate. Yet, there is still too much focus on recovering from drought rather than being less susceptible to it, with insufficient funding, preparedness, and coordination remaining significant constraints. The UN Food and Agriculture Organization (FAO) report issued in 2018 has called for a fundamental shift in the way drought is perceived and managed in the region. The agency said in the report that a more pro-active approach based on the principles of risk reduction is needed to build greater resilience to droughts. The report argues that developing and implementing national drought management policies consistent with the country's development objectives as well as establishing early warning systems are essential. It recommends disseminating technologies to combat drought, and support policies and incentives to use land and water resources rationally.

Source: www.fao.org/news/story/ru/item/1140875/icode/

Cape Town, South Africa continued suffering from water insecurity in 2018. The water level of the major dams supplying the City have been declining since 2015 and peaked during mid-2017 to mid-2018 where water levels hovered between 15 to 30 per cent of total dam capacity. On January 1, 2018, the city announced an official limit for sustainable water use of 450 million liters per day for the entire province and declared Level 6 water restrictions, capping household water use at 50 liters per residence per day. In February, Cape Town drought was declared a 'national disaster'. Over 6 months, the city issued tenders to build 3 emergency desalination plants, and reduced agricultural use by 60%. The city raised funding to research water saving and recovery technologies and water source diversification. Thanks to all those efforts, the city was able to avoid Day Zero. Despite the ups and downs Cape Town has faced over the last few years, perhaps the biggest lesson from the water crisis is the dire need for people to take the water-wise movement seriously. No one is safe from drought. But if Cape Town has shown us anything, it's that little changes can actually make a big difference.

Source: <https://pulitzercenter.org/reporting/howcape-town-defeated-day-zero-now>

The Sahara desert has gotten 10 per cent bigger since 1920 as reported by scientists from the Maryland University in their study published in the Journal of Climate. Deserts are typically defined by low average annual rainfall – usually 100 millimeters of rain per year or less. The researchers analyzed rainfall data recorded throughout Africa from 1920 to 2013 and found that the Sahara, which occupies much of the northern part of the continent, expanded by 10 per cent during this period when looking at annual trends. The most notable expansion of the Sahara occurred in summer, resulting in a nearly 16 per cent increase in the desert's average seasonal area over the 93-year span covered by the study. The study results suggest that human-caused climate change, as well as natural climate cycles such as the Atlantic Multidecadal Oscillation (AMO), caused the desert's expansion. The geographical pattern of expansion varied from season to season, with the most notable differences occurring along the Sahara's northern and southern boundaries. The study's results have far-reaching implications for the future of the Sahara, as well as other subtropical deserts around the world. As the world's population continues to grow, a reduction in arable land with adequate rainfall to support crops could have devastating consequences. The next step will be to look at what is driving these trends, for the Sahara and elsewhere.

Source: <https://umdrighnow.umd.edu/news/sahara-desert-expanding-according-new-umd-study>

Chad and Senegal become the first countries outside the pan-European region to accede to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). On 22 February, Chad submitted its instruments of accession to the Water Convention to the United Nations in New York. A landlocked country in Central Africa, Chad faces significant water management challenges and largely depends on water resources shared with its neighbours – Cameroon, the Central African Republic, Libya, Niger, Nigeria and Sudan. Senegal acceded the Water Convention on 31 August. A Sahelian country located on the western coast of Africa, Senegal shares most of its surface and groundwater resources with its neighbours – Gambia, Guinea, Guinea Bissau, Mali and Mauritania.

Source: www.unece.org/?id=48148; www.unece.org/?id=49710

11.2. America

2018 marked the start of discussions between the United States (U.S.) and Canada about the 1964 Columbia River Treaty. Over 50 years after the Treaty was originally ratified, negotiators representing the governments of the U.S. and Canada (including British Columbia) sat down together to launch formal discussions (20-29 May, Washington). The second round of negotiations was held on 15-16 August in Nelson (Canada); third round, on 17-18 October in Portland, U.S.; and the fourth round, on 12-13 December, in Vancouver (Canada).

The 1964 Treaty was originally created to reduce flood risk and increase power generation on the Columbia River. The Treaty's hydropower operations and management of flood risk provide substantial benefits to millions of people on both sides of the border. The Treaty also has facilitated additional benefits such as supporting irrigation, municipal water use, industrial use, navigation, and recreation. However, northwest politicians have been pushing for years to renegotiate the Columbia River Treaty, which expires in 2024. The lawmakers are particularly keen to eliminate a so-called "Canadian Entitlement" they contend is too favorable to Canada, providing Canada with \$250 million to \$350 million a year worth of electrical power in exchange for storing water in huge reservoirs in British Columbia. But Canadians living along those reservoirs pay a price: They're subject to water levels that can rise and fall 80 feet per year. Environmental groups and Native American tribes in both countries would like the heavily-dammed Columbia to flow more like a natural river, with additional water releases in dry years to aid struggling salmon and steelhead runs. That is why it is imperative that the parties ensure that any updated treaty is beneficial for both the United States and Canada.

Source:
www.state.gov/p/wha/ci/ca/topics/c78892.htm;
<https://engage.gov.bc.ca/columbiarivertreaty/february-7-2019-newsletter/>

A Water Infrastructure Act of 2018 was adopted in the U.S. The Act provides for the improvement of water infrastructure all over the country. This water resources development bill includes provisions concerning flood control, navigation, water development, maintenance and rehabilitation of dams and reservoirs, environmental restoration, water supply, financing of infrastructure modernization, hydropower, and

community assistance. The bill contains several sections, including on rehabilitation of constructed dams, the operation and maintenance of navigation and hydroelectric facilities, dam safety, licensing of proposed hydropower projects, etc. The National Hydropower Association says the bill will "facilitate a more efficient licensing process for proposed projects at existing non-powered dams; shorten the approval timeline for projects utilizing existing conduits; provide regulatory incentives for investments at existing hydropower facilities."

Source:
www.congress.gov/bill/115thcongress/senate-bill/3021/text

Historic presidential decrees create hundreds of water reserves in Mexico. The President of Mexico, Enrique Peña Nieto, signed in June 2018 a series of landmark decrees establishing water reserves in nearly 300 out of Mexico's 756 river basins, representing 55 per cent of the country's surface water. A "water reserve" is a volume of water in a river basin allocated exclusively for the protection of nature and human consumption. The new water reserves will also improve the health of 82 Natural Protected Areas, 64 Ramsar wetlands and Mexico's last free flowing rivers. The decrees will guarantee also water supplies for the next 50 years for 45 million people.

Source:
wwf.panda.org/our_work/water/freshwater_news/?328874/Historic-presidential-decrees-creates-hundreds-of-water-reserves-in-Mexico

The Inter-American Court of Human Rights (IACtHR) issued landmark Advisory Opinion on Environment and Human Rights (7 February 2018). This is the latest and potentially most significant decision in a series of high profile international judicial rulings, which acknowledge legal consequences for environmental harm. The Advisory Opinion (AO) focuses on State obligations under international environmental law and human rights law in the transboundary context, in particular as concerns the construction and operation of infrastructure mega-projects, petroleum exploration and exploitation, maritime transportation of hydrocarbons, construction and enlargement of ports and shipping canals, and so on. The AO is ground-breaking in several respects. It is the IACtHR's first pronouncement on State obligations concerning environmental protection under the American Convention of Human

Rights (§ 46). Indeed, it is the first ruling ever by an international human rights court that truly examines environmental law as a systemic whole, as distinct from isolated examples of environmental harm analogous to private law nuisance claims (e.g. *Lopez-Ostra v. Spain* in the European Court of Human Rights). Perhaps most importantly, it is a landmark in the evolving jurisprudence on 'diagonal' human rights obligations, i.e. obligations capable of being invoked by individual or groups against States other than their own. The AO opens a door – albeit in a cautious and pragmatic way – to cross-border human rights claims arising from transboundary environmental impacts.

Source: www.ejiltalk.org/the-rise-of-environmental-law-in-international-dispute-resolution-inter-american-court-of-human-rights-issues-landmark-advisory-opinion-on-environment-and-human-rights/comment-page-1/

8th World Water Forum was held in Brazil. See the detailed description in "[World Water Council](#)".

The dam [Coca Codo Sinclair](#), which was built by China at the foot of the active volcano [Reventador](#) in Ecuador and launched in November 2016, is threatened now. More than 7,000 cracks have developed in the dam's machinery because of substandard steel and inadequate welding. Its reservoir is clogged with silt, sand and trees. And the only time engineers tried to throttle up the facility completely, it shook violently and shorted out the national electricity grid. All this directly affects the natural environment. The heavy sedimentation means engineers sporadically release large amounts of water to clear out the system, causing flash

floods and damaging both wild nature and sugar cane plantations of local farmers. Today, the dam typically runs at half capacity. Experts say that given its design – and the cycle of wet and dry seasons in Ecuador – it would be able to generate the full amount of electricity for only a few hours a day, six months out of the year. That is, if everything worked perfectly. The dam was supposed to christen Ecuador's vast ambitions, solve its energy needs and help lift the small South American country out of poverty. However, Ecuador still has to pay back the debt. The \$1.7 billion loan from China's Export-Import Bank is lucrative for China: 7 per cent interest over 15 years. In interest alone, Ecuador owes \$125 million a year. To settle the bill, China gets to keep 80 percent of Ecuador's most valuable export – oil – because many of the contracts are repaid in petroleum, not dollars.

Source: www.nytimes.com/2018/12/24/world/americas/ecuador-china-dam.html



11.3. Asia

Afghanistan

Following the 2018 census, the population of Afghanistan is 31.56 million people. Its territory covers 652,864 square kilometers. All rivers, excluding the Kabul flowing into the Indus, are continental. The largest rivers are the Amu Darya flowing along the northern border, the Harirod used for irrigation, and the Helmand, which along with the Farakhrud, Khashrud, and Kharutrud Rivers flows into the Sistan depression and forms the Hamun lake system. The rivers are mainly fed by glacial melt water. Lowland rivers have high flow in spring and dry out in summer. Mountain rivers possess significant hydropower potential. In many areas, groundwater is the

only source of water and irrigation. The ANDMA statistics shows **underground water reserves in Kabul will dry up within the next 10 years.** [At the moment](#), there are 213,000 wells in Kabul City, and the city uses 32 billion cubic meters of water every year, while the capacity of the city's water is 29 million cubic meters in a year.

Droughts in Afghanistan. The country is currently experiencing the worst drought in decades, affecting 20 of Afghanistan's 34 provinces. A total of 275,000 people have been displaced by drought in western Afghanistan, with over two million threatened by the effects of [water shortages](#). Many countries assisted Afghanistan: [UK pledged £ 25 million](#) for provision of food,

shelter and clean water; [UN](#) – \$34.6 million; [EU](#) – additional €20 million; [Korea](#) **donated around \$2.2 million in support of** 21,000 families, including the **most vulnerable children and women affected by displacement due to drought in Afghanistan**. The Government of [Uzbekistan](#) sent more than 3,000 tons of food wheat to Afghanistan in humanitarian aid to support the population.

Hydropower development

In 2018, the Naghlu Hydropower Plant (NHPP), Afghanistan's largest hydropower plant, has restarted operations of one of its four turbines after being nonfunctional since 2012. The NHPP is located in Surobi district, about 85 kilometers east of Kabul city. The rehabilitation of turbine number 1 started in 2016. A Russian company was contracted to do the work. In addition to rehabilitating the turbines, it is planned to renovate the dam structure and to clean the dam's reservoir.

Constructions on the hydropower plant in **Feyzabad** will now resume after clarifying geological circumstances. The hydropower plant will provide electricity to Feyzabad's entire population – in total about 60,000 people. The Afghan-German Cooperation funds the construction via KfW Development Bank at a total cost of AFN 3.7 billion. Constructions started in 2015 and shall be finished by December 2020.

Source: <https://wadsam.com/afghan-business-news/hydropower-plant-feyzabad-benefits-60000-people/>

The World Bank and ADB signed an agreement to co-finance Kandahar's Dahla Dam rehabilitation project. Dahla Dam is the largest dam in Kandahar and second largest in Afghanistan. The dam was built in 1952, but it was subject to siltation of the reservoir due to neglect over the years of war. The rehabilitation project is expected to cost \$400 million, which will be financed by World Bank and ADB. Tranche 1 of four expected tranches includes raising Dahla Dam's height by 12 meters as a result of which its capacity will increase from 298 million cubic meters to 798 cubic meters. Tranche 2 includes building system to irrigate 20,000 hectares of agriculture land. Trench 3 involves water supply to Kandahar city and its neighboring villages. Trench 4 includes installing 24 MW capacities of hydropower turbines.

Source: www.1tvnews.af/en/news/afghanistan/36370-world-bank-adb-sign-agreement-to-co-finance-kandahars-dahla-dam-rehabilitation-project-

New projects

ADB has approved a \$75 million grant to help in the development of horticulture value chains in [Afghanistan](#), empowering farmers, crop producers, as well as [agriculture](#) enterprises. The project will improve agricultural productivity and food security in Afghanistan, while helping promote business linkages between agro-business enterprises and farmers. This will help boost growth in the subsector, which is mainly constrained by a large number of geographically scattered small-scale producers that lack access to finance as well as proper agriculture infrastructure and inputs. For agro-business enterprises, the project will help provide pre-cooling rooms; packhouse, sorting, or grading buildings and equipment; storage facilities; processing equipment and machinery; a quality control accredited laboratory.

Source: www.adb.org/projects/51039-002/main

Afghanistan's Ministry of Agriculture, Irrigation and Livestock and USAID [signed](#) an agreement based on which USAID will invest \$110 million in the country's agriculture sector in the next five years. The money will be invested in two projects, Afghanistan Value Chains (AVC) and High Value Crops (HVC), to improve Afghanistan's agricultural sector.

ADB and the Ministry of Rural Rehabilitation and Development (MRRD) of Afghanistan have inaugurated the distribution of 80 off-grid solar kits, called "[electricity-in-a-box](#)", to rural households near Kabul without grid electricity. The "electricity-in-a-box" package uses recent technological advances to make off-grid connections economically more viable and environmentally friendly. In the past, solar packages only provided solar photovoltaic panels and lead acid batteries for lighting. The "electricity-in-a-box" provide not only the solar photovoltaic panels to generate energy, but also more durable lithium-ion batteries for storage and energy efficient 12-volt DC appliances including a television set, refrigerator, fan, and LED lights. The recipients will contribute a monthly fee for operation and maintenance of the kits.

EU announced a project worth € 36 million to tackle the impacts of climate change in Afghanistan. Pierre Mayaudon, head of EU Delegation in Afghanistan, unveiled the project in a ceremony in Kabul to celebrate EU Climate Change Diplomacy Week. According to the envoy, 300,000 people are displaced due to climate change in Afghanistan. The new project will prevent displacement of people.

Aid Effectiveness in Afghanistan. A joint Oxfam and Swedish Committee for Afghanistan (SCA) report on aid effectiveness found that despite improvements in some sectors, aid delivery in Afghanistan is still largely ineffective and poverty has risen. It reveals that while development aid has decreased, donor support continues to be fragmented and aid dependency remains high. The fragmentation of aid is reflected by the fact that funds for the \$ 6.659 billion Afghan government budget for 2017/18 were provided by over 30 different international donors. Donors also give money to Afghanistan 'off-budget', where it is disbursed through development partners, UN agencies, and nongovernment organizations. Afghanistan has a national development strategy, the Afghan National Peace and Development Framework (ANPDF), which is the government's plan for 2017 to 2021, and the National Priority Programs, which guide the development problem solving for the country. In reality, international donors consult with government and use the above as tools for their own planning, which is largely undertaken back in their respective capital cities. Thus, the level of development ownership enjoyed by the government is at the discretion of individual donors, with some donors not making this a priority for their aid approach. A lack of local development ownership, and poor donor alignment, leads to ineffective aid.

Source:

<https://reliefweb.int/report/afghanistan/aid-effectiveness-afghanistan>

China

In mid-March 2018, during the 13th National People's Congress of the People's Republic of China, the [plan was approved](#) to **reorganize ministries and agencies, which changed the structure of government from "sectoral" to "functional" one, with greater focus on environment.** Although the Ministry of Water Resources remains, it loses many research/monitoring functions and registration of water use rights in favor of the Ministry of Natural Resources. It also transfers to the newly established Ministry of Ecological Environment the function of river basin water quality management and all matters related to regulation of waste discharge. MEE has also the honorable duty to restore and protect environment in the area of the Three Gorges Dam project and South-North Water Diversion project.

In 2018, the [Water Pollution Prevention and Control Law](#) adopted on 27 June 2017 came into force. It focuses on agricultural water

pollution; fertilizer pollution standards are introduced; protection of drinking water sources is strengthened; discharge of wastewater in those sources is severely punished. By this law, illegal discharge of pollutants is subject to a maximum fine of ¥1 million and the prosecution of reoccurrence. The government and party leaders will be assigned "river chiefs" and take personal responsibility for their status. 200 thousand "river chiefs" were already assigned; and, assignment of "lake chiefs" is still [in process](#).

Key water policy areas in 2018 and early 2019.

Economic issues topped [China's recent Two Sessions](#) given its slowing economy, but despite this China's march towards a Beautiful China appears unhindered. In the latest government budget for 2019, [spending in water and soil pollution will increase](#) by a strong 45.3% and 42.9%, reaching ¥30 billion and ¥5 billion, respectively. Spending on air pollution on the other hand will go up 25% to ¥25 billion. Below, we have summarized all the key policies into five categories: 1. Water; 2. Pollution; 3. Regional; 4. Industry & Tech; and 5. Energy.

1. Water Focused Policies. China is determined to further improve its pricing mechanism to stimulate environmental protection and green development. For water use, the government aims for a new pricing mechanism that encourages better quality and more conservation to ensure sustainable use of water resources. Other new targets include all the cities to finish the campaign of environmental protection by 2019, and to accelerate the performance in the war on urban black and smelly water bodies. For key cities, black and smelly water cleaning rate should be over 90% by the end of 2018, while for other cities by end of 2020.

2. Pollution Focused Policies. Of the many pollution focused polices released over the last year, the most significant one is the new "Soil Pollution Prevention & Control Law". This is the China's first dedicated law on soil protection, which builds upon the "Soil Ten Plan" issued in May 2016. Together with previously revised pollution prevention & control laws on air (2015) and water (2017), it again shows that China has escalated its fight against pollution through legislation. Two other major pollution related development plans were released in June and July 2018 to strengthen the protection of China's ecological environment. These plans include setting out various targets to achieve a "Beautiful China" by 2035 and establishing the

strictest legal system to fight the war on pollution holistically.

3. Regional Focused Policies. Like previous years, the Yangtze River remained a key target region for China's regional water related policies in 2018. A comprehensive action plan for Yangtze protection and rehabilitation was released in December 2018. Among other key points, the plan set out details of delimitation of ecological protection red lines along the Yangtze, controlling industrial and agricultural pollution, and improving investment and compensation schemes. This year, the Bohai River also became a priority target for water pollution protection and rehabilitation. A quota system for pollution discharge in Bohai will be gradually established.

4. Industry & Tech Focused Policies. To win its War on Pollution, industrial water pollution has to be controlled and the IT and communications sectors were especially targeted in the past year. For the communications industry, China released a three-year action plan to reduce water use per VAI by 23% compared to 2015, and to increase water use efficiency and corresponding water use standards. Moreover, an action plan to promote the green development of lead acid batteries was also put in place. More widely, China issued a development plan to accelerate the industrial green development in its core economic regions such as Jingjinji, Yangtze River Economic Belt, and Pearl River Delta. Later in December 2018, China further revised and consolidated the appraisal indicator system of clean production for 14 sectors.

5. Energy Focused Policies. China's first renewable energy quota finally comes into fruition with the National Energy Administration (NEA)'s consultation on "Renewable Energy Power Quotas and Assessment Methods". In early 2019, China's top planning organization revealed new solar and wind policies for subsidy-free projects. China will start building pilot wind and solar power projects that won't receive national government subsidy as it pushes to improve the competitiveness of renewable energy and rein in subsidy bills.

Source:
www.chinawaterrisk.org/resources/analysisreviews/key-water-policies-2018-2019/

China installs its first turbine on the Baihetan HPP, which will be the world's second biggest power station. HPP is constructed on the Jinsha River, which is a tributary of the Yangtze River. With a total installed capacity of 16 million kilowatts, the project is expected to generate more than 60 billion kilowatt hours of electricity per year. The power will be generated in 2021 and the plant will become fully operational by the end of 2022. Construction cost is estimated at \$24 billion.

China's Forestry and Grassland Administration [announced](#) a new initiative "Restoration of *Populus Euphratica* (Tugai) Forest Eco-system along the Belt and Road". Taking into account that tugais provide important economic value to people (erosion control, fodder, tourism, etc), it is planned to undertake joint afforestation in partnership with the participating countries. However, experts warn that afforestation cannot prevent desertification. Thus, effective preventive measures are indispensable at the legislative and practical levels.

The China Green Foundation [announced](#) the launch of an **international ecological restoration fund**, drawn from donations from companies worldwide to promote a green economy in countries involved in the BRI.

The Chinese [scientists](#) assessed changes in fish assemblages in the Yellow River from 1965 to 2015. According to the report, due to the dam constructions, exotic fish invasions, and flow reductions fish species richness of the river declined 35.4%, and ichthyofauna composition became more homogenous at different river sections. The lower reaches experienced significant species loss.

In 2018, China increasingly began to assess the impact of and demolish tens and hundreds of small hydropower plants and other dams damaging its ecological river basins. Firstly, dams located in the protected areas are to be demolished. In this context, an illegally-constructed hydropower station located inside the buffer zone of the ancient Dujiangyan Irrigation System (Sichuan province), a protected UNESCO World Heritage Site was demolished. By December 2018, Zhangjiajie city (Hunan province) has closed down 34 hydropower stations, and 10 dams have been demolished on the Lishui River, a major tributary of the Yangtze River to restore the living environment of the National Natural Reserve of Giant Salamanders. This work is undertaken or planned in all basin districts.



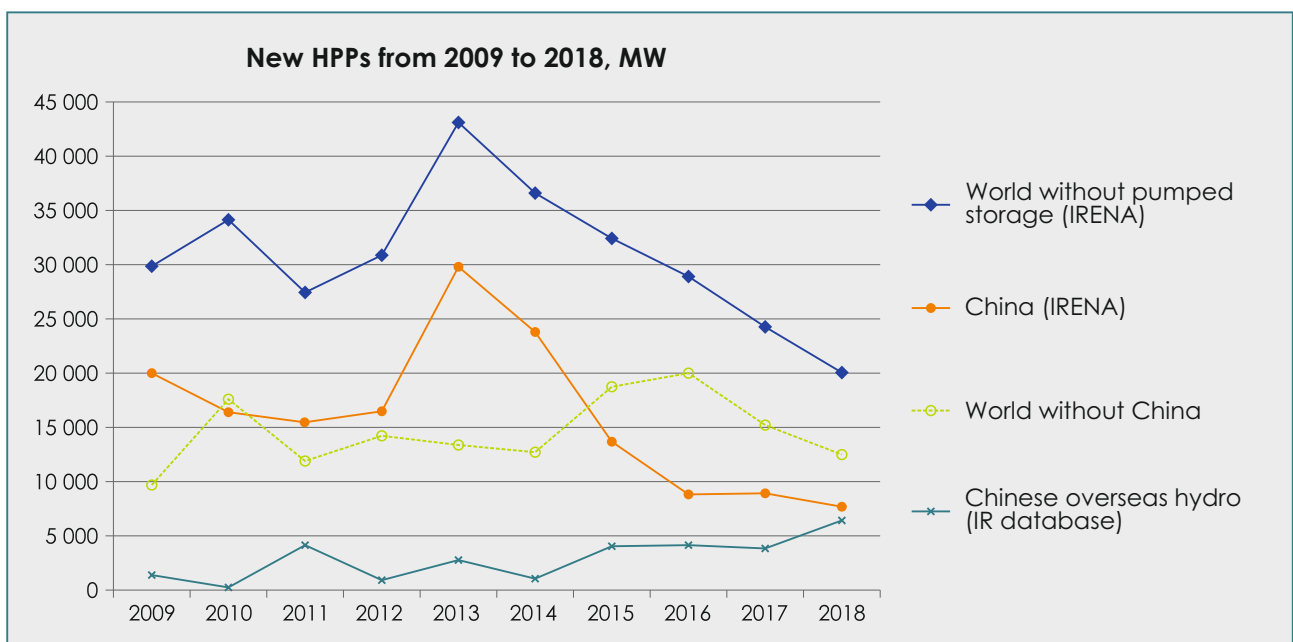
Community activists are celebrating the demolition of the Dujangyan dam (Credit: Peng Wei)

In January 2019, the China Society for Hydropower informed that it controls **70% of the world's hydropower plants under construction**. According to the Rivers without Boundaries Coalition, 75% of hydropower projects that are under construction all over the world in 2018 had Chinese financing.

Since March 2018, China has adopted new Administrative measures for Overseas Investment by Enterprises. The document says that investments concerning transboundary water resources are treated as the most risky and are

subjected to restrictions and additional permissions.

The Global Energy Interconnection Development and Cooperation Organization (GEIDCO), with its permanent office in Beijing, China, was established to develop a global energy interconnection system (GEI) to meet the global demand for electricity in a clean and green way. In May 2018, GEIDCO released the Global Power Grid [Framework](#) and the grid projects for Northeast and Southeast Asia, and in October 2018, plans were announced about



Sources: IRENA, International Rivers databases; Data of China Society for Hydropower

the pilot grids with massive development of hydropower stations in these regions. [In December 2018](#), (GEIDCO) and the Secretariat of the United Nations Framework Convention on Climate Change jointly released an action plan for implementing the Paris Agreement. According to the Action Plan, the Global Energy Interconnection will help expand the global clean energy development scale by four times, and the average annual growth rate of clean energy consumption will increase five times. The Think Tank Alliance of Global Energy Interconnection was also officially set up. Many experts consider that the supergrid program is associated with significant economic, environmental, social, and geopolitical risks and needs [strategic assessment](#).

Mekong

The 3rd Mekong River Commission (MRC) Summit took place on 5th of April in Cambodia to discuss the future of the Mekong River Basin. MRC, as an important inter-governmental organization, aims to improve cross border management and sustainable development of the Mekong between Thailand, Laos, Cambodia and Vietnam, with Myanmar and China participating as “dialogue partners”. It works on fisheries, flood control, hydropower, irrigation and navigation.

At the summit 2018, the MRC released findings of a new study it commissioned to provide a detailed analysis of the costs and benefits of hydropower. Carried out between 2012-2017 the study claims that damming the river for power generation will have huge implications for the region. By 2040, hydropower development could deliver a whopping 16-fold increase in economic benefits. But new dams may reduce income from fisheries by up to 15% and reduce sediment reaching the river mouth by as much as 97%! Loss of such nutrient rich sediment would be disastrous for fish and agriculture, particularly in the delta. According to Mr Pham Tuan Phan, chief executive officer of MRC, the study results are very clear that countries’ plans are not optimal and sustainable from a basin-wide perspective. The MRC will bring countries together to optimize their future plans to increase benefits and reduce potential costs. The MRC also has a singular ability to carry out professional analysis both within and across sectors – hydropower, fisheries, navigation, irrigation, water quality, wetlands and so on.

Taking a strategic basin-wide assessment allows the countries to determine and minimize risks. As a regional body, the MRC can assist here

by acting as a facilitator of dialogue and by looking into mechanisms for sharing of benefits across borders. Such a role was acknowledged and reconfirmed at the third summit by leaders of the MRC member countries. The dialogue partners (China and Myanmar) also acknowledged the MRC’s importance. Although China is not a full member of the MRC, there is a cooperative working relationship, which has gradually improved in recent years. The basis of that co-operation is good scientific analysis and understanding of the Mekong. As a dialogue partner with the MRC, China is well aware of the potential consequences of hydropower construction and has indicated its willingness to work together at a technical level on these issues. China has also clearly stated that it will operate the upstream projects so that river flows downstream are maintained at acceptable levels. At the summit, China has once again expressed its willingness to work with the MRC and all riparian countries, inviting them to play a constructive role in the Lancang-Mekong water resources cooperation. But it should be noted that cooperation still needs to be stronger.

Source:

www.chinadialogue.net/article/show/single/en/10619-Mekong-River-Commission-reaches-out-to-China-to-avert-dam-damage-?mc_cid=6cc6658516&mc_eid=610da95136

Laos suspends new dams as dam collapse sparks government review of hydropower and could open the way for more wind and solar in the Mekong. The July 23 dam collapse in southern Laos marked a turning point that squarely exposed the vulnerabilities of Laos’ current plans to become the “battery” of Southeast Asia. At least 34 people died in floods unleashed by the man-made disaster at the Korean built Xe-Pian Xe-Namnoy dam, with more than a hundred people still missing and more than six thousand displaced. Waters from the dam breach rushed into the Sekong River and sent floods downstream to Cambodia where thousands were evacuated. The flooding reportedly also caused damage to agricultural fields in Vietnam’s Mekong Delta. Since the dam is built in a tributary system of the Mekong River, there is no flood warning or disaster management system between Laos and Cambodia. The information system of the Mekong River Commission only covers dams located on the mainstream of the Mekong. Clearly more transboundary cooperation is needed. The disaster highlights the bigger risks of large dam building in a region facing more frequent extreme weather and where regulation and safety standards are poor. Conse-

quently, on August 7, the government announced a decision to suspend new hydropower projects in order to review its development strategy. The prime minister also set up a task force to inspect all dams that are completed or under construction in Laos for engineering flaws. If inspections are to be thorough, this process should take longer than one year given the need to inspect all 100 dams that Laos' Ministry of Energy and Mines claims will be up and running by 2020.

Source: www.chinadialogue.net/article/show/single/en/10774-Laos-suspends-new-dams-as-tragedy-raises-wider-fears?mc_cid=c61422f63b&mc_eid=610da95136

Japan and five countries in the Mekong River Basin held a summit and adopted a joint statement titled "Tokyo Strategy 2018" (October, Tokyo). The strategy outlines a three-year cooperation plan and gives priority to strengthening connections within the region, cultivation of human resources and environmental conservation. Sandwiched by China and India and located close to the South China Sea and the Indian Ocean, the Mekong Basin is a strategic zone for land and maritime transportation. Rich in resources and labor power, the basin is also the core of development in Southeast Asia. Deepening relationships with the area in both political and economic aspects can serve the national interest of Japan. In the past three years Japan has provided more than \$6.68 billion in official development assistance for the five Mekong countries and cooperated in such areas as the expansion and improvement of the "economic corridor" linking them by arterial roads and port facilities.

Source: www.phnompenhpost.com/opinion/ensuring-stability-mekong-nations

Other countries and transboundary basins in Asia

India faces its worst-ever water crisis. About 600 million Indians are facing high to extreme stress over water, according to the expert data. The comprehensive study on the state of India's water by the government's policy think-tank warned of conflict and other related threats, including food security risks, unless actions are taken to restore water bodies. Critical groundwater resources, which account for 40 per cent of India's water supply, are being depleted at unsustainable rates. Many par-

ched cities and villages in India are pushing back their "Day Zero" (when water taps run dry), but barely. About 40 per cent of the population will have no access to clean drinking water by 2030. More than 20 cities, including New Delhi, Bengaluru and Chennai, will run out of groundwater by 2020, affecting 100 million people. Agricultural baskets, states that are home to 50 per cent of the population, are the low performers in the government policy body's Water Index that could pose a "significant food security risk" for India. "What this report says was true 15 years ago, now the situation has worsened. Ninety cities in India do not have enough clean drinking water now to sustain its populace," says Rajendra Singh, a water conservation activist known as India's "Waterman".

Source: www.aljazeera.com/news/2018/06/india-faces-worst-water-crisis-report-180616072654630.html

Singapore International Water Week 2018 (SIWW) was held on 8-12 July. Work together and the world has a better chance of solving its pressing water issues such as water shortages and floods. That was the key message at the Week. More than 24,000 people from 110 countries and regions attended the event, which brings together high-level speakers from government, industry, academia and international organizations. This was about four times the number that participated in the inaugural edition in 2008. More than 500 water leaders from around the world attended the recent SIWW's Water Leaders Summit. They included former United Nations secretary-general Ban Ki-moon, World Bank chief executive officer Kristalina Georgieva and Sri Lanka's Prime Minister Ranil Wickremesinghe. The Prime Minister noted Singapore as the best example of a well-managed metropolitan environment: "Singapore has tried to maximize aquifer retention within its own territory ... but wisely also struck an agreement with neighboring Johor state in southern Malaysia for water supply. Singapore is also a benchmark in desalination and potable quality recycling of wastewater..." The SIWW also paved the way to a better water future through its Young Water Leaders Summit, which connected 70 water professionals from more than 30 countries. Many of the water industry's latest innovations were on show at the SIWW's TechXchange programme and Water Expo. The one-day TechXchange connected innovators to buyers, partners and investors to accelerate the commercialisation of new water technologies. Finally, nearly \$23 billion worth of awarded projects, tenders, investments and memoranda of understanding were unveiled at the SIWW, the highest in its 10-year history.

Source: www.eco-business.com/news/singapore-international-water-week-2018-a-milestone-in-water/

For the next 10 years, Nepal plans developing its hydropower potential, which is 40 GW as a whole, by building hydropower plants capable of 10 GW to meet domestic demands and 5 GW for export. Over the last 100 years, only 900 MW of power capacities were exploited. In October 2018, the

\$100 million Nepal Energy Sector Development Policy Credit (DPC) was launched by the World Bank. However, negotiations on big projects with China have been complicated yet. Particularly, the Budhi Gandaki hydropower project of 1.2 GW was approved and cancelled many times.

11.4. Australia

The Australian Bureau of Meteorology launched the report "Water in Australia 2016-17" in 2018. Particularly, the report demonstrates the following trends:

- **Boost in public water reserves.** Overall, the accessible storage volume of surface water totalled across Australia for direct water supply purposes increased due to the wetter-than-average conditions;
- **Increased water trading.** Entitlement and water allocation trade volumes increased in 2016-17 compared to the previous year. The volume of water entitlements traded nationally was 2100 GL, 23 per cent higher than in 2015-16. The total volume of surface water allocations traded during 2016-17 was 7000 GL, about 20 per cent higher than the previous year;
- **High storage volumes at the start of 2017-18.** The above-average rainfall conditions in 2016-17 facilitated a large increase in water volumes held in most of the public water storages.
- **Water resources were at a low level of stress.** Water stress is estimated using the United Nation's Sustainable Development Goal indicator 6.4.2. This is the ratio of freshwater withdrawn by major economic sectors and the total renewable freshwater resources, after allowing for environmental water requirements.

In Australia, this water stress indicator was 4.1% in 2016-17, 5.9% in 2015-16 and 7.4% in 2014-15.

11.5. Europe

The Foreign Affairs Council of the European Union (EU) adopted new conclusions on Water Diplomacy (19 November 2018). The Council recalls that water is a prerequisite for human survival and dignity and a fundamental basis for the resilience of both societies and the

environment. The Council notes the potential of water scarcity to affect peace and security. The Council stresses the essential link between water and climate change, and welcomes recent discussions at the UN Security Council linking water, climate, peace and security. The Council

Source:

www.bom.gov.au/water/waterinaustralia/files/Water-in-Australia-2016-17.pdf

Australian Government gives Snowy 2.0 green light. Snowy 2.0 is an expansion of the Snowy Mountains Scheme to increase generation capacity by 2,000 megawatts and provide 350,000 MWh. The Scheme diverts the headwaters of the Snowy River westward through the Great Dividing Range, releasing water into the Murray and Murrumbidgee Rivers. There it can be used for town water supply, irrigation and environmental use. The Project will link the two existing Snowy Scheme dams, Tantangara and Talbingo, through underground tunnels (27 km) and an underground power station.

Source:

www.snowyhydro.com.au/ourscheme/snowy20/

A pulse of green in Australia. The Lake Eyre Basin in the interior of Australia is among the driest places on the continent. With less than 125 millimeters of rain falling in this area each year, the streams and creeks that drain into Lake Eyre – the lowest point in Australia – are usually bone dry, barren, and brown. In 2018, the channels did fill after heavy downpours as observed in a series of images acquired between February 24 and April 25, 2018.

Source:

<https://earthobservatory.nasa.gov/images/92100/a-pulse-of-green-in-australia>

intends to enhance EU diplomatic engagement about water as a tool for peace, security and stability, and firmly condemns the use of water as a weapon of war. The Council reaffirms the EU's commitment to the human right to safe drinking water and sanitation.

Source:

www.consilium.europa.eu/en/press/pressreleases/2018/11/19/water-diplomacy-council-adopts-conclusions/

11.5.1. Western Europe and Large European Transboundary Basins

Rhine

The International Commission for the Protection of the Rhine (ICPR) updated its Master Plan Migratory Fish Rhine, which was originally published in 2009. The Master Plan Migratory Fish Rhine shows, which measures are required for the reintroduction and development of stable populations of migratory fish in the Rhine catchment. Measures such as new and improved fish passes at transverse structures or by-pass channels open the way for or support fish migration, and spawning grounds and juvenile habitats are restored. They have positive effects on many more fauna and flora species and are suitable for sustainably improving the entire ecology of the Rhine and therefore promote the goals of the global ICPR programme Rhine 2020 for the sustainable development of the Rhine. Much has already been achieved since the first Master Plan Migratory Fish Rhine was published in 2009. Considerable progress has been made with respect to improving river continuity and the access to habitats. By dismantling weirs or constructing fishways more than 20% of the potential habitats in the Rhine tributaries are again accessible. The restoration of more fish migration routes in the Rhine catchment will lead to more natural, ecologically functioning water bodies which are more resilient with respect to climate change and its expected effects on the fish fauna. By 2027, the countries in the Rhine catchment will spend or have spent more than €627 million for hydro-morphological measures already implemented or planned.

The ICPR published 2018 a major **inventory of low water conditions of the Rhine**, which provides for the Rhine bordering countries a common understanding of low water situations, possible (transboundary) impacts and measures. Surprising results of the statistical analysis of historical discharge series showed that during the first half of the last century periods of low water on the Rhine were distinctly more pronounced than at the end of the 20th and the

beginning of the 21st century. Discharges were lower, and low flow periods lasted longer than in the past 50 years. These findings may predominantly be attributed to the regulating influence of numerous reservoir lakes in the Alpine region. Also, the trend towards increasing annual precipitation observed in the Rhine catchment during the 2nd half of the 20th century may contribute to this fact. Thus, the perception that low water occurs more often than in the past is not correct. However, water users are more affected, e.g. navigation, energy production, industry and agriculture.

Since low flows directly impact water quality, ecology and uses, the ICPR has decided to monitor them. For this purpose, the ICPR will soon release a web-based **low water monitoring system**. With the uniform ICPR low-water monitoring on the entire Rhine, current low-water events can be directly classified in a comparative manner and possible changes in low-water discharges can be detected. In addition, the system enables the access to information about water temperature and further parameters relevant for water quality and ecology. Further, the Rhine has experienced an extreme low water event between summer and autumn 2018, which according to the classification of the ICPR low water monitoring (tested in real-time on this occasion) lasted until 130 days at some Rhine gauging stations (e.g. Cologne) with discharges falling below the "very rare low water" class on around 20 days. Numerous impacts on the uses were identified, in particular on the abstraction and use of water, energy, shipping and transport, industry, but also on ecology (fish death in the High Rhine). Despite the high water temperatures which have exceeded 28°C in the Rhine, the oxygen content remained high in various parts of the catchment area. The reasons are currently being investigated. The ICPR is presently drafting a report on the 2018 low water event.

Source: IKSR, www.iksr.org

Danube

The General Directorate of Water Management (OVF), the national water authority of Hungary, said in a statement that **the water level in the Danube river has dropped to a record low** due to the drought of 2018 (October). The water level of the river was measured at 0.49 meters, which is below the record figure set in 1947. A low water level had a major impact on shipping, since over the Hungarian section of the river there are many underwater slopes failing to provide ideal navigable depth for shipping.

Source: https://bbj.hu/energyenvironment/water-level-in-danube-falls-to-record-low_156570

Combating drought in Danube. During the summer 2018, the DriDanube Project started testing project tools, the prototype of Drought User Service as part of the Danube Transnational Program. This Program is a financing instrument of the European Territorial Cooperation (ETC), better known as Interreg. The main objective of DriDanube project is to increase the capacity of

the Danube region to manage drought related risks. The project aims at helping all stakeholders involved in drought management become more efficient during drought emergency response and prepare better for the next drought. One of the main products of the project will be Drought User Service, which will enable more accurate and efficient drought monitoring and timely early warning. The service will integrate all the available data, including large volume of the most recent remote sensing products. The Project also started regularly publishing, every two weeks, the Regional drought bulletins together with the maps documenting the situation. The bulletins include summary of the state of soil and vegetation based on soil water index, estimated drought impacts on vegetation, and national reports on drought and drought impact analysis. The current information is provided by DriDanube partners from 10 countries.

Source: www.interreg-danube.eu/aboutdtp/programme-presentation; www.interregdanube.eu/approvedprojects/dridanube/section/drought-2018-watch

11.5.2. South Europe

The Balkan Peninsula, one of Europe's most undeveloped regions, is facing a wave of thousands of hydroelectric projects that would block pristine, free-flowing rivers and cause major environmental damage. Nearly 2,700 dam projects are planned or under construction from Slovenia to Greece. Dam proponents say the hydroelectric projects will supply badly needed renewable energy to the region. Ironically, the Balkans' current hydropower boom owes its existence to international and EU climate protection measures, which set national greenhouse gas reduction targets and require the use of government subsidies to fulfill them. The International Hydropower Association, an industry lobby group, sees hydroelectricity as a viable way for countries such as Albania, Bosnia, and Montenegro to comply with international climate goals and meet criteria required for EU entry.

The association stresses that currently the western Balkans' other main source of electricity generation, besides hydropower, is coal. Scientists and conservationists warn the projects could profoundly alter the region and local residents concerned about threats to their drinking water sources organize protests in the proposed sites of hydropower projects. Opponents say they do not object to all hydroelectric projects in the Balkans, but argue that far fewer should be built and only on the region's less pristine rivers. They also say that other, less environmentally destructive forms of renewable energy, such as solar and wind power, should be given higher priority than hydro, much of which, they argue, is slated for export to Western Europe anyway.

Source: <https://e360.yale.edu/features/a-balkandam-boom-imperils-europes-wildest-rivers>

11.5.3. Eastern Europe and Caucasus

Belarus

Drinking water supply. Specific [sanitary and epidemiological requirements](#) for maintenance and operation of sources; centralized and non-

centralized drinking water supply systems; organization of sanitary protection zones of sources of centralized drinking water supply systems, and monitoring of drinking water safety indicators have been approved by Resolution

of the Council of Ministers (No. 914 of 19 December 2018).

Transboundary cooperation. Delegation of the Ministry of Natural Resources of Belarus participated in the meeting of Belorussian-Polish Working Group on water resources (July, Warsaw). During the meeting, the parties discussed the draft agreement between the governments of Poland and Belarus on cooperation in the area of transboundary water protection and use and agreed the text of the document.

The implementation of the Project “Transboundary Water Inspectors: Towards Joint Monitoring and Development of Water Resources in the Pripjat Basin” was started in Belarus (July). The total budget is €227,800, of which 90% is a contribution of EU. The transboundary project is aimed at preserving small rivers of the Pripjat catchment basin, which are the crucial sources of drinking water, and without which it would not be possible to develop agriculture and support ecosystems of the republican regions. Also, environmental conditions of the Black Sea, which the Pripjat River flows into, depend on the quality of water in the rivers and lakes located in the Pripjat Basin, in the areas of Pinsk and Lyubeshov.

Source: www.pinsknews.by/?p=56716

Moldova

Hydro-technical construction and reconstruction. An agreement on provision of grant by the Government of Germany in the amount of €16.5 million for the project on the improvement of water infrastructure in the central part of the Republic of Moldova was reached. It is planned to construct the main conduit Chisinau-Straseny-Calarasch.

Ecology. The agreements between research institutions and non-governmental organizations of Republic of Moldova, Romania and Ukraine on introduction of innovative transboundary monitoring system in the context of transformation of ecosystems of the Dniester and the Prut Rivers belonging to the Black Sea basin have been reached. Interested parties plan to develop a unified system of key environmental and multi-annual indicators. These indicators will be submitted to officials of the three countries in order to be considered while making decisions on management of the Dniester and the Prut rivers. The “HydroEcoNex” Project is financed by the EU and its budget is approx-

imately €900,000. The period of implementation is 30 months.

Source:

<https://noi.md/ru/obshhestvo/startovalproekt-transgranichnogo-monitoringa-rek-dnestr-ipurut>

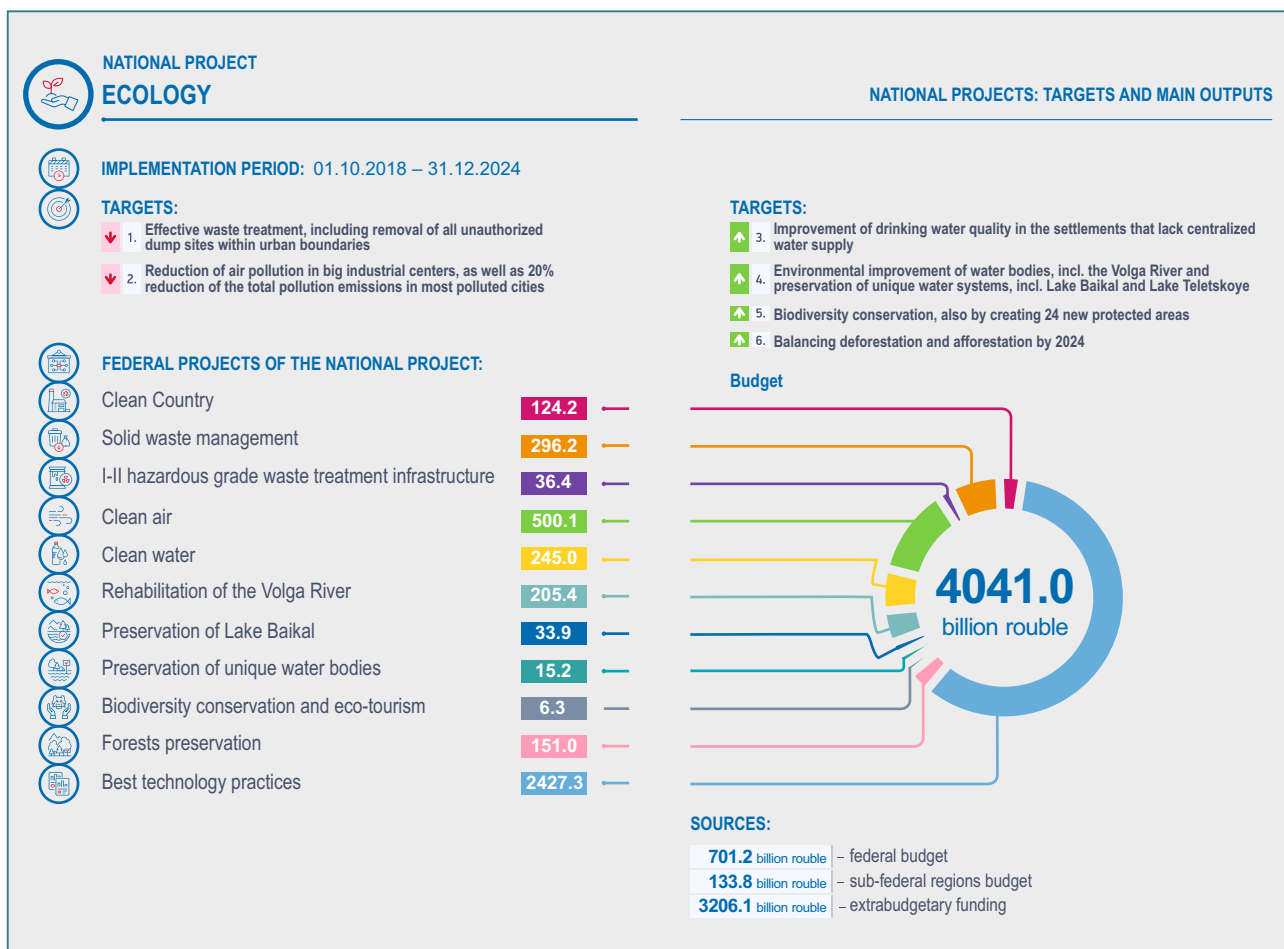
Impact assessment. The Ministry of Agriculture, Regional Development and Environment of the Republic of Moldova and UNDP launched the Project on the assessment of social and environmental impacts of the new HPPs on the Dniester River (September 2018). The Project financed by the Sweden Government in the amount of \$500,000 will be implemented in 2018-2019.

Russian Federation

Latest developments in legislation. The President of the Russian Federation has signed Decree “[On national goals and strategic objectives of the Russian Federation through 2024](#)” (No. 204 of 7 May). According to the Decree, the National Project “Environment” (see the drawing below) was prepared. The global goal is to improve the quality of drinking water and environmental rehabilitation of water sites by 2024. The project comprises 11 federal sub-projects, including “Clean Water”, “Improvement of environmental conditions of the Volga”, “Preservation of Lake Baikal”, and “Preservation of unique water sites”.

Governmental Order of RF (No. 507-p of 26 March 2018) has changed the borders of water protection zone of Lake Baikal. The plan of new boundaries of water-protection zone of Lake Baikal was prepared by experts using two approaches: for inter-settlement territories and for coastal settlements. The inter-settlement territory approach is based on preserving the state of coastal areas, self-cleaning and flow-forming capacities of rivers and landscapes in their catchments, for which purpose the experts have suggested limiting the area, from which all water is drained directly into Lake Baikal. As for the coastal settlements, the boundaries of the water-protection zone are set according to the protective belt of the lake covering 200 meters. This territory is of especial fishery importance (place of spawning, feeding, wintering of fish and other aquatic biological resources), information about which is contained in the Unified State Register of Real Estate.

Source: <https://regnum.ru/news/polit/2399585.html>



Implementation of the Target Program

In 2018, as part of the Federal Target Program “Development of Water Sector of Russian Federation in 2012-2020”, approved by Governmental Decree No.350 of 19 April 2012, several measures to achieve the main objectives of the Program were undertaken. Particularly, as a result of measures aimed at ensuring guaranteed supply of population and economic entities with water, 15 thousand were provided with guaranteed water supply. In order to improve sanitary conditions of water sites, more than 115 km of river channels and about 232 ha of the water area of lakes and reservoirs were cleaned. To ensure the accident-free pass of high-water and floods, more than 300 km of problem-prone sections of river beds have been inspected prior and after flood events. Ice jams have been eliminated, including ice-breaking and ice-cutting along 976 km; also other mechanical work to weaken the strength of ice on an area of approximately 7 km² has been completed. Hydro-technical constructions have been rehabilitated to ensure safety.

Source: <http://voda.org.ru/news/main/minprirody-v-2018-godu-vydelit-1-milliard-rublej-na-vodoochistnyesooruzheniya>

Hydro-technical construction and reconstruction

In 2018, in preparation to irrigation season, land reclamation agencies rehabilitated more than 2,500 hydrotechnical constructions, implemented earthwork operations, including cleaning of main canals from silt and vegetation, on the area of more than 5 million m³. Agricultural producers prepared irrigation and drainage systems of general and individual use on the area of more than 3 million ha.

Source: <http://mcx.ru/pressservice/news/minselkhoz-rossii-o-khode-podgotovkimeiorativnykh-sistem-k-polivu-20474>

Fishery

The Federal Law “On recreational fishing and amendment of certain legislative acts of the Russian Federation” (No. 475-FZ of 25 December 2018) was adopted. According to the Law, citizens are entitled to recreational fishing in water bodies of general use, except for reservoirs located on the land of defense and security, as well as in specially protected natural territories. With the purpose to protect the

interests of fish farms, restrictions are set for fishing in a number of water bodies used for commercial aquaculture. The Law also introduces a concept of daily quota of fish catch and prohibits recreational fishing using explosive and chemical agents, electric current, as well as netting gear, including gillnets. All gillnets will be required to undergo a registration and an obligatory single-piece marking.

Source: <https://novostivl.ru/post/68474>

The Ministry of Agriculture and Forestry of Finland and the Federal Agency for Fishery of the Russian Federation signed Memorandum on fishery development in water bodies located in frontier zones (April 2018). The document will allow establishing a Russian-Finnish Group, which will conserve fish resources of two states. One of the main tasks of the Group will be the development of fish stock management strategy.

Source: <https://topspb.tv/news/2018/04/24/rossiya-ifinlyandiya-dogovorilis-o-sovmestnom-razvitiirybolovstva>

The production of drip irrigation systems and manufacturing of emitter-type drip tapes started in Volgograd province. Administration of the province has signed an investment agreement with LLC "Green growth" for implementation of the project. The total cost of the investment project is approximately 170 million rouble. The volume of production is to be 77,000 km a year.

Source: <http://www.kazakhzerno.kz/novosti/mirovoj-rynok-selskogokhozyajstva-i-prodovolstviya/246180-rossiya-vvolgogradskoj-oblasti-budut-vypuskat-sistemykapelnogo-orosheniya>

Ecology

The All-Russian campaign for cleaning up water bodies - "Water of Russia-2018" was held from 1 March to 30 September. An unprecedented number of volunteers – 1.8 million – took part in this campaign. The volunteers cleaned up more than 5,300 water bodies in 85 regions of the country and collected 1.7 million bags of litter. For the first time, several administrative regions used separate waste collection. The Ministry of Natural Resources and Environment of the Russian Federation initiated and organized this event with the support of the "ECA" eco-movement of Russia and the Conservation Union.

Source: www.чистыеберега.рф/assets/vodarossii-2018.pdf



The Ministry of Natural Resources and Environment of the Russian Federation with the support of "ECA" eco-movement organized an **interactive ecological lesson "Water of Russia. Clean rivers"**. The lesson was joined by more than 10,000 teachers from all Russian regions; a **children's paintings competition "Rainbow drops"** was initiated in 12 different nominations and on different topics to promote water saving; **IV educational campaign "I am Water– 2018"** was organized (10-19 August, Sochi) and brought together more than 25,000 people.

In 2018, the **"The map of socio-environmental conflicts" portal** was developed. The portal works as a public situation center collecting from people and processing actual information on "hot" environmental spots all over Russia.

Source: <http://ecosociety.ru/bez-rubriki/nachalrabotu-interaktivnyj-portal-karta-sotsialnoekologicheskikh-konfliktov>

The full-scale satellite monitoring of the state of water sites was started in May in Amur province and Zabaykalsky Krai with the support of the Russian division of the Wildlife Fund. Using satellite images, ecologists from the international coalition "Rivers without borders" and

experts of the Satellite Monitoring and Civil Control Centre detect actual river pollution evidences caused by gold mining.

Source: <https://new.wwf.ru/resources/news/amur-zolotyereki-v-zabaykale-i-amurskoy-oblasti-pod-pritselomsputnika>

Symposiums, Conferences and Forums

More than 1,000 participants joined the [9th International Ecology Forum](#) from 75 Russian regions and 10 foreign states. Leading Russian and foreign companies presented innovative projects and equipment relating to water protection and rational natural resource development; technical facilities for monitoring of contaminated environments and services to prevent and liquidate consequences of environmental pollution. Based on the results of the Forum, the Annual Public Resolution on Environmental Protection was prepared (22-23 March, Moscow).

9th International Science Conference on ecological world outlook "Ecology of external and internal environment of the social system" ("EcoWorld-9") was dedicated to the results of the Year of Ecology in Russia (29-30 March, Mytishi Department of MSTU named after N.E. Bauman).

5th International Conference "Innovative approaches to ensure sustainable development of socio-ecology-economic systems" was organized in the form of roundtables and a science workshop "Homeostatic mechanisms of biological systems: problem statement and different approaches" in April in the cities of Samara and Tolyatti.

20th Anniversary International Scientific-Industrial Forum "Great rivers (ecological, hydrometeorological, and energy security)" was held under the auspices of the Year of Volunteers in 2019. Representatives of 14 countries, 32 Russia's regions, 108 enterprises and organizations attended this Forum. Task-oriented exhibitions dedicated to environmental technologies in energy and other sectors; the Children-and-Youth Environmental assembly; and, exhibition of photographs of the Russian Geographical Society "The most beautiful country" took place during the Forum. The Resolution of the science congress "Sustainable development of great river basins" was adopted (15-18 May, Nizhniy Novgorod).

2nd All-Russian Water Congress addressed global issues such as water use, improvement of living conditions of the people, and economic

prosperity considering the existing environmental challenges. Special attention was paid to the state's role in ensuring global technological leadership of Russia in the global market for water and water-intensive products; promotion of effective integration of country water resources into economic circulation; development of export potential of all water use sectors; and, solution of global environmental and water scarcity problems. The Congress was organized in form of 30 thematic sessions, roundtables and panel discussions. The IV All-Russian Congress of Water-Supply Companies has become an important event of the II All-Russian Water Congress. The EXPO presented modern innovative solutions on water treatment, transportation and processing (5-7 July, Moscow).

5th All-Russia Environmental Forum "Creating shared values: combining efforts to ensure environmental sustainability" was organized on 5th of September in Moscow. During the Forum, the proposals on up-scaling of the most efficient manufacturing practices related to saving of natural resources, industrial waste disposal, optimization of package use and its further processing in all regions of the country were put forward.

More than 30 states took part in the 2nd Baikal International Ecological Water Forum. Experts in environment, water management and tourism have discussed topical environmental and resource-saving issues. The Forum slogan was "Baikal is a source of life". The Agenda of the Forum included two plenary meetings and eight thematic sections. Based on the results of the Forum, the Resolution was adopted (20-21 September, Irkutsk).

Conference "Water resources of Russia: state-of-affairs and management". The Conference was organized in form of a plenary meeting and four sessions. During the sessions, reports on the following topics were presented: preparation, implementation and adjustment of Master Plans for the integrated use and protection of water resources (IUPWR); formation and use of water resources in Russia; management of large reservoirs and their cascades; monitoring of water quality, river bed, shores, water-protected zones and coastal and shelter belts by using drones and satellite data, etc. (8-14 October, Sochi).

Science-to-practice conference "The SUE "Vodokanal of Saint-Petersburg": 160 years in the service for the great city" was held on 10th of October. Experts of the enterprise, Russian Academy of sciences, Russian water supply and water sanitation association, and non-governmental environmental fund named after V.I. Vernadskiy participated in the Conference (Saint-Petersburg).

International cooperation

Representatives of five states of the Teheran Convention signed the Caspian Sea Environmental Impact Assessment Protocol (Extraordinary Session of the Conference of the Parties to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea, 20 July, Ministry of Natural Resources of the Russian Federation). The document will ensure proceeding with practical implementation of the Convention's provisions and help to maintain efficient use of natural resources in the region. All interested parties have been waiting for this event for 15 years. (See section "The Caspian Sea: Special legal status").

BRICS countries signed the Memorandum of understanding on environmental cooperation (10th Summit of BRICS, 26 July, Johannesburg). This has become an important step in strengthening environmental cooperation between the states in certain directions: air quality, water resources, biodiversity, climate change and adaptation, and implementation of SDGs up to 2030.

VIII (XXVI) meeting of the Russian-Kazakhstan Commission on joint use and protection of transboundary water bodies was held with the participation of members of the Russian and Kazakhstan Delegations (8-10 August, Rostov-na-Donu).

IX Meeting of the Working Group on water resources management of the Joint Russian-Chinese Commission on rational use and protection of transboundary waters (3-5 July, Qingdao, China).

General Meeting of member-organizations of the European Centre for River Restoration (ECRR) and mini-symposium devoted to river restoration practices in Europe (13-14 November, Wageningen, Netherlands). The events were organized by Wetlands International (European office) together with STOWA (Netherlands Office of water applied research). Three ECCR information bulletins were issued (April, July, December).

Anniversaries

Environmental Service of the country celebrated 30 years. The Environmental Service has been operating since 7 January 1988. That day, the CK CPSU and the Council of Ministers of the USSR have adopted Decree No.32 "On fundamental change in nature protection area in the country".

The Lenskoe Basin Organization celebrated 50 years. On 25 June 1968, the Yakutsk branch of Hydro-chemical laboratory of the Amur Basin Inspection was established in Yakutsk city.

80th anniversary was celebrated by the Geographical Department of MSU named after M.V. Lomonosov, which was established by the decision of the All-Union Higher School Affairs Committee on 23 July 1938 as a result of division of the Soil-geographical Department into geology-soil and geographical departments.

90th anniversary was celebrated by the Azov Fishery Research Institute (FSBSO "AzNIIRH").

Ukraine

The Law (No.2354-VIII of 20 March 2018) "**On strategic environmental assessment**" was adopted. The aim of the Law is to regulate relations in the area of assessment of environmental and health impacts which will be conducted at a stage of development of national planning documents in several branches of economy, including energy, agriculture, forestry and fishery, and water use. The document also provides for organization of obligatory transborder consultations in cases the projects undertaken in Ukraine affect the interests and impact environmental conditions in neighboring countries.

Source:

<http://elvisti.com/news/2018/3/20/radaprinjala-zakon-o-strategicheskoy-ekologicheskoyocenke>

Resolution of the Ukrainian Cabinet of Ministers (No.758 of 19 September 2018) approved a **new order of state water monitoring**. The new system of surface water, groundwater and sea water monitoring provides for the following: clear distribution of responsibilities between organizations that measure indicators, with no duplication of duties; extended list of biological, hydro-morphological, chemical and physico-chemical indicators to be monitored; introduction of 6-year cycle of monitoring and classification of water conditions: 5 classes for ecological state and 2 classes of chemical state; increasing number of water monitoring points: from hundreds to several thousands. Based on the data of the Ministry of Ecology and Natural Resources of Ukraine, the document introduces the European water resources monitoring system.

Source: <https://regnum.ru/news/polit/2485416.html>

In February 2018, Ukraine joined the Council of the Global Environment Facility and, for the first time, started to represent the interests of so-called Neighborhood, which consists of 13 countries (Albania, Bulgaria, Bosnia and Herzegovina, Croatia, Georgia, Macedonia, Moldova, Montenegro, Poland, Romania, Serbia and Ukraine).

Source: <http://elvisti.com/news/2018/2/14/ukraina-stalachenom-soveta-globalnogo-ekologicheskogofonda>

The State Agency for Water Resources and the journalistic agency “Agenciya journalistiki Danih” **developed an interactive map of pollution of the Ukrainian rivers - “Clean Water”**. Only 15 countries offer similar free resources. The tool was created on the basis of open data on quality of surface water in the basins of Dnieper, Vistula, Don, Southern Bug, Dniester and Danube. In one click, the interactive tool allows choosing the required river basin from menu and assessing its water quality. If the contamination level is higher than norm, the user will learn about it through special indicators – pink “petals”. The map shows entities which, based on the data of State Water Agency, are the biggest polluters of rivers in each province.

Source: <https://vokrugsveta.ua/ecology/vukraine-sozdali-interaktivnuyu-kartu-zagryazneniyarek-10-07-2018>

Ministry of Ecology and Natural Resources of Ukraine insists on expert discussion of the Ukrainian Hydroenergy Development Program up to 2026, which includes construction of such notable structures as Dniester PSPP (1-3 phases), Kanevskaya PSPP, Tashlyk PSPP, particularly, increase of the water level in the Alexandrov reservoir up to 20.7 m, and Upper-Dniester PSPP cascade. Also, Ukrainian civil organizations have sent an appeal to the Prime-Minister of the country against implementation of the Program in its present shape.

Armenia

Hydro-technical construction and reconstruction. The Government of Armenia approved the programs for construction of 12 new reservoirs, the first of which (Vedinskoye) is to be put into operation in 2020. The reservoir and irrigation system construction program is implemented at the expense of credit provided by the French Development Agency and co-financed by the Government of Armenia. The country looks for potential investors for another 11 projects, construction of which is planned in Vayots-Dzor, Tavush, Gegharkunik and Armavir regions. The Memorandum of understanding was signed between the State Water Management Committee at the Ministry of Energy Infrastructure and Natural Resources and the Polish Company “Simed Construction” (March 2018, Yerevan). Based on the Memorandum, the parties will develop public-private cooperation on the reservoir construction programs. The Committee on Financial-Credit and Budgetary Affairs at the National Assembly of Armenia approved draft Credit Agreement “On additional financing of the irrigation system improvement project” between the Republic of Armenia and the International Bank for Reconstruction and Development in the amount of \$2 million for development of gravity irrigation system (April).

Environmental Impact Assessment. The Government of Armenia has set environmental impact assessment criteria for construction and operation of small hydropower stations (March). In total, the Government approved 10 criteria relating to existence of endemic species of aquatic flora and fauna registered in the Red List of Armenia; maintenance of actual water flow at the level, which does not exceed the environmental water releases set by water-use permission; existence of sanitary-protection territories of water ecosystems; existence of natural sanctuaries within 150 meters; availability of roads or their construction in the sites of small hydropower stations; compliance with the required distance from settlements; and noise effect on environment and population health. There is also provision for suspension of HPS license in case of over 40% load on rivers from diversion pipes.

Ecology. Armenian and Turkish experts have cleaned the bottom of the transboundary Aras River from silt and litter (February). Totally, 200 km of river bottom along the border were cleaned up.

International cooperation. The first component of the USAID PURE Water Project – Participatory Utilization and Resource Efficiency of Water was completed. The total cost of the Project is \$1 M (March). The first component included a legislation study to identify gaps preventing from water efficiency and resulted in the development by lawyers and international experts of an appropriate strategy.

A Memorandum of Understanding was signed between USAID and the CocaCola Hellenic Bottling Armenia Company. According to the Memorandum, the Public Awareness Program on responsible and efficient water resources management for people living in Ararat and Armavir provinces will be implemented (July).

An [Agreement](#) was signed between the French Water Agency and the Agency for Water Management at the Armenian Ministry of Environment on the provision of technical support in water management in Armenia (October). The purpose of the Agreement is to create mechanisms for strengthening of institutional technical cooperation in water management and efficient use of technical facilities. The document can become the basis for investing of approximately €75 million in efficient water use in household-domestic and agricultural sectors in Armenia.

As part of the Program “European Union Water Initiative Plus for the Eastern Partnership” (EUWI+), an [Agreement](#) on procurement, joint actions and services was signed between the

Armenian Ministry of Nature Protection and the Austrian Federal Environment Agency (October). The main purpose of the EUWI+ in Armenia is to enhance laboratory and monitoring services so that the country could approximate its legislation to the standards of Water Framework Directive and improve monitoring of surface water and groundwater. Considering the abovementioned, it is planned to improve and upgrade the existing monitoring infrastructure under cooperation with the Federal Environment Agency of Austria. The total amount of aid provided to Armenia will be €1 million, of which approximately €600,000 will be directed to modernization of infrastructure, procurement of equipment and monitoring.

Azerbaijan

Hydro-technical construction and reconstruction. After capital reconstruction the Mingachevir HPS has been put into operation at the capacity of 424 MW (February 2018). As a result of construction and modernization of a number of hydraulic structures (main canals, such as “H”, Verhne-Milsky, Shamkir-Samuh-Geranboi, Apshe-ronsk and Neft Chalinsk, as well as Samur-Absheron irrigation system, etc.), more than 102,000 ha of arable land was provided with water. The Azeri Company “Gilan Pivot” started production of modern irrigation systems. The cost of equipment for irrigation of 1 ha is approximately \$1,050.

Water supply. Water supply systems in the cities of Agstafa, Tovuz and Gebele were improved. The project on reconstruction of water supply system and construction of first sanitation system in Lerik was completed. The water supply and sanitation systems were reconstructed for 15,000 people in Mingachevir as part of the State Socio-Economic Regional Development Program. Construction of the biggest water-treatment plant next to the Shamkirchai reservoir was completed as well. This plant will

improve water supply for almost 400,000 people in three cities – Ganja, Shamkira and Samuh – and adjacent villages. An agreement was reached with the Japanese Government on allocation of \$90,000 for construction of water supply system in the Turkenjil village of Lankaran district.

Ecology. During the year, 370 million young fish was released into water ponds all over the country, including: 75,000 salmon; 7.59 million sturgeons, and 362 million carps.

Georgia

The 4th Annual International Congress and Exhibition “Hydropower: The Caspian and Central Asia” was held in Tbilisi (20 February). It is a professional platform for high-level participants to discuss key topics to guide the course for hydropower construction and operation in the Caspian and Central Asia region (Georgia, Azerbaijan, Iran, Armenia, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan).

Hydro-technical construction and reconstruction. An agreement was signed on allocation of credit funds in the amount of €28 million between the Georgian Ministry of Finance and the EBRD Regional Office for the “Inguri” hydropower station rehabilitation project as part of the improvement of climate resilience (January). The project was planned for 2018-2021; however, because of expected repair of diversion tunnel, the start dates was moved to 2020. In total, considering the above-mentioned €28 million, the amount provided by EBRD for rehabilitation of “Inguri” HPS exceeds \$100 million. Once capital rehabilitation had been finished, an opening ceremony of the Sukhumi HPS, built in 1936, was held (December). The Head of State and cabinet ministers took part in the ceremony. The project cost was approximately \$12 million. After rehabilitation, the capacity of the Sukhumi HPS reached 19.6 MW.

11.6. Middle East

Israel is responding to a five-year drought with plans for more desalination plants and an expanded pipeline grid. Years of dry conditions have reduced Israel’s natural water resources to their lowest levels in 100 years, and its existing desalination and wastewater treatment systems cannot keep up with the demand. Its fertile land in the north is at risk, and both agriculture and the environment are stressed. Israel’s water ministry announced plans to build two more desalination plants to add to the five that have been put along the Mediterranean coast over the past 13 years. Plans also include expanding the nation’s pipeline system, and pumping less from

natural springs in order to restore rivers. There is even talk of sending massive amounts of water to the struggling Sea of Galilee, which is actually a lake near the Syrian border that serves as Israel’s prime freshwater source. The water ministry intends to present the plans for government approval in the near future. The Middle East is particularly vulnerable to climate change, and competition for scarce water is a flashpoint for conflict and a driver of migration.

Source: www.circleofblue.org/2018/world/whats-up-withwater-april-16-2018/

