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|  | United Nations | Annex to A/HRC/46/28 | |
| A picture containing food  Description automatically generated | **Special Rapporteur on human rights and the environment** | | Distr.: General  01/03/2021  Original: English |

Human rights depend on safe and sufficient water: good practices

Supplementary information on the report of the Special Rapporteur, David R. Boyd, on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment

The following information is supplementary to the report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment (A/HRC/46/28). It is available in English only on the website of the Office of the High Commissioner for Human Rights:

<https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/Annualreports.aspx>.

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I. Introduction

1. Due to a restrictive word limit, the following good practices could not be included in the main body of the Special Rapporteur’s report on the global water crisis and human rights (A/HRC/46/28). However, these good practices are vitally important because they demonstrate the availability of effective actions to simultaneously protect human rights while reducing water pollution, alleviating water scarcity, decreasing the risks from water-related disasters, and protecting/restoring aquatic ecosystems.
2. Drawn from every continent and featuring more than 100 States and a wide range of actors, the following examples are intended to inspire others to take ambitious action to fulfil human rights in all aspects of water governance, conservation and use. It should be noted that these examples are illustrative rather than exhaustive, meaning many more good practices are being implemented. The Special Rapporteur is grateful for the detailed and helpful submissions received in response to his questionnaire on the global water crisis and human rights from Armenia, Brunei Darussalam, Chile, Colombia, Costa Rica, Cote d’Ivoire, Cuba, Cyprus, Ecuador, Egypt, El Salvador, the European Union, Haiti, Iran, Italy, Mauritius, Mexico, Monaco, Qatar, Romania, Russia, Saudi Arabia, Singapore, Switzerland and the United Kingdom as well as more than sixty insightful submissions from Indigenous peoples, national human rights institutions, UN agencies, civil society organizations, business associations, academics and individuals, including youth.[[1]](#footnote-2) The Special Rapporteur organized a series of online consultations in September 2020, engaging people throughout the world. He also hosted meetings with UN Water[[2]](#footnote-3) and Sanitation and Water for All.[[3]](#footnote-4)

II. Legal protection for safe and sufficient water

A. International Law

1. Many international environmental treaties have ramifications for water, including the United Nations Framework Convention on Climate Change, the UN Convention on Biodiversity and the UN Convention to Combat Desertification. Important global treaties that prohibit, phase out or limit the use of certain toxic substances that can pollute water and damage aquatic ecosystems include the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Stockholm Convention on Persistent Organic Pollutants, Rotterdam Convention, and the Minamata Convention on Mercury. The implementation of obligations relating to these treaties constitute good practices in protecting water and realizing the right to a healthy and sustainable environment. However, there is only a small number of global instruments that specifically address environmental protection in the context of water, including the vital Ramsar Convention on Wetlands of International Importance, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), and the Convention on the Law of Non-Navigational Uses of International Watercourses (Watercourses Convention).
2. Worldwide, more than 286 rivers and about 600 aquifers cross sovereign borders, and 40 percent of the world population lives within shared river basins. Therefore, transboundary water cooperation is essential for achieving sustainable development, peace and security. Strengthening transboundary water cooperation can be a powerful tool for reaching both targets under the water-related Sustainable Development Goal 6 and the broader SDGs.
3. Two global treaties, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the Convention on the Law of Non-Navigational Uses of International Watercourses (Watercourses Convention), provide guiding principles for transboundary water management. At the regional level there are literally hundreds of treaties that address freshwater-related issues.[[4]](#footnote-5) The exchange of information—on water allocation, flooding, pollution, infrastructure projects, navigation, irrigation, the status of groundwater resources that could affect other riparian countries, etc.—is key to building trust and a shared vision and can be a first step towards a formalized agreement for joint basin management.
4. The UN Water and Watercourses Conventions support the design, development and implementation of basin agreements, contribute to the dissemination of good practices, and assist Parties to strengthen their legal, technical and institutional basis for cooperation, as well as national water governance, thus preventing conflicts over water and contributing to many Sustainable Development Goals.[[5]](#footnote-6) The Water Convention requires that Parties take “measures to prevent, control and reduce water-related disease within a framework of integrated water-management systems aimed at sustainable use of water resources, ambient water quality which does not endanger human health, and protection of water ecosystems.”
5. Implementation of the Water Convention has led to concrete results on the ground, including improved water quality, mitigation of the impacts of floods and droughts, improved joint planning in many areas (e.g. adaptation to climate change, management of dams and reservoirs, etc.), and better human and ecosystem health. Overall, participation in the Convention—namely adherence to its rules and cooperation through the intergovernmental platform of the Convention—increases certainty and predictability in relations between riparian States and thus helps prevent potential tensions and differences, contributing to the maintenance of international and regional peace and security. The Convention’s standards to be applied by all Parties, for example on the prevention, control and reduction of pollution at source, permitting, prior licensing of wastewater discharges, the application of biological treatment or equivalent processes to municipal wastewater, or the application of the ecosystem approach, can enhance national systems for water resources management and protection. For example, accession to the Water Convention in 2012 prompted Turkmenistan to develop and adopt a new Water Code (2016) in which integrated water resources management and the basin approach were introduced.[[6]](#footnote-7)
6. The Protocol on Water and Health to the Water Convention provides a legally binding framework that requires Parties to establish national targets to achieve or maintain a high level of protection from water-related diseases. For example, Norway undertook to develop a satisfactory internal control system by 2016 that includes a risk and vulnerability analysis considering the effects of climate change for all water and sewerage works that serve 50 persons or more. Serbia undertook to develop legislation for the implementation of water safety plans, and the Republic of Moldova pledged to have water safety plans for all cities by 2015, and for all other settlements serving more than 5000 people by 2020.[[7]](#footnote-8) The UN Water Convention and Protocol provide a compelling example of evolving interactions between environmental protection and the fulfilment of human rights.
7. An opportunity exists to capitalize on the entry into force of the UN Watercourses Convention (in 2014), the opening of the Water Convention to countries outside the pan-European region, and the adoption, by the United Nations General Assembly, of Resolution 63/124 including its Annex on the Draft Articles on the Law of Transboundary Aquifers. States are working to enhance transboundary water cooperation through the implementation of these global frameworks. In recent years, the first countries from outside the UNECE region have acceded to the Water Convention, namely Chad (2018), Senegal (2018) and Ghana (2020). These accessions and ongoing accession processes in many other countries are promising developments.
8. At the regional level, many States have recognized the importance of adopting basin-wide agreements. For example, an agreement between Ukraine and the Republic of Moldova on cooperating to ensure the protection and sustainable development of the Dniester River Basin, was adopted in 2012 and entered into force in 2017. The 1944 Treaty between Mexico and the United States for the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande has evolved to better account for transboundary groundwater, restoration in the Colorado Delta and drought management. The 1995 Mekong Agreement and Commission has proven to be an important platform for the countries of the lower Mekong region (Cambodia, Lao Peoples’ Democratic Republic, Thailand and Viet Nam) to exchange data and information and to develop joint plans and programmes. This has led to a better collective understanding of the social, economic and environmental dynamics of the basin and brought countries together to consider the benefits and potential impacts of existing and planned infrastructure projects.
9. There are other inspiring examples of transboundary cooperation for watershed management. The Canada-United States Boundary Waters Treaty and the associated International Joint Commission have functioned effectively for more than 100 years to resolve potential disputes and promote sustainable use. The Governments of Botswana, Namibia and South Africa established a Multi-Country Cooperation Mechanism for the management and governance of the Stampriet Transboundary Aquifer System. This agreement applies integrated water management and directly contributes to the achievement of Sustainable Development Goal 6.
10. The Guarani Aquifer below parts of the Plata River and Amazon River basins is one of the world’s largest groundwater reservoirs, covering more than 1 million square kilometers. It has a storage capacity of around 37,000 cubic kilometers and a natural recharge of 166 cubic kilometers per year.[[8]](#footnote-9) The aquifer supplies drinking water to populations living within its area (estimated at 70 million) but is also used for agricultural irrigation and industrial purposes.[[9]](#footnote-10) Argentina, Brazil, Paraguay, and Uruguay ratified an agreement that reflects the principles outlined in the United Nations Resolution 63/124 (on the Law of Transboundary Aquifers), including sovereignty, the equitable and reasonable use of water resources, the obligation not to cause harm, cooperation, and the exchange of data and information.[[10]](#footnote-11) The administrative mechanism for the Guarani Aquifer Agreement is the Intergovernmental Coordinating Committee of La Plata Basin Countries established through the La Plata Basin Treaty, which concerns the basin that exists over most of the Guarani aquifer. Funding and other support for projects related to the aquifer have come from the World Bank, OAS, UNEP, GEF, and the four signatory countries.[[11]](#footnote-12)
11. Another good example of cooperation is the 70-year-old framework of the International Commission for the Protection of the Rhine, which provides benefits to both upstream and downstream States (France, Germany, Luxembourg, the Netherlands and Switzerland), including the restoration of fish migration upstream. Another example is the 2000 Agreement on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas where both upstream Kyrgyzstan and downstream Kazakhstan enjoy benefits, with Kazakhstan financially contributing towards the maintenance of water infrastructure located in Kyrgyzstan and used by both countries.
12. The European Union’s Water Framework Directive (2000) introduces river basin management planning for sustainable water quality (applying integrated water resources management or IWRM) and also incorporates climate change adaptation. The Integrated Pollution Prevention and Control Directive (2010) seeks to prevent and mitigate pollution from industrial activities in compliance with the polluter pays principle. The European Union also has a relatively strong regulatory framework for toxic substances that can pollute water and damage aquatic ecosystems. Its main legislation governing toxic chemicals, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation, adopts a hazard-based approach to chemical management. The European Union prohibits the use of carcinogens, mutagens and reproductive toxicants in cosmetics and personal care products. The European Union has enacted comprehensive legislation, Directive (EU) 2019/904, to reduce plastic waste. Banned items include plastic cutlery, plates, stirrers, straws, expanded polystyrene (foam) food and beverage containers, and balloon sticks. Extended producer responsibility rules cover additional plastic products and packaging. By 2029, 90 per cent of single-use plastic wastes must be collected for recycling.
13. The Brisbane Declaration on environmental flows marked an important advance in terms of incorporating ecosystem needs into integrated water resource management. Environmental flows describe “the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems”.[[12]](#footnote-13) Consistent integration of environmental flows into land and water management requires laws, regulations, policies, and programs that (1) recognize environmental flows as integral to sustainable water management, (2) establish precautionary limits on allowable depletions and alterations of natural flow, (3) treat groundwater and surface water as a single hydrologic resource, and (4) maintain environmental flows across political boundaries. [[13]](#footnote-14)
14. Although not legally binding, International Water Quality Guidelines (WQGs) exist for drinking water, recreational use, irrigation, livestock and water reuse.[[14]](#footnote-15) Comparable WQGs for ecosystems with a focus on the ecosystem health of inland waters are rare. WQGs, predominantly based on physical and chemical parameters, to protect freshwater biota are well developed in some regions and States (e.g. Australia, New Zealand, United States, Europe, South Africa). Guidelines that go beyond the consideration of ‘traditional’ physico-chemical water quality indicators and include the consideration of biological and hydro-morphological indicators provide a more comprehensive assessment of freshwater ecosystem health.

B. Constitutional Law

1. More than twenty States including Bolivia, Colombia, Costa Rica, the Democratic Republic of Congo, Dominican Republic, Ecuador, Ethiopia, Fiji, Gambia, Kenya, the Maldives, Mexico, Panama, South Africa, Slovenia, Swaziland, Switzerland, Uganda, Uruguay, Venezuela, and Zambia have now incorporated protection for the right to water in their constitutions, while the right to a healthy environment enjoys constitutional protection in more than 100 States.[[15]](#footnote-16)
2. Costa Rica recently amended its constitution to state that "Every person has the basic and inalienable human right of access to drinking water as a good essential to life. Water is a good of the nation, indispensable for the protection of this human right. Its use, protection, sustainability, conservation, and exploitation will be governed by the law that will be created for these purposes, and the supply of drinking water for consumption by individuals and populations will have priority".
3. Article 27 of South Africa’s constitution articulates rights to health care, food, water, and social security:

27. (1) Everyone has the right to have access to—

...

(b) sufficient food and water ...

(2) The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of each of these rights

1. Explicit constitutional recognition of the right to water has had a significant effect on South African water laws and policies (the National Water Act, the Water Services Act, the Free Basic Water Implementation Strategy and the National Framework for Municipal Indigent Policies), and has contributed to major investments in infrastructure. The Water Services Act includes recognition of the right to sanitation. In 2000, South Africa also passed legislation implementing the procedural rights entrenched in its constitution (e.g. access to information), which are essential for the full enjoyment of substantive rights. Between 2000 and 2017, 14 million predominantly black and poor South Africans gained access to basic water services, while 17 million people gained access to at least basic sanitation.[[16]](#footnote-17) Nelson Mandela described increased access to safe drinking water for millions of South Africans as “amongst the most important achievements of democracy in our country.”
2. Ecuador’s Constitution includes numerous articles related to the conservation and management of water including:

Article 12. The human right to water is essential and cannot be waived. Water constitutes a national strategic asset for use by the public and it is unalienable, not subject to a statute of limitations, immune from seizure and essential for life.

Article 318. Water is part of the country's strategic heritage for public use; it is the unalienable property of the State and is not subject to a statute of limitations. It is a vital element for nature and human existence. Any form of water privatization is forbidden.

The management of water shall be exclusively public or community-based. The public service of sanitation and the supply of drinking and irrigation water shall be provided only by legal entities of the State or communities.

The State shall bolster the management and operating of community initiatives with regard to the management of water and provision of public services, by encouraging alliances between public and community bodies for the provision of services.

The State, through the sole authority for water, shall be directly responsible for planning and managing water resources for human consumption, irrigation to guarantee food sovereignty, ecological wealth and productive activities, in this order of priority. State authorization will be required for the use of water for productive purposes by the public, private and grassroots solidarity sectors, pursuant to the law.

Article 411. The State shall guarantee the conservation, recovery and integral management of water resources, watersheds and ecological flows associated with the water cycle. All activities that can affect the quality and amount of water and the equilibrium of ecosystems shall be regulated, especially in water replenishment sources and zones.

The sustainability of ecosystems and human consumption shall be priorities in water use and development.

Article 412. The authority in charge of managing water shall be responsible for its planning, regulation, and control This authority shall cooperate and coordinate with the authority in charge of environmental management to guarantee water management based on an ecosystem approach.

1. Uruguay’s constitution recognizes the rights to water and sanitation and provides detailed guidance on respecting, protecting and fulfilling these rights.

Article 47.

…

Water is a natural resource essential for life.

The access to potable water and the access to sanitation, constitute fundamental human rights.

1. The national policy concerning water and sanitation shall be based on:
2. the ordering of the territory, conservation and protection of the environment and the restoration of nature;
3. the sustainable management, in solidarity with the future generations, of the hydro resources and the preservation of the hydrological cycle which constitutes a matter of public interest. The users and the civil society, shall participate in all the instances of planning, management and control of hydro resources; establishing the hydrological basins as basic units;
4. the establishment of priorities for the use of water by regions, basins, or parts of them, having the first priority be the provision of potable water to the population;
5. the principle that the delivery of the services of potable water and sanitation, must have preference for reasons of social order over the economic order.

Any authorization, concession or permission that in any manner infringes the provisions above will be considered of no effect.

…

3. The public service of sanitation, and the public service of the provision of water for the human consumer will be provided exclusively and directly by state juridical persons.

1. A new provision added to the Slovenian constitution in 2016 stipulates that every citizen of Slovenia has the right to drinkable water, and identifies certain requirements about how water is to be managed.

Article 70A. Right to Drinking Water

Everyone has the right to drinking water.

Water resources shall be a public good managed by the state.

As a priority and in a sustainable manner, water resources shall be used to supply the population with drinking water and water for household use and in this respect shall not be a market commodity.

The supply of the population with drinking water and water for household use shall be ensured by the state directly through self-governing local communities and on a not-for-profit basis.

This provision, which effectively prohibits the commercialization of Slovenian water, was put into the constitution based on a popular initiative, and has been well received by Slovenians and civil society. It has helped the Slovenian Roma community to get better access to water, despite living in informal settlements.

1. Egypt’s Constitution includes strong provisions related to water governance and human rights:

Article 44. The Nile

The state commits to protecting the Nile River, maintaining Egypt’s historic rights thereto, rationalizing and maximizing its benefits, not wasting its water or polluting it. The state commits to protecting its groundwater, to adopting methods appropriate to achieve water safety, and to supporting scientific research in this field.

Every citizen has the right to enjoy the Nile River. It is prohibited to encroach upon it or to harm the river environment. The state guarantees to remove encroachments thereon. The foregoing is regulated by law.

Article 45. Seas, Beaches, lakes, waterways, groundwater and natural reserves

The state commits to protecting its seas, beaches, lakes, waterways, groundwater, and natural reserves.

It is prohibited to encroach upon, pollute, or use them in a manner that contradicts their nature. Every citizen has the right to enjoy them as regulated by law. …

1. In a number of nations where there is no explicit constitutional right to water—including Argentina, Belgium, Brazil, Colombia, India, Indonesia, Nepal, and Pakistan—courts have held that the right to water is an implicit but enforceable constitutional right. Courts based their decisions on the fact that access to safe drinking water is a fundamental prerequisite to the enjoyment of other human rights, including the rights to life, health, dignity and the right to live in a healthy environment. For example, in Argentina, based on the constitutional right to a healthy environment, courts have ordered governments to provide communities with potable water, construct drinking water treatment facilities, provide medical treatment for individuals harmed by contaminated drinking water, and carry out environmental remediation of polluted watersheds.

C. Environmental legislation

1. More than 40 States explicitly recognize the right to water in national legislation or policy, including Algeria, Angola, Argentina, Bangladesh, Belarus, Belgium, Brazil, Burkina Faso, Cameroon, Central African Republic, Colombia, Costa Rica, Dominican Republic, Finland, France, Germany, Ghana, Guatemala, Guinea, Honduras, Indonesia, Latvia, Luxembourg, Madagascar, Mauritania, Namibia, the Netherlands, Nicaragua, Norway, Paraguay, Peru, Portugal, Romania, Russia, Senegal, South Africa, Spain, Sri Lanka, Tanzania, Ukraine, and Venezuela. For example, France enacted a law in 2006 that explicitly recognizes the right to water:

Art. 1. Water is the common heritage of the nation. Its protection, enhancement and development, in accordance with the balance of nature, are of general interest.

In the framework of laws and regulations previously established, the use of water belongs to every physical person, for food and hygiene, and everyone has the right to access to drinking water under conditions economically acceptable to all.

The costs of water use, including environmental costs and the resources themselves, are borne by users, taking into account social, environmental, and economic consequences and geographical and climate conditions.

1. Although much work remains to be done in implementing and enforcing water and environmental laws, many States have promising legislative frameworks. In Cote d’Ivoire, Law no. 96-766 of 3 October 1996 (the environment code) requires that “water consumption sampling points for human consumption must be surrounded by a safety perimeter” and activities harmful to water quality are prohibited within the perimeter. As well, “the inhabitants of watershed or the water users can put together an association for the protection of the area”. Law no. 98-755 of 23 December 1998 (the water code) regulates the use, protection and preservation of water, applying the principles of integrated water resources management. Water laws in Tanzania and Namibia give authorities the power to review and adjust permitted extraction volumes in response to drought, with or without compensation.
2. Croatia’s Water Act requires the achievement of good ecological status of waters, which includes chemical, biological and hydro-morphological elements of water quality. Provisions of the Water Act also require the implementation of revitalization/restoration measures for damaged watercourses. In Monaco, environmental protection is enshrined in the Environmental Code (2017), which includes provisions on water pollution, protecting aquatic environments, wastewater management and preventing flood risks. Azerbaijan’s Water Code requires that all water bodies must be defended from pollution, contamination and other forms of environmental harm. Switzerland’s Federal Act on the Protection of Waters (1991) states that “Everyone is required to take all the care due in the circumstances to avoid any harmful effects to waters”. In Romania, legislation requires the Ministry of Health, in collaboration with local governments and service providers, to monitor water quality and report cases of non-compliance to relevant authorities and the public. Romania is improving water quality monitoring in rural areas, to close the gap with urban areas. Kyrgyzstan enacted the Water Code in 2005 to regulate the use, protection, and development of water resources and fulfil the right to water. Guiding principles of the Code include participation, sustainability, polluter pays, precaution, and openness.
3. Armenia’s Water Code is intended to conserve the national water reserve, satisfy the water needs of citizens and the economy through effective water management, and secure ecological sustainability. Amendments to the Water Code are being developed taking into account the principle of sustainable access to safe drinking water for vulnerable groups. Armenia’s National Water Policy and National Water Program seek to ensure that water of adequate quantity and quality is available to meet present and future socio-economic, ecological and economic needs. Armenia’s program “Co-financing the introduction of modern irrigation systems” promotes the introduction of water-saving drip irrigation systems on agricultural lands.[[17]](#footnote-18) Sanitary protection zones are established around each water source in order to protect them from microbiological, chemical and other pollutants.[[18]](#footnote-19)
4. In 2017, Cuba adopted the Law of Terrestrial Waters which requires the integrated and sustainable management of waters as a renewable and limited natural resource, and mandates the State to ensure access to drinking water for present and future generations. This law protects the right of the people to participate in the planning and rational use of water and to work to reduce pollution and protect water sources. The law also establishes the supremacy of citizens' right to water, ensuring that government does not subordinate the realization of human rights to the interests of private property.
5. In Costa Rica, inclusion of the right to a healthy and ecologically balanced environment and the right to water in the Constitution has been a catalyst for the development of laws, regulations, and public policies to prevent water pollution. The Constitutional Court of Costa Rica (Chamber IV) has issued rulings requiring both the public and private sectors to take action to correct situations that violate these rights. Costa Rica passed a law that prohibits open-pit mining because of concerns about the impacts on the quality and quantity of water for human consumption and agriculture. Water for domestic consumption is accorded the highest priority over other possible uses, and access to water for has been prioritized for vulnerable populations, Indigenous peoples and communities in threatened by water scarcity. As well, the Office of the Ombudsperson frequently calls upon governments to fulfill citizens’ rights related to water.
6. In some States, laws provide legal recognition for customary water rights and governance. For example, in Tanzania, some customary laws are accepted under the Judicature and Application of Laws Ordinance (No. 453) of 1961. Accordingly, the Water Resources Management Act of 2009 places customary rights on an equal level with administratively granted water permits. In Namibia, the Water Resources Management Act of 2013 recognizes the country’s customary law with reference to the Traditional Authorities Act of 2000. Other examples include Guyana’s Water and Sewerage Act (2002), Indonesia’s Law on Water Resources 2004 and Bangladesh’s Water Act (2013). Under Zambia’s Water Resources Management Act, third parties interested in obtaining a commercial water use permit that may impact communities’ customary land area must first obtain the consent of traditional authorities and establish alternative measures to secure water resources for communities’ domestic purposes.[[19]](#footnote-20)
7. The Framework Principles on human rights and the environment developed by Professor John Knox, the previous special rapporteur, noted that environmental standards should be consistent with international standards and guidelines.[[20]](#footnote-21) The Ministry of Environment, Solid Waste Management and Climate Change in Mauritius has promulgated standards on the quality of drinking water based on WHO guidelines, as have many, though not all States.
8. In 2018, Lebanon adopted a new Water Code, which implements international agreements on water and promotes integrated water resource management. The right to water is included in Saudi Arabia’s Water Law and regulations, and the National Water Strategy 2030 has many projects, programs and initiatives to address water pollution, water scarcity and floods.
9. In compliance with the Bangladesh Water Act, 2013, Bangladesh Water Rules, 2018 and an assessment of water availability in 54 districts, Bangladesh is implementating Integrated Water Resources Management (IWRM). In Bhutan, the Regulations to support the Water Act, which took effect in 2015, require Water Safety Planning implementation for all water supply systems. In Mauritius, pursuant to the Environment Protection (Standards for Effluent Discharge) Regulations 2003, no person shall discharge effluent onto land, into a watercourse or into a waterbody, unless the parameters of the effluent do not exceed the permissible limits for approximately 40 parameters. Highly polluting industries such as the textile sector, the tanning industry, breweries and distilleries, canning and food processing, edible oil refining, and manufacturing chemical fertilisers require an Effluent Discharge Permit before discharging effluents, which shall comply with the standards prescribed. Viet Nam has strengthened its environmental regulatory system, as highlighted by the inclusion of the right to a healthy environment in the Constitution (2013) and a new law on environmental protection (2014). In 2016, following massive discharges of toxic substances into the ocean that killed large quantities of fish and shellfish, the Ministry of Natural Resources and Environment fined the Formosa Steel company $500 million for pollution exceeding permitted levels and required the company to carry out environmental remediation of damaged areas.
10. The approval of the Law on the Prohibition of Metal Mining in 2017 in El Salvador is recognized as an important step forward. In addition to protecting water from the pollution and exploitation caused by many large metal mines, the law establishes retraining for artisanal miners, the closure of existing mines, and the remediation of environmental damages caused by existing mines, in order to return to the population the conditions of a healthy environment, as required by law. However, concrete remediation actions lag behind.
11. In the United States, the Clean Water Act (1972) set an ambitious goal: “to restore and maintain the chemical, physical and biological integrity of the Nation’s waters” and to achieve “elimination of the discharge of pollutants (zero discharge) by 1985.” While these goals have not been completely achieved, there has been substantial progress in protecting and improving water quality from some types of pollutants. The Safe Drinking Water Act (1974) protects against both naturally occurring and man-made contaminants that may be found in drinking water.
12. In Mexico, Official Standards address various aspects of wastewater, including maximum permissible limits of contaminants. The Law of Discharges in the Mexican Marine Areas aims to control and prevent pollution or alteration of the sea by effluent. Other relevant laws include the General Law on Climate Change, the General Law on Sustainable Forestry Development, the General Law on Ecological Balance and Environmental Protection, and the Mining Law. Another mechanism applied to maintain the ecological health of water basins is the reserve volumes for environmental use and ecological flow of the 13 decrees published in the Official Journal of the Federation. This promotes the preservation of environmental services and the resilience of aquatic and terrestrial ecosystems. Conservation strategies are prioritized in areas with high levels of hydrological environmental services.
13. Legal provisions prioritizing community water use for domestic purposes, cultural/religious uses, and livelihoods are found in the national laws of Bolivia, Cambodia, Colombia, Libera, Mali, Mexico, Panama and Peru.[[21]](#footnote-22) Laws in Nepal and Zambia explicitly recognize and protect women’s rights to participate in community-level water governance processeswithin laws recognizing communities’ resource governance rights.[[22]](#footnote-23)
14. Hydraulic fracturing for oil and gas (fracking) consumes large volumes of water and causes extensive contamination of water. Although Europe has more reserves of shale gas than in the United States, there has been much less fracking, due in large part to bans enacted in France, Scotland, Ireland, Denmark and Bulgaria.[[23]](#footnote-24) A law to prohibit fracking is under consideration in Colombia.
15. In some States, including Bangladesh, Bolivia, Canada, Colombia, Ecuador, India, Mexico, New Zealand and the United States, recent legal developments recognize that water, in the form of rivers, watersheds, and ecosystems, has rights. In New Zealand, legislation recognizes the Whanganui River, including both physical and metaphysical elements, as a legal person whose rights re respected and protected by law.[[24]](#footnote-25) In at least ten decisions, courts in Colombia have concluded that rivers have rights, appointing human representatives to serve as guardians of those rights.[[25]](#footnote-26) In Canada, joint resolutions from an Indigenous community and a municipal government recently recognized nine rights of the Magpie River, and appointed guardians to defend the river’s rights.[[26]](#footnote-27)

III. Procedural rights

A. Access to information

1. Understanding the value of water highlights the importance of education. A useful initiative was the development of a water education curriculum focused on Africa, developed by UNESCO.[[27]](#footnote-28) Addressing ecohydrology and integrated water management, the curriculum is intended to be widely used in African universities, contributing to sustainable water solutions through improved water management knowledge among professionals, managers, academics, decision-makers and planners.
2. The Active, Beautiful, Clean Waters (ABC Waters) Programme is a long-term initiative to transform Singapore’s waterways and reservoirs into beautiful streams, rivers and lakes well-integrated with the surrounding parks and spaces. Launched in 2006, this initiative cultivates public ownership over all water bodies, and fosters public appreciation of the value of water.
3. The overall cost of water accounting and auditing programmes varies enormously, but advances in remote sensing and metering technologies, as well as a number of open-access global and regional databases, reduce costs and make it easier to share information. By 2017, Mexico’s National Water Quality Monitoring Network had 5,028 sites, distributed throughout the country, in surface, underground and coastal waters. Up to 295 parameters are measured, including a wide range of contaminants. The results are made available to the public through the National Water Information System.
4. Surface water quality monitoring is carried out in 144 observation sites of the water resources in 6 basin management areas of the Republic of Armenia at a frequency of 6-12 times a year. Between 40 and 60 physicochemical indicators of water quality are tested in water samples.[[28]](#footnote-29) The Groundwater Monitoring Network assesses 100 groundwater sources in 6 water basins, comprising 23 fountain wells, 22 non-fountain wells and 55 springs.
5. France, Hungary, Republic of North Macedonia, Norway and Sweden have excellent websites with comprehensive information on the state of the environment. France developed an online portal for environmental information, which includes data on: pollutant emissions from vehicles sold in France; exposure of urban populations to fine particulate pollution; electricity production (by source) and consumption; the quality of water bodies; municipal solid waste generation and collection; and household energy prices.[[29]](#footnote-30) Hungary has a comprehensive national environmental information system. The national public health institute publishes updated data online on air quality and the quality of drinking water and bathing water, pollen levels, and other factors posing a potential health risk.[[30]](#footnote-31) TheRepublic of North Macedonia developed a national environmental information system that includes water quality monitoring (eighteen hydrological stations that monitor surface water), and comprehensive, easily accessible information on the state, quality and trends in all aspects of the environment.
6. Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu are collaborating on a Pacific island network of national and regional data repositories, reporting tools and public websites to monitor, evaluate and analyse environmental information, supporting planning, forecasting and reporting requirements.[[31]](#footnote-32)
7. Another important type of environmental information is data about toxic substances. The Kyiv Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention requires its 35 parties thereto to collect and publish information on pollution from industrial facilities.[[32]](#footnote-33) This information must be gathered annually, made available in a user-friendly way to the public for free, and must include at least 86 pollutants covered by the Protocol. Canada, Mexico and the United States of America also have comprehensive pollutant release inventories.[[33]](#footnote-34)
8. The Public Prosecutor's Office in Guatemala has a computerized system for the control of investigations related to conflicts about water. The data shows these socio-environmental conflicts are increasing.
9. A growing number of States publish regular national reports on the state of the environment, including Hungary, Kazakhstan and Turkey. Kazakhstan also publishes monthly bulletins on topics relating to the state of the environment and the use of natural resources. South Sudan published its first state of the environment and outlook report just one month after gaining independence.
10. A former Special Rapporteur on the human rights to safe drinking water and sanitation, Catarina de Albuquerque, published a comprehensive set of good practices in implementing the rights to water and sanitation.[[34]](#footnote-35) In the handbook, the former mandate holder emphasizes the need for clear articulation of the content of the rights to water and sanitation through laws, regulations and policies governing availability, physical accessibility, affordability, quality and safety, and acceptability. Also essential are legal frameworks to eliminate discrimination in the provision of water and sanitation services (as reported for example in Ghana, Honduras and Pakistan).

B. Public participation

1. Civil society organizations are major contributors to rights-based approaches to safe drinking water, sanitation and water governance. For example, Water.org has already helped catalyze nearly $2 billion in microfinance to empower 22 million people with water and sanitation solutions. The repayment rate on the loans is a remarkable 99 percent, better than banks generally expect from domestic borrowers. WaterAid has assisted more than 27 million people in gaining access to safe drinking water and adequate sanitation. Other prominent examples include EndWaterPoverty, Accountability for Water, Oxfam, Human Rights Watch, the Stockholm International Water Institute, and the World Resources Institute.[[35]](#footnote-36)
2. In Europe, a citizens’ initiative called “Right2Water” was successful in achieving a rights-based approach to drinking water throughout the European Union, strengthening the EU Drinking Water Directive.[[36]](#footnote-37) Stricter limits will apply to lead and, for the first time, to endocrine disruptors such as bisphenol A. As well, States are obliged to provide free access to drinking water in public places through the provision of water dispensers and take measures to reduce and eliminate water leakages from damaged pipes.
3. A community participation and ecological restoration project at Grand Sable and Quatre Soeurs in Mauritius led to the planting of 20,000 mangrove trees, environmental education campaigns in primary schools and the cultivation of vetiver, cassava, medicinal plants and seaweed as alternative income-generating activities to empower women and help them mitigate the challenges of climate change while sustaining their livelihoods. The project was the winner of the Island Bright Spot Award (part of the Global Island Partnership 2013 Solution Search) and was recognised by the UN as an excellent example of using innovative solutions to develop economic opportunities.
4. In Portugal, when a structured process was introduced to allow all water supply system users to register complaints, consumer feedback increased significantly. Prior to the implementation of this process, an average of just 45 complaints were received per year. Once users had access to a low-cost and user-friendly mechanism to share their concerns and claim their rights, the number of complaints grew to more 3000 in a year, highlighting the importance of giving all water users a voice.[[37]](#footnote-38)
5. Uruguay’s National Water Policy Law enshrines the right to participate effectively in the formulation, implementation and evaluation of plans and policies. To this end, Uruguay created a Water and Sanitation Advisory Commission, three Regional Councils, and a number of other advisory bodies to seek public and expert input and provide advice on national water and sanitation policies. As a result, action plans have been implemented to improve water quality in the Santa Lucía, Río Negro and Río Tacuarembó river basins.
6. Brazil’s 2007 Law on Environmental Sanitation was developed through a multi-stakeholder process. The law highlights the importance of participatory processes to achieve the goal of universal access, focusing on poor and marginalized groups. Service providers are responsible for delivering water and sanitation services to all households in rural and urban areas, including informal settlements.

C. Access to justice

1. Globally, there are more than 1,000 specialized environmental courts and tribunals at the national and subnational levels that can address water-related issues. The advantages of these judicial and quasi-judicial bodies include enhanced legal and scientific expertise, streamlined processes, flexibility, the use of alternative dispute resolution, comprehensive jurisdiction, open rules about standing (eligibility to file cases), effective remedies and enforcement powers, and unique case management tools.[[38]](#footnote-39) Examples include the National Green Tribunal in India, the Environment and Land Courts and National Environmental Tribunal in Kenya and the Land and Environment Courts in Sweden.
2. According to the Global Alliance for National Human Rights Institutions, more than 100 States have national human rights institutions in the form of human rights commissions or human rights ombudspersons.[[39]](#footnote-40) These institutions generally have two core functions: independent review of the nation’s human rights record, and addressing individual grievances or complaints alleging human rights violations. Some national human rights institutions (such as those in Austria, Chile, Czechia, Hungary, Kenya and Romania) also have the power to file lawsuits or to intervene in cases against the Government on behalf of communities whose rights are being violated. Colombia, Croatia and Portugal also have ombudspersons who are active in environmental matters related to water pollution, water scarcity and water-related disasters.
3. Costa Rica has three exemplary institutions that provide access to justice. First, an independent office of the ombudsperson protects the rights of citizens by ensuring that the public sector meets the standards set by the Constitution, statutes, treaties and general principles of law, as well as standards of morality and justice. The office may, either on its own initiative or upon request, investigate complaints of alleged human rights violations by public authorities, initiate judicial or administrative proceedings to address such violations, participate in parliamentary debates or review legislative proposals. Much of the work of the Ombudsperson in recent years has concerned environmental issues, including water pollution and the constitutional right to a healthy and ecologically balanced environment.
4. Second, Costa Rica’s Environmental Administrative Tribunal has jurisdiction to hear complaints for violations of all laws protecting water and the environment. The Tribunal may carry out site visits to determine the nature of environmental damage, require interim protection measures, and levy fines and administrative sanctions to eliminate or mitigate environmental damage.
5. The third element of ensuring access to justice in Costa Rican cases involving the rights to water and a healthy environment is the Constitutional Chamber of the Supreme Court, which has applied this right to a wide range of cases involving mining, pesticide spraying, toxic substances, deforestation, the protection of national parks, and groundwater pollution. For example, the Court ordered the authorities to assess whether a permit should be granted to build a pipeline that would withdraw water from an aquifer, in order to make sure that the pipeline would not deprive the local population of water for personal and domestic use. Without certainty that there would be sufficient water, the pipeline would violate the residents’ rights, including that to a healthy environment.[[40]](#footnote-41)
6. Colombia’s Defensoria del Pueblo (ombudsperson) has done tremendous work related to the rights to water and a healthy environment, including an evaluation of the performance of the state’s obligations in respect to the human right to water. In its investigations, the Defensoria del Pueblo classified the country’s municipalities into a hierarchy from worst to best in terms of water supply and environmental sustainability. The indicator for environmental sustainability classified municipalities according to their performance on three metrics: natural water-regeneration capacity (extent of plant cover, wetlands, etc. in the municipality), water scarcity (risk of water shortages in adverse environmental conditions), and vulnerability (the relationship between natural regeneration capacity and water scarcity). The results of the investigation identified 46 of the 1,097 municipalities as being “high risk” municipalities in which a declaration of a health emergency was recommended. The study added that only 17 percent of the Colombian population has acceptable levels of vulnerability, indicating an urgent need to build regenerative capacity and reduce water scarcity in the majority of municipalities.
7. Argentina’s Defensor del pueblo (ombudsperson) has a strong environmental focus and has taken an active role in promoting human rights in water management. The Defensor has experience in intervening in complaints on insufficient ecological flows, water pollution, inadequate water management, and land use changes.[[41]](#footnote-42) An important ally for environmental rights defenders in Guatemala is the Human Rights Ombudsman's Office (Procuraduría de Derechos Humanos), which has a mandate that includes the rights to water and a healthy environment.
8. The Hungarian Ombudsman for Future Generations (OFG) regards ensuring access to safe and clean drinking water as an essential element of the right to a healthy environment. The OFG has expressed concern that taking ineffective flood measures, failing to protect the quality of aquifers, or weakening regulatory oversight of access to common water resources may violate the right to a healthy environment. In a Constitutional Court case, the OFG submitted an *amicus curiae* brief opposing an amendment to the Water Management Act. The amendment sought to abolish the statutory permitting requirement for drilling new wells down to 80 meters. In the amicus brief, the OFG stressed that the intended weakening of regulatory oversight of the drilling process could result in drilling wells in inappropriate locations and using inappropriate technology, which could in turn pollute finite groundwater resources. and would adversely affect other users of the common pool. The Constitutional Court found a violation of the right to a healthy environment and abolished the amendment.[[42]](#footnote-43)
9. Courts in Argentina, Botswana, Colombia, France, India and Indonesia have issued orders, based on the right to water, requiring governments to prevent private water supply companies from cutting off people’s water and requiring governments to supply poor people with water.
10. Colombia’s Constitutional Court found that the negative effects of illegal logging and mercury contamination from mining on ecosystems and the health of the inhabitants of the Atrato River region violated their fundamental rights to life, health, water, food security, a healthy environment and culture.[[43]](#footnote-44) The same Court ordered a pig farm that caused water pollution to stop operations based on the applicants’ right to health.[[44]](#footnote-45)
11. In the 2008 Mendoza case, the Supreme Court of Argentina found that pollution in the Matanza-Riachuelo watershed of the capital Buenos Aires violated the constitutional right to a healthy environment.[[45]](#footnote-46) The case spurred the creation of the Matanza-Riachuelo Basin Authority (ACUMAR), an interjurisdictional body with legal and institutional powers to oversee the clean-up plan and ensure compliance with the orders imposed by the Supreme Court; the removal of more than 1,400,000 kilograms of solid waste from the Riachuelo River and its banks; the expansion of waste collection systems in areas where this service did not previously exist; construction of sewage infrastructure; the implementation of comprehensive health assessments in risk areas and the construction of environmental health units, which improved health care; and the expansion of drinking water infrastructure serving millions of residents. A decade after the Court’s decision, more than 1.5 million people have gained access to safe drinking water and sanitation, hundreds of polluting businesses and illegal garbage dumps have been closed, parks, plazas, and riverside pathways have been built, and thousands of people have been relocated from riverside slums into newly built social housing facilities. However, there is still much work to be done to achieve a healthy environment and other human rights for residents of this vulnerable region.[[46]](#footnote-47)
12. In another case in Argentina, a court considered the situation of impoverished neighborhoods in Córdoba, where wells were contaminated by a water treatment plant overflowing with untreated sewage. The court ordered the municipality to take urgent measures to address the situation, including providing 200 liters of safe water per household per day until a permanent solution was found.
13. The Environmental Court of San Salvador in El Salvador has established a mechanism of notice or anonymous complaint, which generates favorable conditions for the defenders of human rights (including rights to water, sanitation and a healthy environment) to exercise them without fear and have access to environmental justice.
14. The 1989 International Labour Organization Convention on Indigenous and Tribal Peoples (Number 169) requires recognition of the cultures, traditions, and special circumstances of Indigenous and tribal peoples. Whenever a government considers legislative or administrative measures that may directly affect indigenous and tribal peoples, it must inform and consult those concerned through appropriate procedures and representation. This was upheld in a landmark 2009 Chilean court decision that granted water rights and a minimum water flow to two Indigenous communities. The government had failed to fully comply with the clause on the right to prior consultation, which must be carried out “in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent to the proposed measures,” such as logging, agribusiness or mining projects in indigenous territories.[[47]](#footnote-48)
15. In several Asian countries, including Bangladesh, China, India, Nepal, Pakistan, the Philippines, and Thailand, individuals and organizations have successfully claimed constitutional protection against water pollution.[[48]](#footnote-49) The High Court in Bangladesh delivered a historic judgment in 2019 declaring rivers as legal entities possessing certain rights. The Court assigned the National River Protection Commission (NRPC) as the legal guardian to protect the rights of waterbodies. The China Biodiversity Conservation and Green Development Foundation filed a lawsuit alleging that a company had damaged the Tengger Desert through excessive discharges of wastewater. The court of first instance and the appeals court both found that the Foundation did not have standing to sue, but were over-ruled by the Supreme People’s Court. A key element of the Supreme Court’s decision was that the purpose of the Foundation, as set forth in its charter, to “extensively mobilize the whole society to care about and support the protection of biodiversity,” is consistent with the goals of the Convention on Biological Diversity.[[49]](#footnote-50) The Administrative Court of Thailand plays a vital role in protecting the right to a healthy environment in cases brought by citizens and local communities. The Administrative Court has made orders in more than 65 cases involving human rights and environmental issues such as pollution from gold mining that violated human rights, impacts of limestone mining on people’s health, and industrial lead contamination in a creek.[[50]](#footnote-51)
16. In the 2008 Manila Bay case, the Supreme Court of the Philippines found that pollution was violating citizens’ constitutional right to a healthy environment and ordered a number of government departments to undertake clean-up activities in the polluted water body of Manila Bay adjacent to the capital.[[51]](#footnote-52) In 2020, the Supreme Court reconstituted its Manila Bay Advisory Committee, which is tasked with monitoring the implementation of its 2008 decision that directed more than a dozen government agencies, to clean-up, restore, and preserve Manila Bay. Recent data from the Department of Environment and Natural Resources indicate that fecal coliform levels in Manila Bay have fallen dramatically. Supreme Court Chief Justice Diosdado Peralta toured the area recently and stated “The purpose of the continuing mandamus is to clean the water. If you ask me if I am satisfied, I am satisfied because the water is clean.”[[52]](#footnote-53) There is much more to be done, but progress is being made.
17. Under Indonesian law (Act 32/2009 regarding Environmental Protection and Management), every person has the rights of access to information, to participate in environmental decisions and to effective remedies if they are harmed by environmental degradation. The Supreme Court has adopted policies that require all environmental cases to be handled by a judge with environmental certification (obtained through specialized training).
18. In 2011, the Basarwa indigenous people living in the Central Kalahari game reserve in Botswana won a lawsuit in which they argued that the Government violated their human rights by denying them access to a borehole they used for decades as a source of water.[[53]](#footnote-54) The Government had attempted to force them to move out of the game reserve. The court referred to General Assembly resolution 64/292 on the rights to water and sanitation and found that denying the Basarwa permission to use the borehole on the land where they resided violated their human rights.
19. Even where lawsuits are not successful, they can contribute to positive outcomes if combined with civil society organizations pressuring policymakers. In South Africa, residents of Phiri, Soweto filed a lawsuit, alleging that the installation of water meters requiring prepayment was unlawful and that the government’s free basic water policy did not provide residents with sufficient water.[[54]](#footnote-55) Although the Constitutional Court ruled against the residents, the municipality changed its policy to provide larger volumes of free water to indigent households.
20. National courts in Europe have also addressed water issues through a rights lens. The Constitution of Latvia provides: “The State shall protect the right of everyone to live in a benevolent environment by ... promoting the preservation and improvement of the environment” (Article 115). The Constitutional Court of Latvia has struck down several local land use decisions that would have permitted development on flood zones as violating the right to a healthy (benevolent) environment.[[55]](#footnote-56) The Spanish High Court in 2015 mandated that new residential and industrial developments not be approved without proof that enough water was available.[[56]](#footnote-57) A French court held a public water company accountable for ensuring that the water it provided was not detrimentally impacted by agricultural runoff.[[57]](#footnote-58)
21. When access to justice and/or effective remedies are denied at the national level, regional courts, tribunals and committees can play an important role. Cases involving the right to a healthy environment have been decided by the African Commission on Human and Peoples’ Rights,the Inter-American Court of Human Rights,[[58]](#footnote-59) the European Court of Human Rights,[[59]](#footnote-60) the European Committee of Social Rights[[60]](#footnote-61) and the Aarhus Convention Compliance Committee.
22. The Inter-American Court of Human Rights required Argentina to submit a plan to provide an Indigenous community with access to its traditional territory, with a particular focus on the conservation of waters, and the protection and recovery of forests.[[61]](#footnote-62) The African Commission on Human and Peoples’ Rights found that oil and gas industry activities that polluted water in the Niger Delta violated the right to a healthy environment.[[62]](#footnote-63) The European Committee on Social Rights found Greece in violation of the right to health owing to the country’s failure to implement measures and enforce regulations to reduce the harmful impact of industrial pollution in the River Asopos.[[63]](#footnote-64)

IV. Empowering vulnerable and marginalized populations

1. Vulnerable and marginalized populations have tremendous potential to contribute to effective and equitable solutions when given the opportunity and requisite resources to participate in planning and decision-making related to the conservation and use of water and aquatic ecosystems.[[64]](#footnote-65)
2. The Global Water Partnership is a leader in driving gender equality and social inclusion in water management. Water governance institutions can demonstrate leadership by making gender equality and inclusion a core goal, which requires adequately funding and implementing gender equality strategies. Water management decisions must be informed by gender and social inclusion analysis, to reveal the different uses and knowledge of water by women, girls and others. Adopting a ‘nothing about them without them’ approach helps to ensure meaningful and inclusive participation in decision-making through institutions including river basin organisations, irrigation associations and water agencies. Policies that prevent women from owning or licensing water are discriminatory and must be revised.
3. According to the World Health Organization, most States have policies and plans to provide water and sanitation services to poor populations, consistent with the Sustainable Development Goal of leaving no one behind, but many States lack adequate financial resources to fully implement their plans. However, official development assistance (ODA) commitments for water, sanitation and hygiene are rising, indicating the continued determination of the international community to make progress on these critical human rights. For example, aid allocated to Sub-Saharan Africa almost doubled between 2015 and 2017.[[65]](#footnote-66)
4. Pro-poor programmes to ensure access to safe drinking water and sanitation are a leading good practice. In a number of States - including Colombia, India, Kenya, Morocco, the Philippines, and Uganda – water and sanitation subsidies are offered to water services providers when water and sanitation facilities are extended to poor households and communities.[[66]](#footnote-67) In France and Belgium, a type of subsidy, referred to as a solidarity mechanism, pays water bills for the most financially deprived people.[[67]](#footnote-68) Chile employs a similar approach, allowing connection costs to be paid in affordable monthly instalments over five years instead of a lump sum. In Zambia, the Devolution Trust Fund was created in 2003 to finance water and sanitation services for poor urban areas and informal settlements. Funding came from development partners, government and water utilities and is replenished by a 3 per cent solidarity levy on the water bills of all customers.[[68]](#footnote-69) Community members are represented in the project task team and decide where water distribution kiosks are to be placed, and local water watch groups serve as an accountability mechanism. Bangladesh, Hungary, Mozambique and Peru also have strong laws, policies, or programmes in place to provide water and sanitation to poor and marginalized communities. Bangladesh earmarks 20 percent of its pro-poor annual development plan funds for sanitation and hygiene promotion. The government then allocates 75 percent of this budget to free latrines for families living in extreme poverty and 25 percent for promotional activities. Subsidized sanitation equipment is provided to public facilities including schools and markets.
5. In the 1960s and 1970s, Malaysia, the Republic of Korea, Singapore and Thailand made rapid and remarkable progress towards achieving total sanitation coverage. More recently, countries such as Ethiopia, India and Nepal have dramatically reduced open defecation and made progress towards universal access to basic sanitation. In each case, the common factor has been strong political leadership, with government playing an important role in setting policies and plans, mobilizing investment, regulating services, galvanizing widespread participation and continuously learning and adapting.[[69]](#footnote-70)
6. Indigenous peoples’ approaches to respecting and protecting water offer extensive wisdom that can be used to transform society’s troubled relationship with aquatic ecosystems. For many Indigenous peoples, water is sacred.[[70]](#footnote-71) An emblematic case on the importance of water for Indigenous Peoples is represented by Lake Atitlán, declared a "living being" by the Alliance of Ancestral Authorities of the Department of Sololá, Guatemala. The Krenak people have developed environmental recovery practices without any support from the Brazilian government. The recovery of springs is an example of this practice of environmental restoration that they have developed by “planting native trees, carrying out agro-ecological management, caring for Mother Earth and preventing unbalanced exploitation.”
7. In Canada, the Tŝilhqot’in Nation recently adopted the ʔElhdaqox Dechen Ts’edilhtan (ʔEsdilagh Sturgeon [Fraser] River Law) with the objective of remediating and protecting a key watershed that the Tŝilhqot’in Nation, and many other Indigenous people, rely on for sustenance.[[71]](#footnote-72) This law addresses both responsibilities for ensuring the river is healthy and rights to clean water and healthy ecosystems.
8. In order to ensure that activities pursuant to the Guarani Aquifer Agreement (referred to in para. 12) complied with national laws, a conscious decision was made to involve Indigenous communities. An Indigenous Peoples Strategy was formulated to secure the effective and informed participation of Indigenous Peoples. Effective means of involvement included: providing informative and educational material in the Guarani language; carrying out a multidisciplinary study on the relationship between water and the indigenous cultures; holding regional meetings in which the villages could exchange their experiences on preserving natural resources and sustainable practices; and identifying regional needs at a state level. Among the regional needs identified were: translation of the new Water Resources Law into Guarani; a law allowing Indigenous Peoples to exploit mineral water; creation of national standing committees; capacity building and leadership development within the indigenous communities; and sharing technical knowledge and good practices.
9. An innovative program enhanced the capacity and resilience of farmers living on the floodplains of India and Bangladesh. To overcome the damages and risks of flooding on conventional agriculture, the farmers were trained in hydroponic float farming and aquafarming, approaches resilient to flooding. The training and modest financial assistance enabled beneficiaries to improve their economic situations: every three months, each float farm produced 130–170 kg of vegetables and 150–200 kg fish, for a total value of $1,000. Food security improved and farmers’ earnings increased by 65–70 percent.[[72]](#footnote-73)
10. Most of the villages in Mongla, a coastal area of Bangladesh, suffering from a lack of access to safe drinking water due to high levels of salinity. In response, the villages have built water reservoirs which capture rainwater during the wet season, and connected these reservoirs to natural water retention features, such as ponds. Moreover, the reservoirs have been useful in mitigating the effects of floods and other natural disasters.
11. National laws and policies can provide significant guidance, impetus and resources for integrating equity into water planning. For example, through the Magna Carta of Women 2009 (Philippines Gender Law), the Philippines Government requires all government agencies to designate five percent of their annual budget for gender and development activities, which provides a great opportunity for supporting equity integration.[[73]](#footnote-74)
12. Nepal’s Rural Water Supply Policy recognizes the different roles and responsibilities of women and men in relation to water collection, time availability of individuals based on their gender roles, vulnerability of the poor in relation to water access, and appropriate methods of raising awareness based on differences within the community. The policy requires that “the participation of gender, caste and disadvantaged ethnic groups will be made essential to all decision-making processes regarding water supply... and special emphasis will be given for their meaningful participation.” Water committees should ensure proportional representation of gender, caste and disadvantaged ethnic groups, including 50 percent representation of women.[[74]](#footnote-75)
13. The Framework for Monitoring Realization of the Rights to Water and Sanitation in Kenya highlights the need to prioritize funding for highly disadvantaged and vulnerable groups, with the aim of making up for long- standing marginalization of these groups. Kenya’s national WASH monitoring framework includes indicators on: the implementation of pro-poor water policies; and operationalizing policies encouraging participation of local communities in water and sanitation management.[[75]](#footnote-76) Kenya’s Water Act (2016) requires all profits generated by water and sanitation service providers in an area to be invested in extending these services until all residents in that area have adequate access to clean water and sanitation. The number of Kenyans with access to at least basic water services doubled between 2000 and 2017.[[76]](#footnote-77)
14. In North Darfur, Sudan, the Wadi El Ku Catchment Management Project has been improving livelihoods of conflict-affected populations in a region with a long history of severe food shortages and cyclical episodes of drought since 2013. The focus is on soil, water and forest conservation measures that support sustainable livelihoods.[[77]](#footnote-78)
15. A poverty and environment initiative in Mauritania facilitated access to clean water for nearly 28,000 beneficiaries in eight locations. More than 12,800 households gained access to sanitation services. Local communities built more than 6,500 latrines, more than 260 sites in the Trarza region were certified free of open defecation, and more than 6,000 students and 90 teachers were trained in hygiene and sanitation.
16. Mozambique’s Water Regulatory Council is involved in decisions regarding service delivery standards and affordability in order to ensure access to water and sanitation for people in poverty, particularly in slums. The Council found that to deliver services effectively it is necessary to go beyond traditional models, understand who does not have access and why, and find solutions based on the reality on the ground. Mozambique promotes the restructuring of tariffs to improve affordability, such as deferring connection charges so they are paid over a series of billing periods. In Mozambique, some communities (e.g. the village of Ndombe), are using solar electricity to power community water systems. Many women are involved in managing and maintaining these systems. Women also benefit from increased economic opportunities. For example, improved irrigation systems enable women to sell vegetables and fruits and increase their income. The improved yield of crops also impacts diets, reducing malnutrition especially among women and children.[[78]](#footnote-79)
17. Ethiopia’sOne WASH National Program uses gender disaggregated indicators to track gender equity in WASH programme roles and benefits.[[79]](#footnote-80)
18. Mauritius has invested in pipe replacement programmes across the island that have dramatically reduced water losses from leaks. As well, through the Water Tank Grant Scheme, low-income families receive grants to purchase domestic water pumps and water tanks with a capacity of 400 to 1000 litres. Over 99 percent of the population has access to safe drinking water, with per capita consumption of approximately 190 liters per day. A solar-powered desalination plant was built in Rodrigues in 2018 that produces 80,000 liters of fresh drinking water for 2,400 inhabitants every day.
19. The Republic of the Marshall Islands’ National Water and Sanitation Policy has an objective to improve conditions for disadvantaged populations, defined as “those living in or with extreme poverty, severe disability due to age, disease, injury or other causes, disaster or conflict-affected households, significantly adverse ground conditions (necessitating expensive construction), or lack of space for private facilities.”[[80]](#footnote-81)
20. Mexico’s National Water Commission (CONAGUA) is focused on improving the well-being of marginalized groups, creating conditions for the enjoyment and exercise of human rights, reducing the inequality gap in access to water and sanitation, and promoting food security. The most important of CONAGUA's current programs is PROAGUA, which seeks to: increase access to drinking water, sewerage and sanitation services with a focus on equity and social justice, mainly benefiting the most vulnerable rural, urban, Indigenous or Afro-descendent populations; and to incorporate women into water decisions in order to contribute to reducing the existing gender inequality gaps. The rights of Indigenous and Afro-Mexican communities are protected through collective water allocations, respecting their customs, in order to generate conditions that allow for progressive progress in the exercise of the human rights to water and sanitation. Among the guiding principles established in Mexico’s National Water Program 2020-2024 are: "for the good of all, the poor first" and "leave no one behind, leave no one out.” Building institutional and social capacities to deal with disasters, reducing the material and human impact of climate variability, and developing communities that are resilient to climate change are also priorities. The National Human Rights Commission (CNDH) issues regular reports on human rights violations related to water and prepares recommendations for each case.
21. Mexico’s Program for the Sustainability of Drinking Water and Sanitation Services in Rural Communities reached over 1,200 small rural communities between 2014 and 2018, upgrading their drinking water and wastewater treatment systems and contributing to the progressive realization of the rights to water and sanitation for marginalized and vulnerable populations. Across Mexico, the proportion of the population with access to basic water services increased from 89 to 99 percent between 2000 and 2017, while access to at least basic sanitation jumped from 75 to 91 percent.[[81]](#footnote-82) Improved infrastructure for drinking water and sanitation has contributed to a significant reduction in levels of gastro-intestinal illness. Nevertheless, significant challenges remain, and Mexico needs to revise its general water legislation to give full effect to the rights to water and sanitation.[[82]](#footnote-83)
22. Colombia’s Intra-domestic Water and Sewerage Connections Program has enabled 38,765 families in vulnerable conditions to have, for the first time, a toilet, a sink, a washing machine, and a shower connected to the water and sewage services (or wastewater management system for concentrated rural areas). These improvements enhance dignity and improve the quality of life of the beneficiaries.
23. For more than 10 years, the Plurales Foundation and the Fondo de Mujeres del Sur have supported the strengthening of rural women's organizations in Argentina, Bolivia and Paraguay. These women fight for access to water, land tenure, and against the contamination and deforestation that their territories suffer. They demand the preservation of natural assets and food sovereignty as the basis for the survival of their communities.
24. The National Programme for Rural Water and Sanitation in Peru focuses specifically on improving access to water and sanitation for poor, marginalized and isolated rural populations, as well as building local capacity to manage these systems effectively. Similarly, Paraguay initiated a program requiring access to drinking water and basic sanitation to be integrated into all government housing projects and involving civil society in their design and implementation.
25. A human rights-based approach is a cross-cutting pillar of the Honduras’ National Adaptation Plan. Through a capacity building project in Tegucigalpa and five neighbouring municipalities, 8,988 families in vulnerable communities learned to harvest rainwater for domestic use, manage forests, and build reservoirs to prepare for droughts and control floods.

V. Preventing water pollution

1. It is clear that the majority of States have laws, regulations and policies aimed at preventing and reducing water pollution, as detailed in Part II of this annex on good practices. There is however a critical implementation gap facing almost all States, and the Special Rapporteur was disappointed with the lack of information in submissions related to success in actually reducing water pollution.
2. In Poland, the National Programme for Municipal Wastewater Treatment was introduced to ensure compliance with upgraded water legislation. The policy fostered the construction of new and updated wastewater treatment plants that reduced water pollution and generated energy from waste. As at 2017, 99 per cent of the population in Poland had access to at least basic sanitation service, and 99 per cent of wastewater was treated at plants providing at least secondary treatment.
3. In 2014, Saudi Arabia’s Presidency of Meteorology and Environment announced a decree giving all companies five years to meet new water pollution standards. All projects must meet international benchmarks standards as part of Saudi Arabia’s environmental plan to protect human and environmental health. Sudan has also created strict limits for water pollution from the oil industry.
4. Israel’s Ministry of Environmental Protection's Marine Environment Protection Division implemented new regulations and increased supervision and enforcement on discharge permit holders. They also imposed large fines on polluting corporations, which has helped to deter other companies from polluting the Mediterranean. These policies led to a 95% reduction of all pollutants, including mineral oil, heavy metals, and ammonia, discharged into the Mediterranean Sea from 1998 to 2017.[[83]](#footnote-84)
5. Guatemala invented a simple, inexpensive and easy to implement solution to capture solid, surface waste and reduce pollution in the Motagua and Villalobos Rivers. A Bio-bar is a barrier made of recycled plastic bottles encased in mesh that is placed across the width of a river or stream to capture garbage, large plastics, and other surface debris. BioBars are now being used in Honduras, Panama, Argentina, and the Dominican Republic. They capture 90 percent of the plastic and other surface waste that could have polluted the ocean. Bio-bars enable communities to participate in creating, installing, and maintaining the systems while also creating jobs in the collection, sorting, and recycling of the waste that is recovered from the rivers.
6. Safely re-using and recycling agricultural waste and domestic wastewater will help promote the transition to a cyclical economy. Not only water, but also energy and nutrients are more easily recovered from source-separated wastewater: energy from hot water and from feces as well as nutrients from urine. Some well-documented examples of source separation include the 40 million domestic biogas reactors in China or the almost 100,000 urine-diverting dry toilets in peri-urban areas of eThekwini, South Africa.
7. Cabo Verde, Comoros, Maldives, Mauritius, Sao Tome and Príncipe and Seychelles have begun an initiative to fix problems relating to the scarcity and contamination of freshwater supplies, over-exploitation and the poor management of groundwater resources, and pollution in surface water.[[84]](#footnote-85) About 100,000 community members have already benefited from improved water quality. This project contributes to fulfilling the right to water, reduces poverty, improves health and facilitates climate change adaptation.
8. Taxes can be used effectively to reduce environmental threats. States that levy water effluent charges include France, Germany, Malaysia, the Netherlands, the Philippines and the United States of America. Studies show that water pollution taxes lead to a significant decline in pollution levels.[[85]](#footnote-86)
9. Finland initiated a 2019- 2023 water protection enhancement programme involving five ministries, an international water strategy and updated national goals relating to water and health. The initiative will improve water quality and reverse the deterioration of water and sewage networks.[[86]](#footnote-87) In Germany, water suppliers and farmers commonly engage in cooperation agreements to manage pesticide and nitrate levels in source waters. Topics covered under these agreements include consultations on water-protective application of fertilizers and financial support for inter-cropping.[[87]](#footnote-88)
10. Agroecology is spreading in many States, including Argentina. People practice agroecology by growing food without the use of agrochemicals, taking advantage of water resources but without poisoning the water and the environment, respecting the ecosystem and its cycles, learning from the wisdom of nature and traditional peasant production, exchanging organic seeds, sowing in small fields, partnering in farming communities, promoting local consumption and healthy, balanced diets.
11. In Colombia, a Canadian corporation sought government approval to build a large gold mine in a rare ecosystem called the paramo, which is the source of drinking water for millions of Colombians and home to important biodiversity. The Ministry of Environment rejected the proposal because of concerns that pollution from the mine would violate the constitutional rights to water and a healthy environment.
12. Access to safely managed sanitation can contribute to reduced water pollution. Between 2000 and 2017, Ethiopia, India and Nepal achieved a substantial reduction – greater than 45 per cent – in the number of people relying on open defecation. The proportion of the population using at least basic sanitation services rose by more than 30 per cent between 2000 and 2017 in Cabo Verde, Cambodia, India, Indonesia, Lesotho, Mauritania, the Federated States of Micronesia, Nepal and Viet Nam. These examples of progress improve human health and well-being, and fulfil human rights.[[88]](#footnote-89) India’s Swachh Bharat program is an ambitious effort to fulfill the right to sanitation, improve health outcomes, respect human dignity and reduce environmental pollution. Since 2014, more than 100 million household toilets have been built in India pursuant to this program.

VI. Preventing and alleviating water scarcity

1. Many States are implementing improvements in irrigation systems including Bangladesh, Egypt, Kenya, Kyrgyz Republic, Malawi, and Uganda). For example, Bangladesh is practicing an alternate wetting and drying method of irrigation for rice production in different parts of the country, which reduces water use 15 to 30 per cent while maintaining yields.[[89]](#footnote-90) Egypt is making efforts to transform irrigation systems to use drip irrigation. Sekem, an Egyptian company, has pioneered organic farming and the complete reuse of wastewater after treatment.
2. Improved water management practices are most effective when combined with improved agricultural practices, such as the use of drought-tolerant crop varieties. While sprinkler and subsurface drip irrigation have the potential to increase irrigation efficiency when compared to gravity surface irrigation systems, irrigation schedules based on real-time crop requirements, soil water monitoring and short-term forecasts also appear to be good options. Scheduling irrigation based on soil water content and crop requirement could produce water savings up to 35 per cent with no yield penalty compared with standard farming practices. Centre pivot systems used 30 per cent less irrigation water than gravity surface irrigation to achieve the same yield, and conservation tillage required 20 per cent less irrigation water than conventional tillage. Crop residues under conservation tillage may diminish irrigation requirements by increasing precipitation storage efficiency and by reducing direct soil evaporation and surface run-off.
3. States facing water scarcity are taking steps to diversify their sources of water, including using recycled and reclaimed water (Namibia, Singapore, United Arab Emirates) and desalinated water (Egypt, Qatar, United Arab Emirates), which has become a viable option for producing drinking water due improvements in technology.[[90]](#footnote-91) For example, Namibia played a pioneering role in reclaiming and treating wastewater to the standard of drinking water. With the first reclamation plant established in 1968, water re-use and recycling will likely continue to be an important way for Namibia to augment its scarce water supply.[[91]](#footnote-92) Jordan, Kuwait and Oman use at least secondary treatment for wastewater prior to water re-use in agriculture.
4. Singapore has a three-pronged strategy to manage water demand and achieve a sustainable level of water consumption that includes pricing water to reflect its scarcity. First, the water price is charged based on quantity used and is pegged to the cost of supplying the next drop of water, (i.e. the long run marginal cost). Rebates are available for lower-income households to ensure that water remains affordable. Second, mandatory water efficiency requirements are in place, focused on businesses that are large users. Third, extensive public education and outreach programs encourage the population to use water wisely. Through these measures, Singapore's per capita household water consumption declined from 148 litres per day in 2016 to 141 litres per day in 2019, and the government has a goal of lowering this to 130 litres per day by 2030.
5. In 2018, the Punjab state government in India launched a pilot project called ["*paani bachao, paisa kamao*"](https://indianexpress.com/article/cities/chandigarh/pspcl-launches-pilot-project-to-give-cash-incentive-to-farmers-for-using-less-electricity-5214904/) ("save water, earn money") in partnership with the World Bank and The Energy and Resources Institute. A select group of farmers was offered monetary compensation in exchange for reducing their agricultural groundwater consumption. The preliminary results from the project were encouraging, indicating that the approach could be scaled up.[[92]](#footnote-93)
6. Brazil successfully implemented a program called "1 Million Cisterns" that has provided access to clean water for more than 5 million Brazilians in the country’s northeast region. In Argentina, governments and civil society organizations have been developing similar programs with thousands of cisterns built, solving the problem for a large number of isolated rural communities.
7. A good practice example and blueprint for other business sectors is the Scotch Whisky industry, which has reduced water use through innovation.[[93]](#footnote-94)

VII. Restoration and rehabilitation

1. Restoring and maintaining healthy freshwater ecosystems is a cost-effective way to improve water quality, biodiversity and human health.[[94]](#footnote-95) By conserving and restoring upstream forests, water utilities in the world’s 534 largest cities could better regulate water flows and collectively save $890 million in treatment costs each year.[[95]](#footnote-96) Mexico is protecting its water on a national scale by designating water reserves in more than one-third of the country’s river basins. These protected areas and wetlands cover nearly 124 million acres and ensure a secure water supply for some 45 million people downstream.[[96]](#footnote-97)
2. To improve health and well-being and maintain ecological diversity, Revitalising Informal Settlements and their Environments (RISE) is working at the nexus of health, environment, and water and sanitation in 24 informal settlements across Makassar, Indonesia and Suva, Fiji. This action-research programme, funded by the Wellcome Trust and the Asian Development Bank, collaborates with communities, governments, local leaders, and partner institutions to co-design location-specific solutions. These solutions integrate natural infrastructure, such as constructed wetlands, and focus on supporting communities to: recycle their own wastewater; harvest rainwater; create green space for purifying water and cultivating food; restore natural waterways to support biodiversity; and reduce vulnerability to flooding and climate change. The programme will run from 2017-2022.
3. Restoring natural infrastructure, such as wetlands, can substantially reduce risks associated with natural disasters. The Netherlands restored natural floodplains on the Ijssel, Lek, Rhine and Waal Rivers to reduce flood risks. Thailand restored mangroves at the Krabi River Estuary, a Ramsar site, to protect vulnerable coastal communities against tropical storms and rising sea levels. China has reconnected marshes, lakes and other wetlands to the Yangtze River, improving water quality and boosting fish populations. Senegal has planted tens of millions of mangrove trees in the Casamance and Sine Saloum regions. Other examples of wetland restoration include peatlands in Belarus, Everglades restoration in the United States and Aotearoa/New Zealand’s Arawai Kākāriki wetland restoration programme.
4. Farmer managed natural regeneration is a low-cost land restoration technique used amongst poor subsistence farmers to increase food and timber production and resilience to climate extremes. New or regrown trees and shrubs are integrated into fields or grazing pastures, restoring soil quality, inhibiting erosion and evaporation, rehabilitating groundwater, and increasing biodiversity. This technique has proven effective in Ethiopia, Ghana, Indonesia, Kenya, Mali, Niger, Rwanda, Senegal, Timor Leste, and Uganda, among other States.
5. In Mali, Burkina Faso and Niger, zaï or tassa is a farming technique to restore degraded lands, catch water and increase soil fertility. Zaï are pits dug in the soil (20-30 cm long and deep and 90 cm apart) prior to planting crops to catch water and concentrate manure and/or compost. In these West African States, stone barriers built alongside fields slow down runoff water during the rainy season, improving soil moisture, replenishing water tables, and reducing soil erosion. Used in combination with zaï, the water retention capacity is multiplied five- to ten-fold, the biomass production (e.g. trees, sorghum, and millet) increases up to five times, and livestock can feed on the grass that grows along the stone barriers after the rains.
6. Mauritius has established community-based programmes aimed at restoring important ecosystems, including coral reefs and mangrove forests. At least five vulnerable coastal communities have participated in training programmes and created coral nurseries. Mangrove forests in Mauritius that have been rehabilitated are now protected by the Fisheries and Marine Resources Act.
7. Cote d’Ivoire has developed an action plan to address problems associated with alien invasive species. Herbivorous insects are being used to control 3 alien invasive species, namely, water hyacinth (Eicchornia crassipes), water fern (Salvinia molesta), and water lettuce (Pistia stratiotes). This is environmentally superior to using pesticides, and in an interesting innovation, ground up water hyacinths are being composted for use as fertilizer.
8. Nature Iraq (BirdLife in Iraq), a CSO, has worked to restore large areas of the Mesopotamian marshes that were drained in the 1990s. Between 40 percent and 60 percent of the drained area has been re-inundated, and with ongoing management efforts, some of these marshes are once again providing water, food, shelter and income for the Indigenous Marsh Arab peoples.[[97]](#footnote-98)
9. Slovakia is implementing a national watershed restoration plan that employs thousands of people rehabilitating degraded land and using traditional rainwater harvesting methods.[[98]](#footnote-99)
10. Cuba has integrated nature-based solutions to address climate change, water and biodiversity, particularly in its coastal areas. A priority has been the rehabilitation of coastal wetlands (mangrove forests, swamp forests and marshes) and marine ecosystems, such as seagrasses and coral reefs. Projects are developed with the broad involvement of communities and local governments. A leading example is a Living Mangrove Project to reduce the vulnerability of communities to floods, erosion, and saline intrusion in the Artemisa and Mayabeque Provinces. Results achieved thus far include thousands of hectares of restored mangrove ecosystems benefitting hundreds of thousands of coastal residents.[[99]](#footnote-100)
11. In recognition of the special importance of mangrove ecosystems, Colombia developed a policy known as the "National Programme for the Sustainable Use, Management and Conservation of Mangrove Ecosystems", as well as extensive regulations. Any project, work or activity that is not related to the subsistence or customary uses of the communities that have traditionally been related to this ecosystem is prohibited. Mangrove restoration projects are being designed, managed and implemented in partnership with Indigenous communities.[[100]](#footnote-101)
12. A project funded by UNDP and the Global Environment Facility enabled Costa Rica to approve its first national policy for the protection of wetlands, encompassing approximately 600,000 hectares of internationally important wetlands. These wetlands are also essential for the livelihoods of local communities because they provide water purification, flood control, groundwater replenishment and spawning grounds for fish.
13. The Wetlands Reserve Program (now the Agricultural Conservation Easement Program) in the United States paid farmers to restore and conserve wetlands, with funding linked to the duration of the commitment. From 1992-2013, approximately 1.1 million hectares were enrolled in the program, with investment of $4.5 billion.
14. The restoration of polluted or contaminated aquatic ecosystems is also important. Pursuant to a federal law passed in 1999 and most recently amended in 2019, the Russian Federation is implementing a wide range of actions to protect Lake Baikal and the surrounding region, including the closure of a pulp and paper mill, the rehabilitation of polluted land, and a reduction in the volume of polluted wastewater entering the lake.To ensure implementation of and compliance with the legislation on environmental protection in the Lake Baikal watershed, as well as to protect the constitutional right of citizens to a favourable environment, the Baikal Interregional Environmental Prosecutor’s Office was opened in 2017.
15. Belgium’s *maillage vert et bleu* initiative focuses on reconnecting natural areas to preserve biodiversity. Wildlife corridors enable species to move from one green space to another and allow aquatic species to travel freely through connected waterbodies. This initiative has already benefitted the Woluwe river, stabilizing riverbanks and restoring wildlife habitat.

VIII. Nature-based solutions to water and climate change challenges

1. Nature-based solutions use natural processes to improve water management and conserve or rehabilitate natural ecosystems and processes. A healthy natural environment stores and filters water, reducing water scarcity, reducing flood risks, decreasing drought impacts and improving water quality. Environmental or ‘nature-based solutions’ can help address many of today’s most pressing water challenges, particularly if planned in harmony with ‘built’ infrastructure.[[101]](#footnote-102)
2. Natural capital solutions, which draw on such features of nature as the water-retaining abilities of forests, offer relatively inexpensive means of addressing water challenges. Water services can often be provided through better management of ecosystems and investments in natural capital at a fraction of the cost of physical and engineering solutions. Natural infrastructure (forests, mangroves, flood plains, and rivers) not only serves as a source of protection and resilience but is required for sustainability - to assure future supplies of water. Adoption of these solutions has been slow due to misaligned incentives that fail to recognize the value and role of ecosystem assets and services.[[102]](#footnote-103) Nature-based solutions have kept clean water flowing from the Catskill Mountains into New York City since the 1930s without the huge costs of purification.
3. Kenya’s Upper Tana - Nairobi Water Fund ( UTNWF) is an example of directing investment towards ecosystems services in order to enhance water security and climate resilience. The UTNWF contributes to the rehabilitation, conservation and sustainable management of Kenya’s water towers from which some 75% of the country’s water is sourced. By investing in green infrastructure upstream, costs can be recovered through reduced water treatment costs. The UTNWF is contributing to conservation, the restoration of protected areas, the sequestering of carbon, the stabilisation of the water cycle, the reduction of floods, the improvement in water quality through nature-based solutions (including the planting of at least 2.5 million trees), and the lifting of more than 20,000 people in local communities out of poverty. Other potential benefits include improved cropland management, establishment of agroforestry systems on marginal lands, cultivation of perennial crops, avoided degradation of agricultural land, and improved agricultural production and nutrient management. The Upper Tana-Nairobi Water Fund estimates that a $10 million investment in watershed conservation delivers a return of $21.5 million, including savings from water treatment, increased power generation, and increased agricultural yields.
4. Egypt is currently one of the few Parties to include transboundary water considerations in their Nationally Determined Contribution under the Paris Agreement on climate change.
5. The adaptation component of Mexico’s 2015 Nationally Determined Contribution highlights both the critical role of ecosystems in buffering communities from the worst effects of climate change and the role ecosystems play in providing essential services for adaptation, including additional water storage and coastal protection against storms and sea level rise. Green infrastructure, ecosystem-based adaptation, and integrated water resources management are prioritized in Mexico’s NDC. Finally, Mexico also prioritizes integrating climate change criteria into the design, construction, financing, and maintenance of water infrastructure, ensuring that plans to retrofit, relocate, or build new infrastructure are climate-resilient.
6. In their 2016 Nationally Determined Contribution, the Solomon Islands included adaptation activities related to community-based adaptation planning and risk-reduction. These bottom-up approaches to risk-management, linked to top-down national plans, are a systematic way to address the climate adaptation challenges that many small island developing nations face: extreme floods, drought, sea-level rise, and increasingly strong and frequent tropical cyclones. These countries have been facing these challenges for decades, if not centuries, and have some of the best developed coping strategies across the world. They are a compelling example of how local knowledge that drives local solutions can be adapted, piloted and scaled up where appropriate. Because many of their climate risks are directly water-related, the Solomon Islands is also implementing a national integrated water management plan.
7. Uganda is one of the few Parties to include water in their first Nationally Determined Contribution, with a particular focus on wetland protection, restoration, and management. These activities include a national inventory and assessment of all wetlands, the development of Ramsar-designated “Wetlands of International Importance” for the purposes of wetland research, conservation, education, and eco-tourism; the design and implementation of local wetland action plans; the identification and protection of 20 “critical and vital” wetland systems; achieving a net increase in total wetland land cover by 2030; and the strengthening of wetland management institutions and governance at both the national and local levels.
8. To address increasingly common droughts in South Africa, KwaZulu-Natal began the uMngeni Ecological Infrastructure project aimed at integrated watershed planning and management. The goal is to improve the resilience of water services to climate change at a watershed scale. The project evaluates and restores the ability of ecosystems to provide improved services to downstream communities in a resilient manner and seeks to enhance governance and regulatory capacity at a catchment scale. The socio-economic co-benefits include improved livestock production, an increase in employment in rural areas, and the long-term protection of species-rich endemic grassland ecosystems. The project was funded by the Critical Ecosystem Partnership Fund and implemented by Wildlands Conservation Trust. In Eswatini, the Lower Usuthu Smallholder Irrigation Project promotes sustainable and climate-smart agriculture that anticipates changing climatic conditions.
9. Improved approaches to the treatment of water, and especially wastewater, offer a range of climate mitigation opportunities. Untreated wastewater is an important source of GHGs. With more than 80% of all wastewater (globally) released to the environment without treatment, treating its organic matter prior to its release can reduce GHG emissions. The reuse of untreated or partially treated wastewater can reduce the amount of energy associated with water extraction, advanced treatment and, in cases where the wastewater is reused at or near the release site, transportation. The biogas produced from wastewater treatment processes can be recovered and used to power the treatment plant itself, rendering it energy- neutral and further enhancing energy savings.
10. Climate-Smart Agriculture (CSA) is a suite of innovative and effective approaches to land and water management, soil conservation and agronomic practice that sequester carbon and reduce GHG emissions. CSA practices help to retain soil structure, organic matter and moisture under drier conditions, and include agronomic techniques (including irrigation and drainage) to adjust or extend cropping calendars to adapt to seasonal and interannual climate shifts. Water efficiency measures in agriculture can increase water availability and reduce the energy needed for pumping, in turn further reducing the water needed for energy production. Increased use of renewable energy in agriculture (e.g. solar PV pumps) provides additional opportunities to lower GHG emissions and to support the livelihoods of smallholders. Since agriculture accounts for 70 percent of global water withdrawals, reducing food loss and waste could also have significant repercussions on water and energy demand, thereby reducing GHG emissions. The biomass and soils of properly managed forests, wetlands and grasslands provide mitigation opportunities through carbon sequestration, with significant additional benefits in terms of nutrient cycling and biodiversity.
11. In many regions of the world, aquifers present the largest storage capacity, often orders of magnitude greater than surface water storage. Groundwater is also more buffered from seasonal and multi-year climate variability and less immediately vulnerable than surface water. The range of available climate change adaptation and disaster risk resilience strategies includes hard (structural) and soft (policy instruments) approaches. Hard measures include enhanced water storage, climate-proof infrastructure, and crop resilience improvements through the introduction of flood- and drought-resistant crop varieties. Soft measures include flood and drought insurance, forecasting and early warning systems, land use planning, and capacity building (education and awareness). Hard and soft measures often go together. Urban planning, for example, can help increase resilience to flood risks by featuring drainage systems that provide spaces to safely collect and store floodwater. The city thus acts as a ‘sponge’, limiting surges and releasing rainwater as a resource.
12. To respond to increasing rainfall intensities, increasingly frequent intense storms, and other climate change impacts, Singapore has employed innovative solutions to slow the flow of storm-water into the public drainage system and reduce flood risks. New and re-developments must implement “source” measures such as detention tanks to limit the peak runoff that is discharged into the public drains. These developments must also implement flood protection measures. A comprehensive drainage improvement programme increases the capacity of drains and canals. As a result, Singapore has reduced its flood-prone area from 3,400 hectares in the 1970s to less than 30 hectares today.

IX. Improved planning and international cooperation

1. Integrated Water Resource Management (IWRM) strives to unify, in one management system, all of the different human interventions in freshwater within a given river basin, taking into consideration social, economic and environmental perspectives. Adding the lens of the human rights-based approach offers opportunities to streamline water governance and provides coherence in both the sphere of environmental sustainability and in terms of human development. Therefore, introducing human rights-based approaches into IWRM is an important starting point to ensure a ‘just’ allocation of scarce freshwater resources. About 170 European river basins have 6-year integrated water management plans intended to prevent, reduce and eliminate water pollution, water scarcity and floods.
2. Eight African countries with low scores on the Human Development Index reported medium to high levels of IWRM implementation: Benin, Burkina Faso, Mali, Mozambique, Senegal, Swaziland, Uganda and Zimbabwe. They reported medium to high implementation of policies, laws and plans, high national institutional capacity and coordination among sectors, high levels of stakeholder participation at national and local levels, and regular opportunities for private sector involvement in water development and management. However, implementation was constrained by lack of financial resources.[[103]](#footnote-104) Cameroon’s National Action Plan (2015-2019) for the Promotion and Protection of Human Rights in Cameroon includes a chapter on the protection and the preservation of a healthy environment, including water.
3. Egypt’s National Water Resources Plan (NWRP 2037) embodies a comprehensive approach to water planning as it incorporates pollution, scarcity, flood risks, food security and climate change. The four objectives are to improve water quality, enhance availability of fresh water, enhance management of water use, and strengthen capacity for IWRM planning and implementation. Egypt held competitions for farmers in 2018 and 2019 to encourage them to implement innovative approaches to conserving water.
4. El Salvador has a National Plan for Integrated Water Resource Management, which is aimed at achieving water security. Water Security Plans are elaborated at a local level, for each drinking water system in rural areas. El Salvador’s Civil Protection Law (2005) is intended to prevent, mitigate and effectively deal with natural and human disasters, so as to protect human rights. The National Civil Protection Plan addresses the risk of flooding by preparing actions for prevention, preparation and response to floods and landslides. Twenty early warning systems, which measure rainfall and river levels, are installed in different basins of the national territory, enabling the government to issue warnings when floods are forecast. Many specific adaptation actions have been undertaken, including constructing ponds to absorb excess water, improving drainage systems, maintaining vegetation on riverbanks, planting trees (PLANTATON is the national reforestation campaign) and protecting families living in vulnerable areas
5. Water safety plans (WSPs) are being implemented to varying degrees in almost 100 States representing every region of the world. Water safety planning is a comprehensive risk assessment and risk management approach that encompasses all steps in a drinking-water supply chain, from catchment to consumer. The WSP framework organizes and systematizes a long history of good practices adopted by water professionals It is widely recognized as the most reliable and effective way to manage drinking-water supplies to safeguard public health. Inherently flexible and fully adaptable to local conditions, WSP principles and concepts can be applied to the full range of system types, sizes and resource levels to ensure water safety. However, it is essential that human rights be integrated into water safety plans, both in the process of developing the plans and in terms of the substance.
6. Case studies from Bangladesh, Ethiopia, Nepal and Tanzania highlight some of the practical challenges, lesson learned and success stories from the implementation of climate resilient water safety planning between 2013 and 2018.[[104]](#footnote-105) The case studies provide examples of how WSPs can support water supply planning and management activities in the face of a changing climate, addressing water pollution and adaptation measures to mitigate the impacts from water scarcity and floods.[[105]](#footnote-106)
7. The UNEP-DHI Partnership is dedicated to improving the management, development and use of freshwater resources from the local to the global level, working in more than 100 States and training more than 10,000 people.[[106]](#footnote-107) For example, the Flood and Drought Management Tools project offers a range of tools that can be used to plan for, prevent, and mitigate the impacts of floods and droughts.[[107]](#footnote-108)
8. The Water Governance Facility (WGF) supports low and middle-income countries in Central and South Asia, Middle East and North Africa, Sub-Saharan Africa, and Latin America by providing policy advice, offering technical support, developing water governance knowledge and helping to develop institutional capacity. The WGF advances water governance in thematic areas such as water supply and sanitation, integrated water resources management, transboundary waters, climate change adaptation, integrity, gender and human rights. A partnership between UNDP and the Stockholm International Water Institute, the WGF was established in 2005, with the support of the Swedish International Development Cooperation Agency.
9. The European Union’s NEXUS Water Energy Food security programme has supported national and regional dialogues at the technical and political level in more than 80 countries to enhance the more efficient and affordable use of water resources. For example, the programme contributed to improving water management in the Panj-Amu river basin in Afghanistan where it helped improve security, ensure economic development and enhance gender equity.
10. Numerous submissions urged that support from high-income countries to low-income countries should be scaled up substantially in the water sector and focused on:

* Strengthening of technical capacities of actors involved in water resource management, both at local and national levels
* Providing clean technology that minimizes the impact on water resources
* Strengthening support for the execution of projects focused on groundwater studies in localities with water deficits
* Working with scientists so that knowledge about new and improved techniques of treatment for both drinking water and wastewater can be applied equitably and effectively, taking local contexts into consideration
* Promoting enhanced care for water, while prioritizing human rights and the needs of ecosystems.

1. Strengthening policy coherence and improving water management will require the aligning of incentives. General subsidies should be replaced by targeted ones to spur adoption of new irrigation technology and the provision of environmental services, such as fish-friendly irrigation structures that mitigate the impacts of irrigation development and dam construction. Payments for environmental services – payments to farmers or landowners who agree to manage their land or watersheds for environmental protection – can also help ensure the proper valuation of well-functioning ecosystems. Subsidies can be powerful and progressive tools in delivering water and sanitation when they are designed in smart, targeted ways and implemented effectively and equitably.[[108]](#footnote-109)

X. Conclusions

1. **In this annex to his report Human Rights and the Global Water Crisis: Water Pollution, Water Scarcity and Water-related Disasters, the Special Rapporteur has summarized many good practices in ensuring safe and sufficient water, a key element of the human right to a safe, clean, healthy and sustainable environment.[[109]](#footnote-110) A remarkably diverse array of actions can contribute to improved access to safe, sufficient water, adequate sanitation, healthy aquatic ecosystems and the prevention or mitigation of water-related disasters. The most important beneficiaries of the good practices highlighted in this annex are the individuals and communities who are most vulnerable to the adverse effects of water pollution, water scarcity and water-related disasters.**
2. **Protecting the environment contributes to the fulfilment of human rights, and protecting human rights contributes to safeguarding the environment. While in some States some aspects of achieving safe and sufficient water and healthy aquatic ecosystems are subject to progressive realization, all States must dedicate the maximum available resources to comply with their human rights obligations in addressing environmental challenges.**
3. **The Special Rapporteur hopes that these concrete examples of good practices will inspire States to accelerate their efforts to recognize, respect, protect and fulfil all of the inter-connected elements of the right to a safe, clean, healthy and sustainable environment, including clean air, safe and sufficient water, a safe climate, healthy ecosystems and biodiversity, non-toxic environments where people can live, work, study and play, and healthy, sustainable food. The adoption of a resolution recognizing the right to a safe, clean, healthy and sustainable environment would be a positive catalyst to accelerate efforts to ensure the enjoyment of this right. Indeed, this was precisely the effect witnessed in many States following the adoption in 2010 by the General Assembly of resolution 64/292 on the rights to water and sanitation and by the similar Human Rights Council resolution 15/9. A rights-based approach is not only helpful but essential to stimulating the many urgent actions needed to achieve the Sustainable Development Goals as outlined in the 2030 Agenda for Sustainable Development.**
4. **Ultimately, however, it must be emphasized that humanity faces a daunting and unprecedented global environmental crisis involving the climate emergency, plummeting wildlife populations, pervasive air and water pollution, and the rising number of emerging infectious diseases of zoonotic origin. Despite the many good practices, they are not nearly enough. There is much, much more work to be done to transform today’s unjust and unsustainable society into an ecological civilization where everyone breathes clean air, drinks safe water, eats healthy food, appreciates the diversity and abundance of wild species, enjoys a stable climate and a non-toxic environment, and lives in harmony with nature.**

1. Submissions are available at https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/  
   EnvironmentWater.aspx [↑](#footnote-ref-2)
2. [UN-Water | Coordinating the UN's work on water and sanitation](https://www.unwater.org/). [↑](#footnote-ref-3)
3. [About us | Sanitation and Water for All (SWA)](https://www.sanitationandwaterforall.org/about/about-us). [↑](#footnote-ref-4)
4. A searchable database of freshwater treaties is available here: <http://gis.nacse.org/tfdd/treaties.php> [↑](#footnote-ref-5)
5. UN Office for South-South Cooperation, 2020, “Transboundary Water Cooperation for Sustainable Development in African basins and Globally Facilitated through the Water Conventions” in Good Practices in South-South and Triangular Cooperation for Sustainable Development—Volume 3. [↑](#footnote-ref-6)
6. UNECE, 2020, “Frequently Asked Questions on the 1992 Water Convention”. [↑](#footnote-ref-7)
7. World Health Organization, 2017, Global status report on water safety plans: A review of proactive risk assessment and risk management practices to ensure the safety of drinking-water. Geneva. [↑](#footnote-ref-8)
8. Organization of American States, Guarani Aquifer: Strategic Action Program 62 (2009) http://www.oas.org/en/sedi/dsd/IWRM/Past\_Projects/Documents/Guarani\_SAP.pdf [↑](#footnote-ref-9)
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