

# Implementing the Paris Agreement through Water Solutions

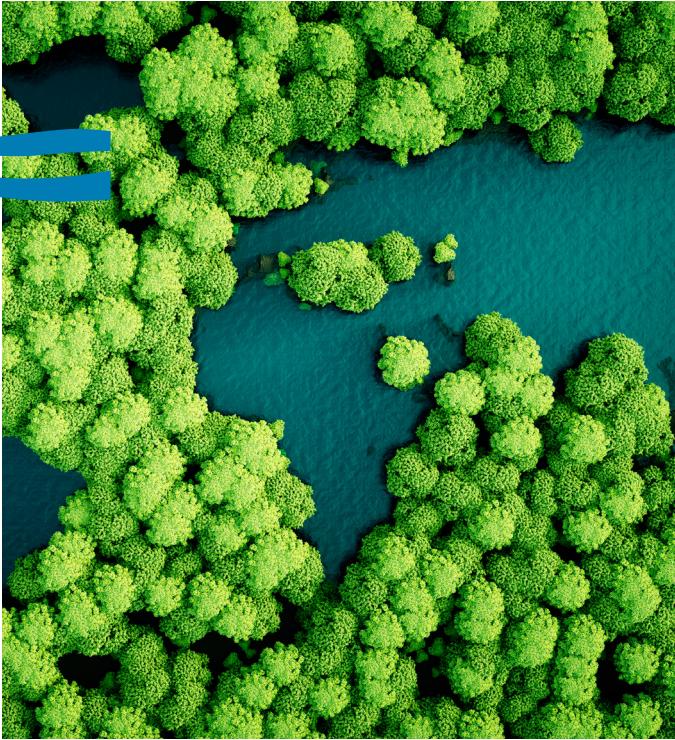


Photo: istock

Resilient water management is crucial to achieving the objectives of the United Nations Framework Convention on Climate Change (UNFCCC) 2015 Paris Climate Agreement. While there is no shortage in mentions of water in many of the Nationally Determined Contributions from the Parties to the Paris Agreement, countries have not yet fully realized the potential that a holistic, integrated, and cross-sectoral approach to water management can offer in accelerating action on climate change mitigation and adaptation. This policy brief contains key recommendations on implementation of the Paris Agreement that illustrate the interlinkages between water and climate while also exploring water solutions towards achieving ambitious and transformative climate action.

The climate crisis is a water crisis, and climate change is primarily experienced through water. Increased climate variability will affect the availability of water, in terms of both quantity and quality, and expose already vulnerable populations and ecosystems to even greater risks. Too much water (floods and extreme weather), too little water (droughts and desertification) or too dirty water (as bacteria and algae thrive in hotter water bodies) will lead to climate change affecting the hydrological cycles upon which the natural and human environments entirely depend. In other words, tackling the manifestations and the consequences of climate change and water change must be seen through one and the same lens.

For this reason, it is crucial to take water into consideration when implementing climate action according to the objectives set out in the Paris Agreement. Resilient water management must be a priority as an adaptive response to climate change. When water is managed wisely, it not only contributes to climate adaptation, but also has the potential to mitigate climate change. Water brings another important benefit in the broader context of the 2030 Agenda for Sustainable Development: water interconnects across the Sustainable Development Goals (SDGs) and hence across systems such as sustainable economies, food, energy, and urban development. Integrated solutions found in water management and governance can set countries on pathways towards transformation.

This policy brief focuses on several key articles of the Paris Agreement and provides suggestions on where and how water can facilitate the implementation of the Agreement's core objectives. While it is by no means a comprehensive list, the main aim is to systematically highlight key areas where greater knowledge about water as an enabler and connector could provide an important toolbox for achieving the goals of the Agreement. It also strives to assist and enhance the ability of Parties to meet their national targets and contribute to the work of the UNFCCC Subsidiary Bodies.

## Article 4 – Nationally Determined Contributions for adaptation and mitigation

Nationally Determined Contributions (NDCs) comprise all the actions a country intends to undertake in order to meet its Greenhouse Gas (GHG) reduction goals under the Agreement. With the 2020 NDC revision deadline looming on the horizon, the NDCs offer a great opportunity for water knowledge and management to be utilized, in terms of both adaptation and mitigation. For example, improving stormwater management enhances watershed health, thus creating more resilient ecosystems and reducing the

likelihood and severity of flooding, while at the same time lowering carbon emissions from the treatment of the contaminated water. As a result, improved freshwater management can contribute to adaptation and have co-benefits for mitigation that can be applied to emission reduction targets under the NDCs.

We do not need to go back to the drawing board. Most countries have already included water action plans in their intended NDCs, providing a good starting point for revised NDCs that are due for submission in 2020. While 90 per cent of NDCs mention water in relation to adaptation, there is very little mention of resilient water management as a goal and a solution for ensuring accessibility to water, in quantity and quality. This is especially worrying in the face of increasing climate change threats and greater demand from water-intensive sectors such as energy and agriculture. Water availability is an implicit enabling condition for achieving many of the NDC goals, and so a resilient water management approach is crucial to achieving these goals. The NDCs can be significantly enhanced when taking into fuller account the role that water plays in adaptation and mitigation.

Water also has implications for other sectors commonly included in NDC mitigation plans. Several focus on investments in the energy and transportation sectors – improving or replacing inefficient infrastructure, developing carbon capture and storage, transitioning towards renewables, and implementing policy and governance reforms. The forestry sector has also received attention, with plans for afforestation, reforestation, and improved forestry management. All of these measures have important freshwater implications. Nearly all energy generation systems are water-intensive while forest and soil management is also heavily dependent on water. Because of these interlinkages, there is a risk of deep disruption and increased vulnerability if these activities are managed in silos and so close coordination is needed to ensure that mitigation actions are both climate smart and water-resilient.

As NDCs are reviewed and strengthened ahead of 2020, prioritizing climate resilient water management policies and implementation plans is crucial. Implicit water commitments contained in the NDCs should be made explicit in order to fully demonstrate the importance of resilient water management. Water-related actions with both adaptation and mitigation benefits – such as improved stormwater management, increased water-use efficiency, and carbon-neutral wastewater treatment systems – should be included and implemented.<sup>1</sup>

### Article 5 – Conserve and enhance GHG sinks

In addition to reducing the sources of carbon emissions, the Paris Agreement targets the maintenance and improvement of carbon storage facilities, also known as carbon sinks. Major natural carbon sinks include oceans, grasslands, forests, and forested wetlands such as mangroves and peatlands. Forests and wetlands also play a central role in the water cycle by filtering, storing, and regulating both surface and groundwater flows. Given the inextricable links between these natural systems, they must be managed in unison.

Major efforts to protect existing forests and wetlands are well under way, with the annual net global deforestation rate cut by

1 <https://alliance4water.org/wateringthendcs/>

50 per cent since 1990, according to the FAO.<sup>2</sup> However, roughly 3.3 million hectares – an area larger than Belgium – are still lost each year. This has major implications not only for carbon storage but also for water quantity and quality, being particularly true for peatlands; waterlogged soils capable of holding more carbon per acre than any other terrestrial sink, and containing twice as much carbon as the world's forests.<sup>3</sup> According to a recent PNAS report, if we stopped draining and converting peatlands, which are lost at a rate of approximately 780,000 hectares globally each year, up to 678 million tonnes of carbon emissions could be stored annually – roughly equal to removing 145 million cars from the streets.<sup>4</sup>

Draining these essential carbon sinks could also have major implications for water and soil quality, increasing flood and fire risk for adjacent communities and reducing the availability of clean water, productive land, and sustainable fisheries. Managing peatlands for both carbon sequestration and water conservation produces important co-benefits that can make a significant contribution to reducing global emissions. Water scientists and policymakers are working to better understand, protect, and restore these important water regulating systems and their work could be of great benefit to countries who are striving to meet their national carbon reduction commitments and improve their overall resilience to climate change.

Three initiatives that are generating knowledge on the interdependencies between natural systems are worth highlighting here: a collaborative effort between SIWI, the Food and Agriculture Organization of the United Nations (FAO), the International Union for Conservation of Nature (IUCN), and the International Union of Forest Research Organizations (IUFRO) has established an expert group named the Forest-Water Champions (FWC) with expertise from the forestry and water sectors in order to identify a common ground and increase focus around the important roles played by the forest-water nexus in securing resilient landscapes. The Source-to-Sea (S2S) Action Platform, launched by SIWI, is another multi-stakeholder initiative formed to exchange and generate knowledge and support joint actions for improved management of land, water, coastal, and marine linkages. Most recently, the Global Commission for Adaptation created a Water Action Track that calls for efforts to be directed at “interdependent, but often fragmented scales of natural systems and human governance: strengthening national preparedness and adaptation, fostering basin-scale water system resilience, and building the resilience of human systems reliant on water.”<sup>5</sup>

### Article 6 – International voluntary cooperation in the implementation of NDCs

The Paris Agreement allows for voluntary cooperation in the implementation of the NDCs and envisions an international mechanism to transfer mitigation outcomes between countries. Through this voluntary cooperation system, mitigation actions can be implemented in one country, but the resulting mitigation effect is counted towards another country's NDCs. An example of this could be a large-scale afforestation project in country A financed by country B but allowed to count as a mitigation outcome towards country B's NDCs.

2 <http://www.fao.org/forest-resources-assessment/en/>

3 <http://www.wetlands.org/wetlands/what-are-wetlands/>

4 <http://www.pnas.org/content/114/44/11645.abstract/>

5 <https://gca.org/global-commission-on-adaptation/action-tracks/water>

It is specified in the Agreement that such cooperation shall, in addition to promoting mitigation of GHG emissions, promote sustainable development and ensure environmental integrity. This is an important consideration when it comes to water in that mitigation actions' impact on water, which is crucial for both sustainable development and environmental integrity, must receive careful attention. In the case of afforestation, a holistic assessment must be made to ensure that the action does not have a negative impact on water-availability that could destroy existing ecosystems, which could be the situation if for instance, water-thirsty tree species are planted in arid areas.

### **Article 7 – Increasing adaptive capacity and resilience**

Adapting to a climate-changed world requires increasing the capacity of individuals and communities to mitigate, absorb, and recover from shocks and stressors in ways that reduce chronic vulnerability. Increasing severity and frequency of floods, droughts, tropical cyclones, and receding coastlines are just a few of the threats faced as a result of increasing temperatures. Resilient and secure communities and ecosystems are only possible if water considerations are taken into account from the outset. Therefore, systematically integrating water issues into national adaptation strategies is essential.

National Adaptation Plans (NAPs) and Nationally Appropriate Mitigation Actions (NAMAs) should build on existing integrated water resources management knowledge and experience. Bottom-up approaches to water management can be modified and used to build adaptive capacity from the community-level upward. Countries engaging in climate adaptation actions, such as building climate resilient infrastructure or investing in sustainable agricultural production methods, should explicitly acknowledge the cross-sectoral character of their work and ensure that these activities do not increase vulnerability to either water scarcity or flooding.

Because building adaptive capacity is an ongoing, iterative process, flexible adaptation pathways must take water into account at every step of the process, acknowledging that the challenges faced are likely to evolve over time and require adjustment. Adaptive solutions that are appropriate for today may in fact increase long-term vulnerability, so the formulation and prioritization of no-regret options will be key.

### **Article 8 – Reducing the risk of loss and damage**

There is a plethora of extensive water knowledge related to reducing the risk of loss and damage from both extreme weather events as well as slow onset events that could be of great use to climate actors. Stronger, more frequent storms are already impacting coastal communities worldwide and much work is being done to improve the adaptive capacity of these regions, including mangrove planting, seawall reinforcement, coastal floodplain re-connection, early-warning system creation, and integrated coastal planning. Elsewhere, longer and more frequent droughts are exacerbating water scarcity, decreasing agricultural production, and increasing the fire risk for communities. Such communities are also actively working to reduce their risk by adapting their agricultural and silvicultural practices to ensure their watersheds are more resilient and able to withstand longer dry periods.

Bringing the Sendai Framework for Disaster Risk Reduction with the UNFCCC's Paris Agreement through resilient water

management reveals innovative solutions to reducing loss and damage.<sup>6</sup> The example of marrying blue-green infrastructure (nature-based solutions such as forests and wetlands) with grey infrastructure (constructed dams and treatment plants), when planned hand in hand, can secure resilient cities and human settlements and reduce risks due to floods and droughts.

When it comes to decision making in the context of climate change mitigation and adaptation measures, everybody needs to have a voice. It is especially important to include all stakeholders, with special attention paid to indigenous communities, women, youth and children, and minority populations. This is a question of climate justice – the people most affected by the effects of climate change are seldom themselves causing major emissions. Yet, at the same time they can be strong agents of change. Local communities can build resilience and reduce chronic vulnerability to disasters, particularly in an era of increasing climate uncertainty, by mainstreaming adaptive water management strategies.

### **Article 9 – Financial assistance for mitigation and adaptation**

Climate finance for adaptation continues to expand but it is still far below what is needed, and persistent inequalities in the targeting of climate finance for adaptation is all too prevalent. In 2018, just five per cent of all public climate finance (US\$30 billion) was targeted for climate change adaptation,<sup>7</sup> but to implement post-2020 activities in the least developed countries (LDCs), has been estimated at a cost over US\$93 billion each year.<sup>8</sup> Currently, less than one third of all available climate finance reaches the LDCs. Effective targeting and use of funding at local levels has proved challenging in many countries, though innovations exist and are increasing.<sup>9</sup>

The challenges of development, poverty eradication, and sustainability are intricately interwoven with those of climate change mitigation and adaptation. Treating development and climate as separate entities for action, as is currently the case in many countries, comes at a very high cost. Climate finance should be designed in order to leverage and intensify the climate aspects of the SDG agenda. In the water and sanitation subsector, climate finance must focus on the climate actions that are likely to be underemphasized in the SDG framework and on high climate-vulnerable areas, such as coastlines and arid areas that will require more robust development action. In many of the LDCs, these areas coincide with very low levels of water and sanitation coverage. Strategic use of development and climate finance can help to sustainably address parallel development and adaptation deficits.

### **Article 10 – Developing and transferring technology**

Ensuring that Parties are aware of, have access to, and possess the institutional and human capacity to harness and extend appropriate technology, knowledge, and institutions will be key to achieving many of the ambitious country-level targets currently being set through the NDC process. According to the UNFCCC's Climate

6 Mastering Disaster in a Changing Climate: Adaptive Water Management for Disaster Risk Reduction (2018), policy brief by AGWA and SIWI

7 <https://climatepolicyinitiative.org/wp-content/uploads/2019/11/GLCF-2019.pdf>

8 <https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/Increasing%20climate%20finance%20policy%20brief%20Feb%202017.pdf>

9 <https://pubs.iied.org/pdfs/17333IIED.pdf>

Technology Centre and Network (CTNC), as of May 2016, over 100 Parties to the Paris Agreement have stated that they will require international support for technology development and transfer to successfully implement their NDCs.<sup>10</sup>

The employment of new water technologies to support sustainable, climate-resilient water management has been ongoing for some time and there are many lessons learned that could be of great use to those developing and sharing new technologies for climate change mitigation and adaptation. For example, because water supply and sanitation are intrinsically interlinked with many other sectors, such as energy and food production, urban planning and circular economy, technologies should be deployed with site-specific considerations taken into account. A lack of consideration of local conditions could lead to a lack of effectiveness or maladaptation. Building a small hydropower dam for sustainable electricity production may make sense in one region but could have unintended negative impacts on food security or water quality in other regions. Traditional knowledge should also be consulted as an important source of contribution to these innovations.

### Article 11 – Capacity-building for developing country Parties

In the realm of capacity-building, there are many existing water organizations and networks dedicated to knowledge sharing and training that could be utilized by Parties seeking to improve their ability to design and implement locally appropriate, inclusive climate change adaptation and mitigation programmes.

<sup>10</sup> <https://www.ctc-n.org/news/unfccc-conference-technology-transfer-insights-technology-mechanism>

There are several notable examples of capacity building efforts. Among others, the Alliance for Global Water Adaptation (AGWA), co-chaired by SIWI and the World Bank, is a network of regional and global development banks, government agencies and ministries, diverse non-governmental organizations, academics, and the private sector that is focused on sustainable water resource management. The work of the network covers several areas related to climate change adaptation, such as science, policy, economics and engineering. AGWA is focused on how to support experts, decision-makers, and institutions in the water community to work more effectively with the climate community.

### Article 2 – Overall Objective of the Agreement: A Global Response to Climate Change

#### *This Agreement:*

*Aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:*

- (a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;*
- (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions developments, in a manner that does not threaten food production; and*
- (b) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.*

### About this publication

This publication is a contribution to the discussions and activities at the Conference of the Parties 25 (COP25), 2–13 December 2019, Madrid, Spain. It is an update of a previous publication prepared by AGWA and SIWI in 2018. This policy brief has been authored by Maggie White, Senior Manager for International Policy at SIWI, Jennifer Jun, Programme Manager for International Policy at SIWI, and Viktor Sundman, Programme Officer for International Policy at SIWI. The original version, published in 2018, was authored by Maggie White, Senior Manager for International Policy at SIWI and AGWA co-chair, Ingrid Timboe, Policy Officer at AGWA, and Kristina Johansson, Programme Officer at SIWI.

SIWI is grateful to the Resilience Shift and the Alliance for Global Water Adaptation (AGWA) for contributing to this policy brief, produced as part of a project financed by the Government of Sweden and the GIZ, commissioned by the Government of the Federal Republic of Germany.

For more information about SIWI's activities and events during COP, please visit [www.siwi.org/siwi-at-cop/](http://www.siwi.org/siwi-at-cop/).

### About SIWI

SIWI is a leading water institute, focused on water governance and capacity building in order to reach a just, prosperous and sustainable water wise world. It is well-known for its research, knowledge generation, and applied science, which helps to develop policy recommendations and supports the implementation of programmes. In addition, SIWI uses its trusted convening power to facilitate multi-stakeholder dialogues, most evident in its annual event, World Water Week.