

**United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, “Water for Sustainable Development”, 2018–2028**

**Contribution of Finland, based on input of experts, to the concept papers on the themes of the interactive dialogues**

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# **Contribution of Finland to the concept papers on the themes of the interactive dialogues**

## **Based on inputs of experts**

### **I. Introduction**

The world is not on track to achieve SDG 6 and related goals and targets by 2030. The COVID-19 pandemic has further increased the challenge, and the world must quadruple the rate of progress to ensure water and sanitation for all by 2030. Water is inextricably linked to the three pillars of sustainable development, and it integrates social, cultural, economic and political values. It is cross-cutting and underpins the achievement of many SDGs through close linkages with climate, energy, cities, the environment, food security, poverty, gender equality, and health, amongst others. With climate change profoundly affecting our economies, societies and environment, water is indeed the biggest deal breaker to achieve the internationally agreed water-related goals and targets, including those contained in the 2030 Agenda for Sustainable Development.

As part of the organizational arrangements mandated in A/RES/75/212, paragraph 9 (d), the Secretary-General of the UN 2023 Water Conference will prepare concept papers on the themes of the interactive dialogues. The contribution of Finland to this process is sent in accordance with the General Assembly resolution 75/212 and the letter of the UN DESA Under-Secretary-General dated 28th of October 2022.

The contribution of Finland contributes to all five themes of the interactive dialogues, as finalized during the one-day preparatory meeting for the Conference convened by the President of the United Nations General Assembly on 25 October 2022;

1. Water for Health: Access to WASH, including the Human Rights to Safe Drinking Water and Sanitation;
2. Water for Sustainable Development: Valuing Water, Water-Energy-Food Nexus, and Sustainable Economic and Urban Development;
3. Water for Climate, Resilience, and Environment: Source to Sea, Biodiversity, Climate, Resilience, and Disaster Risk Reduction (DRR);
4. Water for Cooperation: Transboundary and International Water Cooperation, Cross Sectoral Cooperation, including Scientific Cooperation, and Water Across the 2030 Agenda; and
5. Water Action Decade: Accelerating the Implementation of the Objectives of the Decade, including through the UN Secretary-General's Action Plan.

The contribution at hand contains contributions mostly from Finnish experts and research institutions. The contribution 4.2., under theme 4, is an expert opinion of a group of both international and Finnish actors. The Ministry for Foreign Affairs of Finland has collected the

contributions and combined them to a one contribution paper, and expresses high appreciation to all contributing actors. The views are of independent experts and do not necessarily express the view of Finland.

The contributions are set under the five themes of interactive dialogues. Some the concepts presented contribute to more than one theme, but are set under the theme of most relevance. The concepts summarize in a very concise manner topics that are outside this document supported by vast amount of research. For further inquiries, each concept includes the details of the contributing experts or organization(s).

In addition, Finland supports the Contribution of the European Union and its Member States to the concept papers on the themes of the interactive dialogues.

The ideas presented in the following sections are science-based and analyze possible pathways to achieve the goal of SDG 6, with attention paid to the interlinkages between SDG 6 and other SDGs. The concepts share relevant data and analysis as well as many good practices and recommendations on advancing the implementation of water-related SDGs. It is wished that the Secretariat of the UN 2023 Water Conference scrutinizes and makes thorough use of these contributions in the preparation of the interactive dialogues.

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# **THEME 1. WATER FOR HEALTH: ACCESS TO WASH, INCLUDING THE HUMAN RIGHTS TO SAFE DRINKING WATER AND SANITATION**

## **1.1. Principles of sustainable and resilient water services**

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According to International Law Association and water legislation in many countries such as Finland, community water supply is considered the most essential water use purpose, although its share of other users may often be smaller. This fact is surprisingly often forgotten by international literature dealing with Integrated Water Resources Management.

Throughout the world, society depends on a set of systems that supply water, public health services, food, energy, and transport. Well-functioning water utilities play an important role in societal progress. Citizens and businesses need reliable access to high-quality and affordable drinking water and wastewater services. Producing these essential services efficiently and effectively requires viable, high-performing utilities that are also able to cope with the multi-dimensional threats. In particular, economic, social and environmental challenges are daunting because of a vast coverage gap in safely managed water services and drinking water and sanitation facilities in non-OECD countries. The aging and decaying water infrastructure exacerbates these problems and comes at a large financial cost – including a sizeable loss of economic activity also in OECD countries.

The definition of institutions by D.C. North, a Nobel Laureate in Economics, is applicable also to water services organizations. He used the soccer analogy and defined institutions as the “formal and informal rules of the game” while organizations are the “players”.

In terms of water services we suggest to follow the guidance by Nobel Laureate E. Ostrom who made the difference between water services provision and production. Provision should refer to the bodies who are in charge of arranging the services such as local governments while the actual services are produced by utilities of various kinds of water users associations. In many countries local governments are in charge of arranging (provision).

We suggest the following key principles for providing and producing water services mainly in Finnish conditions: customer and citizen orientation, dependencies between history and futures, considering technology in its wider context, need to cover the costs, necessity of widening the context of water services education and research, streamlining permit processes, importance of strategic asset management, and considering future options through wider PESTELCE (Political, Economic, Social, Technological, Environmental, Legislative, Cultural and Ethical) framework. In short, physical infrastructure needs to be sustainable while the related organisations should be flexible to change. These principles are very likely applicable also in other countries and conditions.

All in all, the principles of good and effective governance are to be followed. According to UNESCAP, good governance needs to be open and accountable, coherent and integrative, responsive and sustainable, and equitable and ethical. Furthermore, good governance is to be consensus-oriented, participatory, and inclusive. Laws should be enforced and governance should be effective and efficient.

This paper is based on long-term research conducted by the CADWES Research Team at Tampere University  
<http://www.cadwes.com/projects/>

## **THEME 2. WATER FOR DEVELOPMENT: VALUING WATER, WATER-ENERGY-FOOD NEXUS AND SUSTAINABLE ECONOMIC AND URBAN DEVELOPMENT**

### **2.1. Best practices and capacity building in relation to mine water management and closed and abandoned mining waste areas**

Geological Survey of Finland, [www.gtk.fi](http://www.gtk.fi), tel +358 29 503 0000. Eeva Käpyaho, Head of Unit, Water Management Solutions. Kirsti Korkka-Niemi, Associate professor, hydrogeology).

The Geological Survey of Finland (GTK) has a solid experience in creating best practices and guidelines for mine water management and risk assessment of closed and abandoned mining areas. These actions support safe and affordable drinking water (SDG 6.1) and improve water quality by reducing pollution and minimizing release of hazardous substances (SDG 6.3) also protecting and restoring water-related ecosystems, wetlands, rivers, aquifers and lakes (SDG 6.6). The expertise has been applied in several guidebooks and best practice guides, originating from GTK's scientific research activities. In addition, these topics have been used in capacity building actions in e.g., Finland, Zambia, Armenia, Afghanistan and on EU level increasing international cooperation and capacity-building support to developing countries in water related activities (SDG 6.A) as well as the participation of local communities in improving water management (SDG 6.B). Below, we describe some topics to which GTK has been contribute and could contribute as an expert in future, as well.

#### **Sustainable mine water management and recirculation of water and valuable elements**

Sustainable mine water management is one of the most crucial elements in sustainable environmental management of minerals and metals. It is essential for the mines, but also for the surrounding communities and other stakeholders. The non-sustainable mine water management leads to high environmental and health risks, through the deterioration of the water quality and quantity and can harm or destroy the surrounding water ecosystems. The effects are both direct, such as effect to humans and ecosystems and non-direct, such as lower food security. A good and adequate water governance and legislation, as well as the well planned, correctly timed and budgeted actions of mining companies, leads to safe and adequate water for all the stakeholders.

One of the technical aspects, in addition to guidance and capacity buildings, is the recovery of valuable elements and recirculation of mining water. The methodologies GTK uses are environmentally friendly and gains economical benefits for the mines.

#### **Risk assessment guideline for closed and abandoned mine waste areas**

The European Union charter demanded all the member states to map the closed and abandoned mine waste areas and assess their environmental risks. GTK created the methodology and performed such actions in Finland. The result was a database of the highest risk mining waste areas and guidebook on the research and remediation methodologies. The pioneering work GTK have shown in this area has led to capacity building and mapping activities in Zambia and Armenia. Such a risk assessment methodology with the guidance and guidebooks, would contribute to the full life cycle of the environmental sustainability of minerals and metals.

## **THEME 3. WATER FOR CLIMATE, RESILIENCE AND ENVIRONMENT: SOURCE TO SEA, BIODIVERSITY, CLIMATE, RESILIENCE AND DRR WATER FOR COOPERATION**

### **3.1. The role of atmospheric pollutants on cryosphere melt, from research to capacity building towards sustainable water supply from mountain regions and glaciers**

Finnish Meteorological Institute, Atmospheric Composition Research Unit. Outi Meinander, Eija Asmi, Jonas Svensson and Antti-Pekka Hyvärinen. Address: Erik Palménin aukio 1, 00560 Helsinki, Finland.

Global warming impacts the water cycle and has led to mass loss in ice sheets and glaciers worldwide. In mountain regions and various catchment areas (i.e., areas supplying watercourses), humans, crops, or plants, animals, and microbes are often highly dependent on snowmelt water supply. Globally about two billion people depend on glacier water supply. In high mountain glaciers, the mass budget is mostly controlled by the balance of snow accumulation and melt of the glacier surface. This, in turn, is primarily driven by atmospheric conditions. Atmospheric drivers of changes in mountain cryosphere include changes in surface temperature, rainfall and snowfall, atmospheric humidity, incoming shortwave and longwave radiation, near-surface wind speed and direction, and deposition of light-absorbing atmospheric pollutants on snow and ice surfaces.

Light-absorbing impurities, such as black- and brown carbon and mineral dust, heat the atmosphere. When they are deposited, they impact via the ice-albedo-feedback mechanism, where impurities darken snow and ice surfaces. This cryospheric amplification of the heating effect leads to enhanced glacier melting and impacts the glacier water resource. Nutrients from mineral dust can also drive glacier ice algal growth and biological darkening, where mineral dust contributes to ice melt indirectly. The mechanisms and their quantitative impacts of the above mentioned issues are still highly uncertain. Several critical gaps in monitoring exist for example in Central and Southern Asia.

The Finnish Meteorological Institute (FMI) has in-depth experience in investigations and international collaboration, on atmosphere-cryosphere interactions and on impacts of light-absorbing impurities on glaciers, ice caps and snow fields. This has been exemplified in various field measurements resulting in unique datasets from the Arctic, Antarctic, and mountain regions with glaciers (incl. India, Tajikistan, Kyrgyzstan, Austria, Iceland). We have shown that: 1. black carbon lowers snow albedo (Svensson et al. 2016, Ström et al. 2022, Meinander et al. 2013); 2. BC concentrations in snow have been found to be 0–100 ppb in the Arctic (Svensson et al. 2013, Meinander et al. 2020), below 40 ppb in background snow in Austrian Alps at 1600 m a.s.l. (Meinander et al. 2022), and below 70 ppb 4900 m a.s.l. in the Indian Himalayas (Svensson et al. 2018); 3. dust particles can also have significant effects, for example on the water cycle (Meinander et al., 2022).

In addition to advancing global state-of-the-art science and filling gaps in monitoring, the FMI research activities in Central and Southern Asian glaciers contain a key component towards enhancing the sustainable development in these regions. In practice, during various expeditions, teamwork and workshop activities aim to achieve effective capacity building on glacier monitoring techniques, practices and data handling towards our local project partners in Tajikistan, Kyrgyzstan and India. The projects, funded by the Ministry for Foreign Affairs of Finland, have provided the tools for awareness raising and long-term successful glacier and climate monitoring collaboration. Cross-cutting values of development collaboration such as gender equality and climate sustainability, are promoted in these collaborations.

The world's cryosphere is experiencing rapid changes that can have vast effects on the livelihood of people. The role and significance of various impurities on cryospheric changes, including snow and ice melt and permafrost thaw, and their effects in different regions should be carefully assessed. Focus of

these investigations should be in understanding the reasons and impacts for the diminishing water supply from mountain regions and glaciers to lowland areas.<sup>1</sup>

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<sup>1</sup>References for the contribution 3.1.:

- Meinander, O. et al. Newly identified climatically and environmentally significant high-latitude dust sources, *Atmos. Chem. Phys.*, 22, 11889–11930, doi: 10.5194/acp-22-11889-2022, 2022.
- Meinander, O.; Kasper-Giebl, A.; Becagli, S.; Aurela, M.; Kau, D.; Calzolari, G.; Schöner, W. Intercomparison Experiment of Water-Insoluble Carbonaceous Particles in Snow in a High-Mountain Environment (1598 m a.s.l.). *Geosciences* 2022, 12, 197. doi:10.3390/geosciences12050197, 2022.
- Meinander, O.; Heikkinen, E.; Aurela, M.; Hyvärinen, A. Sampling, Filtering, and Analysis Protocols to Detect Black Carbon, Organic Carbon, and Total Carbon in Seasonal Surface Snow in an Urban Background and Arctic Finland (>60° N). *Atmosphere*, 11, 923, doi:10.3390/atmos11090923, 2020.
- Meinander O., Kontu A., Kouznetsov R., Sofiev M. Snow Samples Combined With Long-Range Transport Modeling to Reveal the Origin and Temporal Variability of Black Carbon in Seasonal Snow in Sodankylä (67°N). *Front. Earth Sci.* 12 June 2020, doi:10.3389/feart.2020.00153, 2020.
- Meinander, O.; Dagsson-Waldhauserova, Pavla; Arnalds, Olafur, Icelandic volcanic dust can have a significant influence on the cryosphere in Greenland and elsewhere, *Polar Research*, Volume: 35, doi: 10.3402/polar.v35.31313, 2016.
- Meinander, O., Kazadzis, S., Arola, A., Riihelä, A., Räisänen, P., Kivi, R., Kontu, A., Kouznetsov, R., Sofiev, M., Svensson, J., Suokanerva, H., Aaltonen, V., Manninen, T., Roujean, J.-L., and Hautecoeur, O.: Spectral albedo of seasonal snow during intensive melt period at Sodankylä, beyond the Arctic Circle, *Atmos. Chem. Phys.*, 13, 3793–3810, <https://doi.org/10.5194/acp-13-3793-2013>, 2013.
- Ström, Johan, Jonas Svensson, Henri Honkanen, Eija Asmi, Nathaniel B. Dkhar, Shresth Tayal, Ved P. Sharma, Rakesh Hooda, Outi Meinander, Matti Leppäranta, Hans-Werner Jacobi, Heikki Lihavainen, Antti Hyvärinen. Snow albedo and its sensitivity to changes in deposited light-absorbing particles estimated from ambient temperature and snow depth observations at a high-altitude site in the Himalaya, *Elementa: Science of the Anthropocene*, 10,1, 00118. doi:10.1525/elementa.2021.00118, 2022.
- Svensson, J., Virkkula, A., Meinander, O. et al., Soot-doped natural snow and its albedo - results from field experiments, *Boreal Environment Research*, 21, 5-6, 481-503, 2016.
- Svensson, J., Ström, J., Kivekäs, N., Dkhar, N. B., Tayal, S., Sharma, V. P., Jutila, A., Backman, J., Virkkula, A., Ruppel, M., Hyvärinen, A., Kontu, A., Hannula, H.-R., Leppäranta, M., Hooda, R. K., Korhola, A., Asmi, E., and Lihavainen, H.: Light-absorption of dust and elemental carbon in snow in the Indian Himalayas and the Finnish Arctic, *Atmos. Meas. Tech.*, 11, 1403–1416, <https://doi.org/10.5194/amt-11-1403-2018>, 2018.
- Ström, Johan, Jonas Svensson, Henri Honkanen, Eija Asmi, Nathaniel B. Dkhar, Shresth Tayal, Ved P. Sharma, Rakesh Hooda, Outi Meinander, Matti Leppäranta, Hans-Werner Jacobi, Heikki Lihavainen, Antti Hyvärinen. Snow albedo and its sensitivity to changes in deposited light-absorbing particles estimated from ambient temperature and snow depth observations at a high-altitude site in the Himalaya, *Elementa: Science of the Anthropocene*, 10,1, 00118. <https://doi.org/10.1525/elementa.2021.00118>, 2022.

### **3.2. Managed aquifer recharge (MAR)**

Geological Survey of Finland. [www.gtk.fi](http://www.gtk.fi), tel +358 29 503 0000. Eeva Käpyaho, Head of Unit, Water Management Solutions. Jaana Jarva, Chief expert.

Managed Aquifer Recharge (MAR) has been defined to be a feasible method for sustainable management of groundwater resources. It provides a tool to reduce vulnerability, to adapt future climate and to cope with growing water demand. MAR means purposeful recharge of raw water (rainwater, surface water, storm water or reclaimed water) to aquifers for recovery or other environmental benefit. The aim of MAR is to produce artificially infiltrated groundwater utilizing the natural attenuation processes. When implemented correctly, MAR is an environmentally friendly, climate-proof, reliable and cost-effective way of securing year-round water supply that can be utilized in different types of climatic conditions and manifold hydrogeological environments.

There are many reasons to apply MAR such as stabilizing or raising groundwater level, stormwater runoff and flood management as well as preventing saline intrusion or land subsidence. However, the successful implementation of MAR requires extensive knowledge and expertise on hydrogeological and geochemical conditions of the target area. With over 100 years of experience and over 25 MAR plants in operation, the Finnish water sector has proven to be able to provide sustainable solutions for different kind of MAR applications. The Geological Survey of Finland (GTK) has a long experience on research and studies required for an effective and sustainable groundwater resource management. Our competence in hydrogeological mapping, understanding of local hydrogeological conditions and characteristics, 3D modelling of aquifers, groundwater flow and transport modelling, water balance analysis, water quality research as well as development of case-specific risk management and climate change adaptation measures to secure water supply are all crucial for MAR studies as well.

MAR strongly contributes to the SDG 6 as a feasible option to ensure universal and equitable access to safe and affordable drinking water (SDG 6.1). It may also be a tool for improving water quality (SDG 6.3) and promoting efficient water use (SDG 6.4). GTK has already shared its knowledge and raised awareness of the feasible implementation of MAR not only in Finland and the EU but also in Vietnam, Central Asia, and Kenya (SDG 6.a.). Capacity building of local experts and decision makers for feasible implementation of MAR to cope with climate change impacts on groundwater resources contributes also to the SDG 13.3 (Climate action).

## **THEME 4. WATER FOR COOPERATION: TRANSBOUNDARY AND INTERNATIONAL WATER COOPERATION, CROSS SECTORAL COOPERATION, INCLUDING SCIENTIFIC COOPERATION, AND WATER ACROSS THE 2030 AGENDA**

### **4.1. Water research community focusing on social-ecological characteristics of waters**

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The UN SDG6 and water policies on multiple levels of governance aim to safeguard the social-ecological resilience of waters and water-using communities. This calls for a societal shift in the study, management, and governance of waters as waters are pressurized from multiple anthropogenic sources from agriculture to hydropower generation and water abstraction, which are also key for societal security and resilience. Moreover, climate change considerable challenges the current water policies as the hydrological cycle faces a major shift.

To tackle these challenges, UEF Water, an inter- and transdisciplinary research community working at University of Eastern Finland brings together more than a hundred scientists and scholars (from doctoral researchers to professors) to work on water related themes. The community takes a social-ecological catchment perspective to water and seeks to unravel the biophysical and social characteristics of how nature and people in the catchments operate. We combine interdisciplinary water research from multiple disciplines studying water and connect natural and social sciences to help coin effective and legitimate water policies and business models. To this end, UEF Water has established an open innovation ecosystem that brings together university researchers, sector research institutes, and water-related business operators. We help researchers to develop new water monitoring, analysis, and treatment techniques and to create interdisciplinary solutions to preserve the biodiversity and ecological performance of freshwater environments. UEF Water also aims to create sustainable operating models to support nature tourism and develop adaptive policy and legal instruments for ensuring the sustainable use of water resources.

UEF Water is funded by three major Finnish foundations (Olvi-foundation, Jenny and Antti Wihuri foundation and Saastamoinen foundation) and associated researchers receive funding from the Academy of Finland, Business Finland, and the EU Horizon programme. The boundaries between the departments and the faculties are small, but by crossing them first, helps to achieve our big common goal: clean water for all.

### **4.2. Expert Opinion, Value of Water in Times of Armed Conflicts**

*Expert opinion paper, on behalf of:* Finnish Environment Institute, Ministry for Foreign Affairs of Finland, Geneva Water Hub, United Nations Children's Fund, CMI – Martti Ahtisaari Peace Foundation; Geneva Academy of International Humanitarian Law and Human Rights, Organization for Security and Co-operation in Europe OSCE, Central Asian Youth for Water CAY4W, Aalto University; Finnish Institute of International Affairs, IHE Delft – Institute for Water Education, Ministry of Foreign Affairs of Slovenia, Stockholm International Peace Research Institute SIPRI, Stockholm International Water Institute SIWI. Published in September 2022.

We, the experts representing the convening and contributing organizations of the side-event ‘*Value of Water in Times of Armed Conflicts*’ at the Stockholm World Water Week 2022 and partners, propose the

following key messages to be considered in the preparation of the United Nations 2023 Water Conference Interactive Dialogues on Water for Cooperation.

Water and sanitation should never be used as a means of warfare. In spite of this humanitarian, legal and political consensus, water resources and infrastructure are often strategic targets, and their control is being deployed, directly or indirectly, as tactics of warfare by parties to conflicts (offence and defense). Vulnerable groups such as women, children, youth, and persons with disabilities, are usually the most affected by destruction of infrastructure, disruption of water, sanitation and hygiene services, and deterioration of the water-dependent ecosystems and environment.

The Expert Opinion emphasizes the importance of water during and after conflict and in conflict prevention, underlining weaknesses and gaps in international frameworks and practices and state and non-state actors' compliance with them; and highlights available measures to safeguard the human rights to water and sanitation, water resources and infrastructure, and a healthy environment for all.

## Key messages

### Conflict prevention

- Increasingly, global security analyses cite water as a strategic resource that, when not managed properly, can be a source or driver of conflict and in extreme cases threaten national and regional security.<sup>2</sup>
- Water related conflicts may range from competition over resources to political tensions, to the delegitimization of governments and increasing fragility, to low-level violence or to armed conflict, from the local to the international level.<sup>3</sup>
- According to recent data, number of conflictive events over water has grown in the past years. 2 Most of water related conflicts take place at intra-state level, and most of the effects on water infrastructure and the environment occur in armed conflicts within countries or between state and non-state actors.
- Water has never been the only reason in international armed conflict and is not likely be so. Between states, water can act as a connector rather than a divider.

### *Transboundary cooperation*

- Transboundary water cooperation can act as a driver and sustainer of peace with agreements, joint bodies and cooperation arrangements, shared information and monitoring and assessment.<sup>4</sup>
- International water law codified in the UN Water Conventions set out principles for that cooperation.
- We commend the efforts of several countries from different regions to accede to the UN Water Conventions.
- International water treaties in river basins provide comprehensive bases for addressing potential disagreements over water use in a peaceful manner. River basin organizations have a key role in the prevention and settlement of water conflicts.
- International judicial bodies such as the International Court of Justice (ICJ), the main UN judicial body, as well as arbitral tribunals may also support cooperation between riparian countries in context of water-related disputes.<sup>5</sup>
- **Recommendation:** The Meeting of the Parties of the UNECE Water Convention and the UNECE Secretariat, international organizations, non-governmental organizations and multilateral development banks should support riparian countries to develop agreements consistent with international water law and based on the equitable sharing of transboundary water resources.

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<sup>2</sup> See [Water, Peace and Security Partnership](#)

<sup>3</sup> See [Transboundary Freshwater Dispute Database](#)

<sup>4</sup> See [UNECE Water Convention Publications](#)

<sup>5</sup> See for example ICJ Pulp Mills on the Uruguay River case (Argentina/Uruguay), 2010; Kishenganga case (India/Pakistan), Arbitral Tribunal, Permanent Court of Arbitration), 2013).

• **Recommendation:** Cooperative arrangements for all major transboundary water courses should be in place by 2030 and those in place must be implemented and adequately capacitated and resourced by their members and the international community, in particular through institutionalized cooperation mechanisms.

#### *Importance of understanding local socio-political contexts and dynamics*

- Water is of key importance for local lives and livelihoods, and in the event that access to sufficient water of sufficient quality changes, humans will respond. In certain contexts, this has led to increased competition, tensions as well as violence, and fed into larger violent conflicts, or the changed situation has been exploited by armed groups and elites.<sup>6</sup>
- Climate change, actions to mitigate or adapt to climate change and other interventions in the water system can all lead to changes in local water availability and quality. However, local governance and socio-political settings and dynamics generally determine who has access to available resources.
- **Recommendation:** All efforts to increase WASH services and develop water resources need to consider how different groups in society make use of water and related ecosystem-services, the social-political dynamics involved, and how different societal groups will respond to changes in water systems.
- **Recommendation:** Different societal groups need to be involved through meaningful participation in the development of understanding climate-water-society linkages and the identification of effective actions.
- **Recommendation:** The international community should develop and share approaches to assessing socio-political dynamics and how meaningful participation can be carried out to create peaceful, effective water management strategies with local ownership that can prevent conflict and contribute to sustainable peace.

#### *Involvement of women and youth*

- A persistent gender gap exists in the water sector and transboundary water cooperation in particular.
- Gender mainstreaming in water governance contributes to stability and security, bolsters the resilience of local communities, and contributes to more effective policy-making at all levels, including in transboundary cooperation, peacebuilding and mediation.<sup>7</sup>
- Networks and platforms for dialogue as well as participatory and consultative approaches in water processes help to ensure women's voices are amplified in international water processes.<sup>8</sup>
- **Recommendation:** Special attention and funding support should be directed towards capacity building and skills development of women water professionals, as well as youth interested in water sector careers in times of peace, ensuring integration of all genders in management of water resources at all levels including transboundary cooperation.

#### **During conflict**

• Water is a victim in armed conflicts, with direct impacts including destruction of water, sanitation and hygiene (WASH) infrastructure, deterioration of resources and ecosystems, leading to sickness and death; and indirect impacts including increased social vulnerability, economic problems, militarization, collapse of water management and governance, deteriorating supply and state of the environment.

#### *Respecting international law*

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<sup>6</sup> See: [Pathways of climate insecurity: guidance for policy makers](#). Stockholm International Peace Research Institute, 2020.

<sup>7</sup> See: [Gender Mainstreaming in Water Governance | OSCE e-learning platform](#); Stockholm International Water Institute, 2022. [A Path Forward for Women, Water, Peace and Security: Women in Water Diplomacy Network Nile and Beyond Global Strategy 2022-2027](#). Stockholm, Sweden.

<sup>8</sup> See: "[Women, Water Management and Conflict Prevention](#)" | OSCE.

- **Recommendation:** States must respect and ensure respect of international humanitarian law (IHL).<sup>9</sup>
  - o Parties to a conflict must not attack, destroy, remove or render useless the objects indispensable for the survival of the civilian population, these include drinking water installations and supplies and irrigation works (Arts. 54.2 of the 1977 First Additional Protocol to the 1949 Geneva Conventions and 14 of the 1977 Second Additional Protocol to the 1949 Geneva Conventions, Rules 53 and 54 of Customary International Humanitarian Law<sup>10</sup>).
  - o Installations containing dangerous forces such as dams and dykes are also protected under IHL (Arts. 56 of the 1977 First Additional Protocol to the 1949 Geneva Conventions and 15 of the 1977 Second Additional Protocol to the 1949 Geneva Conventions, Rule 42 of Customary International Humanitarian Law).
  - o Attacks which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment are prohibited under IHL. (Arts. 35.3 and 55 of the 1977 First Additional Protocol to the 1949 Geneva Conventions, Rules 43-45 of Customary International Humanitarian Law).<sup>11</sup>
- **Recommendation:** Parties to a conflict, including an Occupying Power, must respect, protect and fulfill the human right to water in line with the 1966 International Covenant on Economic, Social and Cultural Rights, the Convention on the Rights of the Child and the Convention on the Discrimination Against Women which continue to apply during armed conflicts, and which is indirectly acknowledged by other human rights instruments as well.<sup>12</sup>
- **Recommendation:** Intentionally using starvation of civilians as a method of warfare by depriving them of objects indispensable to their survival is a war crime (Statute of the International Criminal Court (ICC), Article 8.2 (b) (xxv) and 8.2 (e)(ix)). Military manuals enshrining a sound protection of water infrastructure and water resources may prevent these crimes.
- **Recommendation:** Attacks against WASH facilities must be monitored and reported and treated like grave violations. Such attacks are barriers to the realization of Sustainable Development Goal 6 and other SDGs.
- **Recommendation:** The role of international environmental law should be considered to fill in the gaps of IHL in the protection of the environment during armed conflicts.<sup>13</sup>
- **Recommendation:** Intentionally launching an attack in the knowledge that such attack will cause widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated is also war crime and must be punished (Art. 8.2 b (iv) ICC Statute).

## Post-conflict

### *From water aid to ending needs*

- Transitioning from delivering aid to ending needs in conflict and post-conflict settings is of paramount importance should the world advance in equality. Often times, humanitarian contexts are well resourced, and these should be used rationally to bring about durable changes to people's lives.
- **Recommendation:** Access to safe drinking water must be ensured to internally displaced peoples (IDPs) and refugees, taking into account the existing water use agreements and local context to avoid potential conflicts between incoming and recipient populations.
- **Recommendation:** WASH sector resilience is key to minimizing adverse sectorial impacts, human suffering and humanitarian needs. All WASH undertakings need to at least be conflict sensitive to do no harm and should where possible contribute to peacebuilding in order to do more good.

<sup>9</sup> See: Geneva Water Hub, [Geneva List of Principles on the protection of water infrastructure](#).

<sup>10</sup> See: [Customary IHL Database](#)

<sup>11</sup> See the following publications: ICRC [Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict](#); ICRC, World Bank and Unicef: [Joining forces to secure water and sanitation in protracted crises](#); [Reducing Civilian Harm in Urban Warfare: A Commander's Handbook](#); [Geneva List of Principles on the Protection of Water Infrastructure](#).

<sup>12</sup> See General Comments No. 15 on the Right to Water; the Conventions above mentioned; the 2004 ICJ Advisory Opinion on the Construction of a Wall in the Occupied Palestinian Territory.

<sup>13</sup> See [International Law Commission Draft Principles on the protection of the environment in relation to armed conflict](#).

- **Recommendation:** Implementation of water infrastructure reconstruction programmes must be prioritized, along with restoration measures for river ecosystems in post-conflict countries.

#### *Building long lasting peace*

- Water can be a powerful tool to build bridges between displaced communities and the host population.
- Regional and transboundary water dialogues, as well as exchange and peer-to-peer learning among experts within the region, can develop trust and relationships that are essential for post-conflict regional cooperation and should be encouraged.
- Transboundary freshwater agreements often help to consolidate peace between parties involved in an armed conflict, especially when they establish a river basin organization.
- **Recommendation:** International organizations and other actors should support the creation of networks of local and transboundary peace mediators using water as a driver for reconciliation and building long-term peace.
- **Recommendation:** Peace agreements should include water sharing provisions developed in consultation with local communities affected by the conflict.

*The Key Messages expressed in this paper represent the views of the experts themselves. The group consists of professionals at different stages of career and from different geographical locations. As such the views expressed in this Expert Opinion may not represent the views and policies of their organizations.*

### **4.3. Corporate water stewardship and fair water footprints**

Based on COP26 Glasgow Declaration for Fair Water Footprints, Finnish Delivery Plan 2022-2025. Suvi-Tuuli Puharinen, University of Eastern Finland & Suvi Sojamo, Finnish Environment Institute.

Companies from water-intensive sectors are among the biggest water users globally, and consequently, corporate water use has significant impacts on water resources both directly and through their multinational operations and supply chains.

Despite the major impact corporate water use has on water resources, the international community has so far been unsuccessful in enacting binding international law that would address the impacts of multinational corporations and supply chains. To put it simply, international environmental law in general and international water law in particular regulate relationships between states in relation to the environment and international water resources. International water law does not contain explicit regulation or principles that would enable extending state duties on corporate water use. In turn, national and European legal frameworks fail to address multinational corporate water use due to their limited geographical scope of application and focus on direct environmental impacts of operations rather than encompassing the corporate actions in their entirety and integrating water sustainability consideration in the business model.

The corporate sustainability issues, including sustainable water use, has mostly been governed through soft law and voluntary initiatives, which to date have not been effective enough in addressing unsustainable corporate water use.

Thus, there is a need to strengthen existing voluntary initiatives and explore options for binding legal instruments.

The UN Protect, Respect and Remedy Framework and the associated UN Guiding Principles on Business and Human Rights as well as the OECD Guiding Principles on Multinational Corporations have during recent years formulated more cogent principles on corporate sustainability. These frameworks include some water related considerations particularly through the human rights implications.

Currently, corporate sustainability regulation is developed at national and supranational levels in many states and the EU. Corporate water stewardship should be reflected in the corporate accountability legislation and sustainable corporate finance legislation as the sustainability of corporate water use is directly linked to both respecting human rights, particularly the human right to water, and the companies' environmental accountability. International legally binding frameworks for addressing the sustainability of multinational business from water, climate, biodiversity and other environmental aspects could also be considered. Meanwhile, voluntary initiatives like Glasgow COP26 Declaration for Fair Water Footprints provide important arenas for devising new approaches to steer water use along international value chains towards more sustainable and fair practices.

Finland is a founding signatory of the Glasgow Declaration for Fair Water Footprints, launching its first Delivery Plan at the UN Water 2023 Conference, and promotes the Declaration as a key voluntary commitment advancing sustainable and fair water use in both producing and consuming countries along international value chains.

## **THEME 5. WATER ACTION DECADE: ACCELERATING THE IMPLEMENTATION OF THE OBJECTIVES OF THE DECADE**

### **5.1. Intensifying SDG 6: Subsidiarity principle–resilience approach–multi-level governance nexus for water services**

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There cannot be sustainable development in any sector without the support of effective institutions, hence underpinning the importance of understanding institutional sustainability in the development context. Numerous studies have addressed water utility performance both in developed and developing nations. The studies point out the importance of the institutional factors affecting those managing water utilities and those providing regulatory oversight: social structures (the political and cultural context), formal organizations (government ministries and regulatory authorities), and support systems (including political patronage and civil service). These external factors affect how conflicts are resolved regarding resource allocation, pricing, and access to water services. Obviously, these issues also influence the internal governance of the water utilities.

Institutional sustainability depends upon maintaining: a) responsive output flows (high quality and valued goods and services); b) cost-effective goods and services delivery mechanisms (organization and management); and c) resource flows (recurrent costs, capital investments, human resources).

In addition, to function properly and sustainably, all aspects of water resources management and water supply-related services must be fully funded. This not only includes the creation and maintenance of physical infrastructure, but also water resource management, environmental protection and pollution abatement measures, and less visible functions such as policy development, research, monitoring, administration, legislation enforcement, provision of public information, control of corruption and of conflicts of interest, and the involvement of public stakeholders.

Typically, water services are regulated formally and comprehensively to ensure robustness and reliability of the infrastructure assets, to protect the health of the citizens and the natural and built environment, and to ensure that citizens and businesses are getting affordable, fair and equal pricing. Efficient governance

must, however, be multi-level and therefore a public water service industry, should have three components: regulatory governance, provision and production.

The principle of subsidiarity enables both innovating and launching of water services legislation, water services regulatory governance, provision and production, and resilience of water utilities as well as applying the rules and regulations in the ways that enhance coverage and sustainability of water services. The principle is to promote societal efficiency and local ownership with actions taken at the right level. The principle has not only a vertical but also a horizontal relevance.

The principle of subsidiarity may not yet be characterized as a customary principle of international law, but it is gaining increased recognition as an integral component of effective governance frameworks. It should, however, be also recognized that in many cases, the subsidiarity principle of water resources management has been applied with undue haste, assuming, that water resources management should occur at the local level when in fact institutional capacities would suggest that local institutions are not the appropriate governance level.

The economic, environmental and social conditions in general influence the level of resilience. On the other hand, the economic, environmental and social sustainability can be enhanced by reinforcing and maintaining resilience adequately. Resilience of water utilities can be strengthened, when the policies and strategies, operational models and good practices are developed and implemented based on reciprocal, responsive and proportionate collaboration. This kind of collaboration also benefit from the virtue ethicist approach.

Reciprocity in collaborative work is commitment to mutual assistance. In practice, resilience can be enhanced and secured through contractual collaboration arrangements, amalgamation of utilities or establishment of a joint entity. The joint entity could be responsible on behalf of all partner utilities, for example, for organizing and giving specified assistance, for pooling resources, for joint procurement and/or production of the works, goods and services, and for collective disaster risk governance and strategic asset management on a regional basis.

When the principle of subsidiarity, resilience approach and multi-level governance are smartly linked together innovative institutional arrangements can be formulated and put in place to promote the building of viable water services governance. The viable adoption these institutional instruments would generate and offer outstanding opportunities to progressively achieve SDG 6 targets 6.1 and 6.2, and to improve and maintain economic, environmental and social sustainability of water services. Subsequently, this would contribute to the sustainability and resilience of the entire society.

This paper is done based on the research: Hukka, J.J. and Katko, T.S. 2021. Towards Sustainable Water Services: Subsidiarity, Multi-level Governance and Resilience for Building Viable Water Utilities. CADWES Publications. 89 p. <<http://www.cadwes.com/wp-content/uploads/2021/08/HukkaJ.J.-and-Katko-T.S.-2021.-Towards-Sustainable-Water-Services-Subsidiarity-Multi-level-Governance-and-Resilience-Approach-for-Viable-Water-Utilities-1.pdf>>