United Nations Educational, Scientific and Cultural Organization

World Water Assessment Programme

Sustainable Development Goals

UN WATER

The United Nations World Water Development Report 2021

VALUING WATER

ANNOTATED TABLE OF CONTENTS

December, 2019

Background

The United Nations World Water Development Report (WWDR) is a flagship UN report coordinated and produced by the UNESCO World Water Assessment Programme (WWAP) in close collaboration with UN-Water members, partners and external contributors. In August 2012, UN-Water approved a new periodicity and structure for the WWDR series. The Report thus became an annual (around 100+ page) thematic publication that addresses specific challenges affecting the status, use and management of freshwater resources globally.

At the UN-Water Senior Programme Managers (SPM) meeting in February 2017, it was decided that the 2021 World Water Day be dedicated to the theme "**Valuing Water**", which would also be the theme for the WWDR in that same year.

The WWAP prepared a set of **Background Documents** describing the theme and its scope, highlighting several technical considerations and providing a condensed **literature review** to highlight critical sources of information and material. WWAP also prepared a **draft 'storyline'** and an initial compilation of **potential 'main messages'** for the report, which have been circulated to UN-Water Members and Partners for comments and further discussed during the **developmental workshop** held September 19-20, 2019, in Perugia, Italy. These documents contain essential information and material about the theme, and thus provide a highly valuable and practical represent resource for chapter authors and contributors.

Different roles in preparing the WWDR: Lead Agencies and Contributing Agencies

UN-Water members and partners can contribute to the WWDR 2021 with different roles.

I) Lead Agencies (LAs) are UN-Water members that are responsible for the production of a substantive part of the report (one chapter or more). This implies that LAs write parts of the Report and coordinate and compile the input from Contributing Agencies (see below). Text and other materials produced by the LAs have to be submitted to the WWAP Secretariat in line with the production calendar.

II) Contributing Agencies (CAs) are UN-Water Members and partners that work in close cooperation with a Lead Agency and/or with the WWAP, and directly provide clearly referenced input in the form of short pieces of text, tables, boxes, figures, practical examples and case studies.

Scope of the Report

This is to be a fact-based, unbiased and technically sound report, highlighting the need to better understand, recognize and appreciate the 'value' of water in all its dimensions.

Water is widely perceived as an intrinsically valuable and essential resource: for farmers who depend on it to grow crops; for businesses that need it to cool machines, spin turbines and produce goods; for the environment and its sustainable quality as well as for human life. Furthermore, access to safe and affordable drinking water and sanitation are recognized by the United Nations as basic human rights and is key to reaching equality and equity.

While appreciation of the value of water has been growing, addressing its multiple and diverse values to society and incorporating these values into water governance and management has remained elusive. As such, this vital and unique resource has not been appropriately reflected in terms of political attention and financial investment in many parts of the world. This not only leads to inequalities in terms of access to water resources and water-related services, but can also lead to the unsustainable use and degradation of water supplies themselves, with negative impacts on sustainable socio-economic development in all its dimensions. The fundamental purpose of recognizing the true 'value(s)' of water lies in reversing this negative feedback loop and ensuring the sustainability of water resources now and for future generations.

Prioritizing water is essential for addressing all components of sustainable development. Valuing water, in all its dimension, is a means to heighten this prioritization. The WWDR 2021 will seek to determine and describe the multiple values of water as perceived by different groups, and how recognizing and giving weight to these perspectives can help elevate water on the political landscape.

Purpose of the Annotated Table of Contents

The Annotated Table of Contents (AToC) identifies the main content/points of discussion to be included in each particular chapter. The Lead Agencies and the authors are expected to respect the overall content of the AToC and to work closely with the WWDR production team (i.e. WWAP Secretariat) to ensure coherence across the report and avoid redundancy. It is important to note that, although the AToC informs on the principal content of the chapter, it does not necessarily dictate the chapter's detailed structure or sequence – it is often only after the first full draft is produced that the best options for a clear and coherent narrative and structure emerges.

The order of the chapters presented in this AToC is not necessarily indicative of the final report. The ultimate sequence will be determined once content development has matured.

Annotated Table of Contents
December, 2019

Executive Summary
Words**: 2,000**
Lead Agency: **WWAP**

PART 1 – STATE OF KNOWLEDGE AND THEME PRESENTATION

Prologue: The State of Water Resources
Words**: 4,000**
Lead Agency: **WWAP**
Contributing Agencies**: UNESCO-IHP, Water.org**[1]

Overview of the state of the world's water resources, and coverage of water supply and sanitation services in the context of valuing water. Highly populated with metrics (incl. figures, maps, graphs and tables), the Prologue essentially provides an update on the 'state of knowledge' that the other chapters can refer back to and build on.

- Current and projected status and trends in surface water and ground water demand, availability, quality (for different types of water), reuse and recovery, and extreme events
- Latest metrics on access to water supply and sanitation, water resource management, progress on SDG6 for all targets and indicators (where available), and metrics for water-related/other SDGs (where relevant)
- Additional metrics related to the theme (metrics that reflect diversity of water's values in the context of sustainable development – e.g., gender, status of aquatic biodiversity, stakeholder engagement by different stakeholder groups, investment and financing)

Chapter 1 – Valuing Water: Perspectives, Challenges and Opportunities
Words**: 4,000**
Lead Agency: **WWAP**
Contributing Agencies**: Water.org, International Center for Water Cooperation (ICWC) hosted by SIWI, IHA**

Introductory chapter summarizing what the report is about: scope, objectives, and potential value added in terms of addressing global water issues and broader sustainable development aspirations. The four 'perspectives' for valuing water (and the structure of the report) are introduced. Previous attempts at 'valuing water' are introduced and the basic terminology is described.

- Intrinsic value and full meaning of water for society
- Four basic 'perspectives' for valuing water are introduced:
  - Water sources (water resources and ecosystems)
  - Water services (WASH)
  - Water as a socio-economic driver (food and agriculture, energy and industry, business and employment, transport)
  - Other socio-cultural values (e.g., recreation, spiritual)[2]

[1] **Water.org** is willing to contribute with the metrics on water supply and sanitation, and investment and financing
[2] **International Center for Water Cooperation (ICWC)** is willing to provide input on the values of water for peace

- Multiple values of water and how these can (or why they cannot) be measured across these different perspectives and through multiple uses, be it directly (e.g., volumetrically), indirectly (e.g., through positive/negative impacts and co-benefits), or via intangible (thus non-quantitative) considerations
- Connections with Human Rights framework, Agenda 2030, the five Ps (people, planet, prosperity, peace and partnership) that shape the SDGs, IWRM (and its alignment and complementarity with human rights), others
- Overview of how the theme has been addressed to date (e.g., HLPW/Bellagio principles, other HLPs, incl. a focus on Water and Peace, inter-governmental conventions, UN Water task force, CEO Water Mandate, World Business Council for Sustainable Development; international standards[3] (e.g., environmental management) and safeguards, key initiatives and platforms, e.g., IPBES)
- Basic terminology and key concepts are introduced and described (e.g., value, cost, price, direct/indirect benefits), and ownership of water and how it affects perception, value and price
- Acknowledge existence of polarized/or diverging views, and the challenges of addressing trade-offs
- Potential benefits of valuing water (covering what valuing water can help to achieve) and costs of not fully considering water as an asset comprising different value sets

Chapter 2 – An interconnected Approach to Valuing Water[4]

Words**: 3,000**
Lead Agency: **UNU (FLORES and INWEH)**
Contributing Agencies**: UNESCO Cat II Centre hosted by SIWI (ICWC), Ramsar, WWF, FAO, UNU-IAS, WfWP, IAHS[5]**

Brief chapter exploring how the concepts of valuing water can be perceived differently and how 'relationships' between different stakeholders to water (and amongst themselves) can influence how water can be valued through the different 'perspectives' and ultimately allocated. It underscores the strengths and benefits to society and various sectors of a interconnected treatment of values in water.

- Stage setting:
  - Interconnected (nexus) approach
  - Valuing
  - Water: water and connected resources (nutrients, energy, precious metals etc.)

- Interconnected approach to valuing water:
  - Stakeholder dimension:
    - Discourse on the different relationships to value and water as a connector, for different actors and audiences
  - Resource dimension
    - Elements of a nexus approach to values (e.g., water-food-energy and environment nexus, water allocation as the nexus for decision-making, transboundary settings)
  - Evaluation dimension

[3] **IHA** proposed including the hydropower sustainability assessment protocol and the environmental, social and governance tool. Particularly the topics: hydrological resource, reservoir management, siting and design, erosion and sedimentation, biodiversity and invasive species.
[4] **WWAP**: As *"addressing its multiple and diverse values to society and incorporating these values into water governance and management has remained elusive*" it would be good to refer to IWRM, and whether/how the multiple values of water have been addressed (or are addressed) in its application, and what has failed.

[5] **IAHS** can contribute with a Global WEF Nexus index, the systemic dimension in the perspective of the Anthropocene, and illustrative case studies

- Rationale for, and strengths and benefits (e.g., reducing costs, risks, unintended consequences, sustained engagement) to society and across sectors of a nexus approach to valuing and allocating water (e.g., 30% of energy use for food production)
- Examples of valuing of water in different sectors across a nation's economy[6]

- Sustainability dimension:
  - Economic, ecological, social dimension: Trade-offs across sectors and water-related and other SDGs (e.g., under extreme circumstances, incl. floods and drought; economics of land degradation; use of analytical nexus approaches in SDGs)
  - Spatial and temporal dimension: Nexus in context of a socio-ecological system and relationships with spatial and temporal distribution of water

- Governance dimension:
  - Hydrological, water planning/allocation, policy visions, policy cycles, policy instruments, policy interventions

[6] **UNU-IAS** would like to contribute with their water team's integrated method to assess the value of water.

PART 2 – THEMATIC FOCUS

Chapter 3 – Water Resources and the Environment (i.e., Valuing the 'Source')

Words**: 4,000**
Lead Agency: **WWAP**
Contributing Agencies**: AquaFed, WaterLex, World Bank, FAO, WWF** (TBC)**, Ramsar**, **IWA** (TBC), **UNEP**[7]**, IAHS**[8]**, UNDP-SIWI WGF**[9]**, UNESCO IHP**

Examines challenges and opportunities for valuing water resources and the ecosystem services upon which they rely. Consideration is given to the water's type/origin, its quality and its intended use(s). Environmental dimensions include the ecosystem as the resource base, environmental flows, source water protection and nature-based solutions.

- Value of water as a unique and limited resource in its 'natural' state, including both surface and groundwater (including fossil water), and dependencies on place, quantity, quality, and ecology
- Volumetric quantification of the costs associated with the abstraction, storage, transpiration, treatment (including wastewater treatment and reuse) and safe return to the environment
- Valuing alternative (or 'unconventional') types of water – urban wastewater, greywater, agricultural drainage water, saline water, fog water, etc. - and the resources/by-products they contain
- Competing uses, ownership, land and water rights
- Environmental values, ecosystem health and biodiversity
- Water as an ecosystem service and the value of water in maintaining other ecosystem services; economic value of natural resources (ecological protection cheaper than restoration; e.g., protecting salmon in USA)
- Source water and catchment protection (e.g., payment for environmental services and water funds[10])
- Environmental aspects of water resource management (incl. environmental flows and benefits of implementation, water stress indicator 6.4.2) and nature-based solutions (e.g., natural capital accounting, blended green-grey infrastructure) [11]
- Water quality - Direct and indirect 'costs' of water pollution and pollutants (e.g., SDG 6.3.2)[12]
- Natural resource and environmental governance issues

Chapter 4 – Water Supply and Sanitation (WASH) Services in Human Settlements
Words**: 3,000**
Lead Agency: **UN-Habitat**
Contributing Agencies**: AquaFed, WSSCC, Water.org, WaterLex, IWA, OHCHR, UNICEF**[13]**, UNHCR (TBC), SIWI**[14]**, Wateraid, WYPW**

Examines the costs and benefits (direct and indirect) of WASH services across the full value chain (including wastewater treatment), with a comparison of opportunities for service provision in rural and urban settlements (including high-cost vs. low-cost solutions and centralized vs. small scale systems).

- Small but high values of domestic/household uses of water

[7] **UNEP** is willing to contribute with relevant SDG 6 data and information available to the drafting teams, and review relevant parts of the report.
[8] **IAHS** would like to contribute to the hydrological inputs and perspective
[9] **UNDP-SIWI WGF** is willing to contribute with discussion of personhood / rights of nature
[10] FAO is willing to contribute farmer's stewardship in catchment or source water protection, which includes conservation and production functions.
[11] **FAO** would like to contribute in terms of environmental flows
[12] **World Bank** would like to contribute in terms of risk maps of SDG 6.3.2 pollutants, impacts of these pollutants (specifically impacts of nitrogen and salinity on health and human capital, salinity on agricultural productivity, and BOD (acting as an umbrella indicator for overall river water quality) on downstream economic growth.
[13] **UNICEF** is willing to contribute on affordability.
[14] **SIWI** is willing to contribute on pricing mechanisms and governance insights related to indigenous perspectives on governance in WaSH

- Cost-benefit of access to WASH; indirect benefits (health, education, livelihoods, employment, workforce productivity, etc.); intangibles (e.g., quality of life)
- Full cycle (value chain of the system) including wastewater treatment (leads to other intangibles)
- Comparing rural and urban settlements (how services provided and their values and economics differ); high-cost vs. low-cost solutions; centralized vs. small scale systems
- Urban WASH and infrastructure for service delivery
- Rural WASH and access to water
- Pricing mechanisms (and potential for cost-recovery) for services in different settings; willingness to pay; affordability
- Need for disaggregated data to focus on poverty alleviation, youth, gender and health
- Use of capital markets
- Disconnect[15] between infrastructure development and political change (different time horizons)
- Governance in relation to WASH - implications of level (e.g. municipal/district level, national level, common good)

Chapter 5 – Food and Agriculture
Words**: 4,000**
Lead Agency: **FAO**
Contributing Agencies**: WBCSD[16], UNU-INWEH, IAHS[17], Water.org, IWMI[18], UNU-Flores[19]**

- *Examines challenges and opportunities for valuing water along food production chains, with a focus on both rural and urban (including peri-urban) agriculture. The social and environmental perspective including its implications in land management, water tenure, equality and community ownership are also to be addressed, as are the positive and negative outcomes of subsidies and tariff structures.*
- Valuing water for urban and rural agriculture and its livelihood support especially for small holder farmers. The specific water values in food and agriculture. (including water pricing/tariff for agriculture)
- Valuing water for irrigation (intensification vs. expansion) and throughout the agri-food value chain
- Achieving food and nutrition security and eliminating hunger through water – links to poverty alleviation, sustainable rural development and revitalisation, and ecosystems (e.g., inland fisheries, soil moisture, etc.)
- Sustainable (e.g. conservation agriculture) vs. non-sustainable production practices (industrial monoculture, slash and burn, etc.)
- Indirect benefits/costs, and costs of inaction
- Land management, water tenure, community ownership and gender implications

[15] WYPW is willing to provide illustrative examples here based on WYPW members' work in scientific research on WASH services (incl. infrastructure, operation and maintenance) in fragile and conflict-affected settings.
[16] **WBCSD** proposed to add the following bullet points:
- True cost of food
- Valuing water and soil health
- Policy incentives and instruments for valuing water in Ag.
- Alternative (i.e. not crop related) renumeration for farmers for protecting, conserving, recycling water

[17] **IAHS** is willing to contribute on various aspects and geographic perspectives
[18] **IWMI** is willing to contribute on solar powered irrigation (cases from Africa and Asia), flood insurance pilots in India. methodological approaches of quantifying plant water use via remote sensing and modelling to illustrate the values of water sources and its use.
[19] **UNU-Flores** is willing to contribute with: a) A box/sub-section on sustainable food production systems (e.g., conservation agriculture) demonstrating efficient water productivity and management. b) A box/sub-section on multifunctional agricultural and land-use systems to integrate biological rainwater harvesting for food production

- Valuing water jointly for agriculture and WASH[20] and scaling up financing
- Perverse subsidies (and a need for a tracking system)
- Water footprint of food, water productivity, food loss and waste
- Evapotranspiration models (to calculate water consumption and applying use tariffs – incentives or penalties (monitoring)
- Nutrient per drop, healthy diets
- Energy costs have water costs – WEF nexus (link to Ch 2)
- Ways in which water value is addressed in best management practices and response options (e.g., multiple use and 'eco-agri-food systems'; water productivity and use efficiency; water accounting and agricultural commodity footprints, water stewardship, water allocation)
- Marginal quality water use (drainage water, desal/brackish water/rainwater) and wastewater use in agriculture - multiple values, benefits, and costs[21]
- Policy applications including specific governance and nexus issues for food and agriculture

Chapter 6 – Energy, Industry and Business
Words**: 4,000**
Lead Agency: **UNIDO**
Contributing Agencies**: WBCSD[22], UNU-INWEH, IAHS[23], Water.org, IHA, IWMI[24]**

Valuing water for economic growth, and different sources of water (at different levels of treatment) for different uses across entire value chains. Valuing water as a way to address risks to businesses. The chapter will also consider the CSR to Stewardship role and the more intangible human rights and socio-cultural considerations that come into play as more fully described in the next chapter.

- Water for economic growth and income generation [25]at country, regional, and/or local levels; catalyst for new types of economic activity; measurable co-benefits (e.g., job creation, equality, security against fluctuations in water availability, long-term climate resilience); circular economy
- Valuing different sources of water (at different levels of treatment for different uses)
- Transformation of wastewater treatment and management towards reuse (i.e. marginal quality water for food production), not disposal, value propositions for resource recovery and energy production[26]
- Balancing values, benefits, and impacts of hydropower as infrastructure producing renewable energy
- Mining and extractive industries
- Other economic sectors (e.g., tourism)
- Indirect benefits/costs, and costs of inaction

[20] **Water.org** could be interested in collaborating on this.
[21] **UNU-INWEH** would like to contribute in terms of potential of wastewater as a water and nutrient resource to support food production systems
[22] **WBCSD** proposed to add the following bullet points:
- Business valuing water for reputational, regulatory and physical risk management
- Business valuing water on income statements, balance sheets and for investment decisions
- Examples of market based and regulation-based mechanisms for valuing water (e.g. water rights, wastewater reuse certificates)
- Examples of business establishing an internal price for water

[23] **IAHS** is willing to contribute on Energy
[24] **IWMI** is willing to contribute with examples of integrated modeling work done in Bangladesh and Pakistan where water models are connected to to macro-economic models (i.e. CGEs) to show how water contributes to growth and poverty. Many projects worldwide related to water and inclusive growth can also be featured as case studies.
[25] **Water.org** is willing to contribute that the WASH is needed for economic development and education outcomes to be achieved at the local levels.
[26] **UNU-INWEH** would like to contribute in terms of the value of marginal-quality waters as a source of energy.

- Value across entire value chain (value vs. price)
- Cost of pollution discharge, and of environmental and social impacts (e.g., receiving water body and human health); social return on investment; economic case for improved water quality management
- Risk to business as a way to value water, company water valuation exercises, water stewardship alliances and tools
- Water accounting (e.g., national capital accounts, hybrid flow accounts) and footprints (incl. links to similar approaches in agriculture and other sectors)
- Water use efficiency, water productivity and water use intensity
- Smart design, use and control (incl. use of digital water technology)

Chapter 7 – Socio-Cultural Values
Words**: 4,000**
Lead Agency: **UNESCO-IHP**
Contributing Agencies**: UNESCO World Heritage Centre** (TBC)**, Water.org, OHCHR, UNU-IAS, IAHS[27], UNDP SIWI WGF[28], SIWI ICWC[29], IWMI[30], WfWP, UN-Women** (TBC), **WYPW**

Examines the complex and diverse blend of factors framing relationships with water *and shaping socio-cultural values: human identity, rights, ethics, world views, cosmologies, and belief systems, cultural heritage, sense of place, art and aesthetics, and quality of life etc. How can the more 'intangible' aspects of water be addressed? Opportunities for valuing water for peace building'.*

- Factors shaping socio-cultural values: human identity, rights, ethics, norms, world views, cosmologies, belief systems, faiths, gender, cultural heritage, sense of place, art and aesthetics, and quality of life, etc.[31] [32]
- Water as a socio-cultural 'connector'.
- Peace creation [33]value of water (e.g., transboundary context, crisis situations, forced migration)
- Addressing values, needs, and perceptions of under-represented and marginalised groups, incl. indigenous communities, subsistence rural communities
- Examine methodologies to address more intangible aspects (e.g. Social return on investment, SRoI)
- Influencing behavioural patterns and perspectives.
- Spiritual and faith-based perspectives
- Examples of rivers given 'human' status (e.g., New Zealand, India, Ecuador, Lake Erie in Ohio[34])

[27] **IAHS** would like to contribute on diversity of sociohydrology, paradoxes, traditional knowledge and regulation modes.
[28] **UNDP SIWI WGF** is willing to contribute concerning addressing values, needs and perceptions of under-represented and marginalised groups, incl. indigenous communities; spiritual and faith-based perspectives and examples of rivers given 'human' status.
[29] **ICWC** hosted by SIWI is willing to provide content related to opportunities for valuing water for peace building.
[30] **IWMI** can contribute on gender, multiple-use water services research and with its transboundary work.
[31] **Water.org** would like to contribute in terms of gender aspect and quality of life.
[32] **UNU-IAS** is willing to contribute on the quality of life, as well as gender, indigenous people, and their relationship to the natural environment.
[33] WYPW is willing to provide input on Blue Peace Index which is being currently developed by SADC and the Economist Intelligence Unit
[34] **Water.org** is willing to contribute with a case study on Lake Erie, Ohio

PART 3

Chapter 8 – Regional Perspectives

Lead Agency: **Regional Economic Commissions (ECA, ECE, ECLAC[35], ESCAP and ESCWA) and WWAP**

Contributing Agencies**: GWP**

The objective is to provide insights into the theme 'valuing water' from different regional perspectives. Structure, approach and practical details to be explored with the Regional Economic Commissions.

PART 4 – RESPONSE OPTIONS

Chapter 9 – Creating an Enabling Environment for Change

NOTE: These three major sections will either be combined into one chapter or will appear as three separate chapters. The decision will be taken in conjunction with the Lead Agencies after the first full drafts have been submitted.
In terms of the production process, it is proposed to address these sections as separate chapters, with a specific Lead Agency (and list of potential contributors) for each one.

- **Governance and Management Systems**
  Words**: 3,000**
  Lead Agency: **UNDP and GWP**
  Contributing Agencies**: FAO, GWP, Water.org, WaterLex, UNDP-SIWI Water Governance Facility[36], UNCCD, UNESCO-IHP, UNU-FLORES, WSSCC, OHCHR, IAHS[37], WfWP, WYPW**

  Examines how valuing water can influence governance and management systems, and inversely the role that governance and management systems in moving the concept of valuing water forward. Links back to human rights and SGD frameworks, complimenting Ch1.
    - How recognition of multiple values serves to improve (i.e. silo approach) (and complicate) governance of water
    - The Human Rights to Water and Sanitation (e.g., Law in Mexico) and the SDG framework
    - Factors influencing value judgements, e.g., degree to which ethics is institutionalized in water decisions and water behaviours, equity and transparency,
    - Politics, decision-making and political will (e.g., failure to fully value benefits as cause of political neglect and mismanagement of water; power dynamics and asymmetries, corruption); resolving conflicting values and interests
    - Policy making cycle and how government values water (incl. metrics for assessing costs and benefits)
    - International and national laws, regulations, rights-based mechanisms, standards, and protocols
    - Multi-stakeholder dialogue and participation (e.g., engagement, visions and objective setting, monitoring)
    - Ownership frameworks
    - Roles and responsibilities of state and non-state actors

[35] **ECLAC** commented that: 'Regional sections should aim at providing the main examples from discussion in previous chapters and by placing these sections before recommendations, it leaves little space for discussion on more relevant regional or sub regional level policy insights. Also, *it would be interesting that insights from UNESCO on socio-cultural aspects are embedded on regional chapters.'*
[36] **UNDP SIWI WGF** is willing to contribute on indigenous water governance and management systems and relationships with water
[37] **IAHS** would like to contribute on IWRM, sociohydrology, crowdsourcing and citizen engagement

- Indigenous governance and management systems,
- Gender mainstreaming
- Water planning and allocation cycles and systems (economy vs. ecology, see EU directive; integration of water values into joint development and conservation planning) and mechanisms for water allocation, and optimizing of benefits and accounting for trade-offs

- **Financing**
  Words**: 3,000**
  Lead Agency: **World Bank**
  Contributing Agencies**: Water.org, AquaFed, WSSCC, IIASA, FAO, IAHR, IAHS[38], UNICEF[39], IWMI[40], Wateraid**

  The Chapter will focus on challenges and importance of getting tariffs and subsidies right, for balancing access with financing investment (i.e. mostly the first bullet point). Other topics such as the advantages and disadvantage to valuing water in terms of financing water resources management and WASH services provision, the roles and effects of subsidies in the sector for properly valuing water etc can be included based on the input to be provided by the contributors.
  - Role and effect of subsidies in the sector (incl. pro-poor pricing/tariffs/subsidies), appropriate pricing of water uses and services
  - Costing of and investment in water infrastructure projects, and efficiency of water investment (e.g., beyond project scale, sequencing investments in response to development policies), including provisions for maintenance and monitoring
  - Hybrid and blended finance models, aligned typologies of water infrastructure projects
  - Innovative finance and investment (e.g., impact investment, water sharing investment partnerships, indigenous-led finance models, water entrepreneurship)

- **Knowledge, Research and Capacity Building**
  Words**: 3,000**
  Lead Agency: **WWAP and IHE**
  Contributing Agencies**: UNDP, FAO, IWRA, UNIDO, GEMI group (t.b.c.), ILO (t.b.c.), WfWP, IAHS, UNESCO-IHP[41], WYPW**

  Describes what is needed in terms of advancing data, information and knowledge about valuing water for stakeholder empowerment, policy and decision-making, and the improved management of water resources and WASH services provision. Includes the main areas of innovation and highlights gaps in research and areas of innovation.
  - Valuing data (incl. big data, citizen science data), access, inclusive and equitable collection, ownership and use
  - Traditional, and local sources of knowledge
  - Indigenous knowledge and protocols[42]
  - Knowledge sharing

[38] **IAHS** is willing to provide case studies and review the Chapter.
[39] **UNICEF** is willing to contribute on the issue of affordability.
[40] **IWMI** is willing to contribute on economic versus financial returns to water infrastructure and share its experience with drafting the water strategy of the new Asian Infrastructure Investment Bank (AIIB).
[41] **UNESCO-IHP** can provide input on improving capacity and water education, value of the water related scientific knowledge (i.e. the investment of a country on hydrological sciences)
[42] **UNDP** is willing to contribute in terms of indigenous perspectives

- How existing and emerging novel technologies, tools and platforms can help drive improved valuing water (e.g., digital and low-cost technologies; artificial intelligence; European technology platform on the value of water)
- Areas needing targeted methods and capacity development

Chapter 10 – Moving Forward
Words**: 2,000**
Lead Agency: **WWAP**
Contributing Agencies**: IAHS[43], IHA[44], SIWI ICWC[45]**

Highlights the main messages of the report, summarizes the 'value added' of valuing water in the context of the current landscape and challenges of valuing water, identifies emerging themes and opportunities, and issues a call for action from different stakeholder groups.

- Determining multiple values of water across sectors (at all stages of water management cycle) and addressing conflicting demands and views
- Addressing water scarcity as a magnifier of the value of water, incl. climate change.

- Resilience in context of managing risks (e.g., water-related disasters incl. drought, floods; unmanaged or forced migration)
- Integrated and inclusive development planning
- Promoting non-water interventions to help resolve water problems
- Valuing water as an asset for peace
- Call for action for valuing water (links to other global calls for action from stakeholder groups, e.g., UN decade of ecological restoration, emergency recovery plan for freshwater biodiversity, environmental flow action agenda)

[43] **IAHS** is willing to contribute on transition, transformation, ultimate values, paradigm shift, SDGs progress
[44] **IHA** would be able to contribute, in particular on how to tackle the increasing hydrological uncertainty and how to assess the resilience of a reservoir and a hydropower project
[45] **International Center for Water Cooperation** (ICWC) is willing to contribute with regards to valuing water as an asset for peace