



Proceedings from the Water JPI IC4WATER Knowledge Hub

Workshop #3

*'Seeking Synergies to Contribute to the UN World Water Development Report 2022:
Groundwater-Making the Invisible Visible'*

Virtual Meeting via Zoom, 20 May 2021

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List of Abbreviations

CSA: Coordination and Support Action

JPI: Joint Programming Initiative

KH: Knowledge Hub

IC4WATER CSA: IC4WATER Coordination and Support Action

IC4WATERKH: International Cooperation for Water Knowledge Hub

KHCEC: Knowledge Hub on Contaminants of Emerging Concern

SRIA: Strategic Research and Innovation Agenda

UN SDGs: United Nations Sustainable Development Goals

UN WWDR: World Water Development Report

UNESCO WWAP: World Water Assessment Programme

Water JPI: Joint Programming Initiative on Water

WATER4SDGs KH: Knowledge Hub on Water Related SDGs

Executive Summary

The Water Joint Programming Initiative (JPI), “[Water Challenges for a Changing World](http://www.waterjpi.eu/)” (<http://www.waterjpi.eu/>), was launched following a decision of the Competitiveness Council of the European Union (EU) on 6 December 2011.¹ In June 2020, the Water JPI membership included 23 member countries and three observer countries, which collectively represented 88% of European public research, development and innovation investment in water resources. The Water JPI is dedicated to tackling the ambitious challenge of achieving “[sustainable water systems for a sustainable economy in Europe and abroad](#)”.

The Water JPI, as part of its Coordination and Support Action [IC4Water](#), is looking at opportunities to develop a common strategy for international cooperation with other European initiatives. IC4Water was launched in January 2017 and is funded by the European Commission under Horizon 2020. IC4Water aims to implement joint activities in a dedicated effort to reinforce international cooperation on research, development and innovation to address global water challenges.

Motivated by providing a fresh impetus to transnational collaboration and knowledge dissemination activities for proposing adaptive water policies, the second Knowledge Hub of Water JPI was launched in December 2019. Abbreviated as the [WATER4SDGs](#), the new Knowledge Hub functions as a platform to spread the outstanding water knowledge across international community by utilizing intelligible means. The Knowledge Hub specifically addresses the global water challenges posed against achieving UN Sustainable Development Goals (UN SDGs) under the theme “[New Water under Water Scarcity](#)”.

This report contains the proceedings of the Water JPI IC4WATER Knowledge Hub (Water4SDGs) Third Workshop “[Seeking Synergies to Contribute to the UN World Water Development Report 2022: Groundwater-Making the Invisible Visible](#)”, which took place on 20 May 2021 as a virtual meeting.

This was the third workshop in a series of four, designed to understand the editorial process of World Water Development Report 2022 (WWDR 2022). In particular, the third workshop aimed to learn from research studies related to groundwater management that are coordinated by the Water4SDGs Knowledge Hub’s wider network and develop a roadmap to create text proposals based on the presentations in order to contribute to the WWDR 2022.

1. Introduction

The World Water Development Report (WWDR) is the UN's annual flagship report on water that presents a fact-based account of the current state of knowledge, describing the challenges and opportunities of improved water management in the context of sustainable development. It highlights best practices and potential response options as well as in-depth theoretical analyses on the selected topic of the report. The theme for the WWDR 2022 is selected as "Groundwater: Making the Invisible Visible".

The Water4SDGs Knowledge Hub Seed Group had an online meeting on April 8th, 2021 to decide on the KH's activities for 2021, including the 3rd Workshop. In conclusion, it was agreed that the KH can seek for opportunities to contribute to the WWDR 2022 with its expertise and the 3rd Workshop, which was planned for May 20th, 2021, could be a proper occasion to understand the process and draw a roadmap.

Guided by this background, [the 3rd Workshop of Water4SDGs Knowledge Hub](#) was attended by the KH Seed Group members, Water JPI partners and invited speakers to understand the editorial roadmap of the WWDR 2022 and present several state-of-the-art research studies conducted by the wider network for the KH. The ultimate aim was to analyse how these research studies can be translated into short narrative texts to be submitted to the editorial team of the WWDR and develop a roadmap with clear timelines to coordinate the process.

In total 22 participants attended the workshop who are the members of the KH's Seed Group (6), Water JPI Partners (11) and invited speakers (5). The list of attendees is available as [Annex II](#) at the end of the document.

2. Workshop Programme

The half day event started with the morning session, which included one plenary presentation and two keynote speaks followed by a Q&A session. The workshop continued with three research presentations delivered by the peers of Seed Group members representing [Trinity College Dublin](#), [University of Cagliari](#) and [Wageningen University](#). The last part of the workshop was dedicated to a short discussion and wrap-up to set up a tentative roadmap for coordinating the process of contribution to the WWDR 2022 by taking into consideration the research projects presented during the day. The agenda of the workshop is included at the end of the proceedings as Annex I.

2.1 Plenary Session

The opening and welcome address was done by [Osman Tikansak](#) (Formas). The morning session was chaired by the Scientific Chair of Water4SDGs Knowledge Hub, [Roberto Deidda](#) (University of Cagliari). [Osman Tikansak](#) presented the editorial roadmap for the preparation of WWDR 2022 based on the information exchange that has happened during the previous months between the Water4SDGs KH and the UNESCO World Water Assessment Program (WWAP), which is the coordinator agency of the WWDR 2022. The WWDR 2022 will be composed of 15 chapters of which

some of them can be contributed by short narrative text proposals drafted by the KH's Seed Group. These narrative texts could address case studies and best practices for sustainable management of groundwater resources. Considering the editorial timeline of the WWDR 2022, the plan is to develop and share with the UNESCO WWAP at least one, but preferably more text proposals that are 100 to 300 words long until **June 18, 2021**.

The first keynote presentation was delivered by [Shafick Adams](#) (Water Research Commission of South Africa). In his presentation he underlined the huge potential of untapped groundwater resources to supply the needs of drinking water, industries, and agriculture in South Africa. The real challenge that lies ahead is to translate this potential into growth, jobs, and new products and services in an equitable manner by increasing the country's 'adaptive capacity'. The presentation also covered some of the policy and technical measures being implemented to overcome this challenge.

[Dominique Darmendrail](#) (BRGM-France) covered some of the major challenges of management, monitoring and remediation of Groundwater, with some illustrations on how they are addressed in France. The high dependency on groundwater resources, particularly for drinking water supply, makes France an exceptional case. Micropollutants diffusion into the groundwater resources necessitate implementation of robust monitoring and treatment techniques, whereas climate change brings additional stress on the groundwater recharge capacities. One possible solution is suggested as managed aquifer recharge that should be supplemented by new models of governance and measures to increase acceptability of these new solutions including reuse of treated wastewater where applicable.

2.2 Research Presentations

The second half of the workshop started with the presentation of [Mathias Kuemmerlen](#) (Trinity College Dublin-Ireland). His team's research focuses on hydrometeorological analysis used for developing conservation and management strategies for freshwater pearl mussel (FPM). Accordingly an individual mussel can filter up to 50 litres of water per day. Unfortunately, they are one of the most endangered freshwater species in the world that are being listed in the IUCN Red List. In the case study area; Ireland, FPM populations' conservation success depends on the state of peatlands and forests that are natural consumers of groundwaters. This study recommends effective utilization of remote sensing data to monitor and manage hydrometeorological state in catchments with FPM populations.

The following presentation by [Francesco Viola](#) (University of Cagliari-Italy) elaborated on the analysis of the hydrological cycle in Sardinia by utilizing satellite data of GRACE Mission. It was underlined that through the utilization of remote sensing data it is possible to supplement data gaps for validation of hydrological models at local level. The research outcomes provide a new simple way to assess and reconstruct long-term variations of the total water storage and actual evapotranspiration, which can be used for long term groundwater allocation and management goals at local level.

The final presentation was delivered by [Rita Branco](#) (Wageningen University-the Netherlands). Her study focuses on using innovative biofilm techniques to supplement *in situ* biodegradation of micropollutants. Removal of micropollutants at drinking water treatment plants to a certain level is possible, yet it has serious drawbacks including intense usage of toxic oxidation products, inability to perform micropollutant breakdown and high costs of operation added on top. Utilization of dissolved organic matter (DOM) based technologies to treat micropollutants in groundwater systems yields promising results that can be scaled-up as a reliable solution in near future.

3. Discussion and Wrap-up

The final part of the workshop was allocated for identifying the potential chapters in the WWDR 2022 where contributions could be made by synthesising the presented research projects. [Kevin Mcguigan](#) (Royal College of Surgeons-Ireland) moderated the discussions, and the participants have agreed on the following chapters as being appropriate for contributions with short narrative texts:

- Chapter 4 – Groundwater and Agriculture (text proposal by Rita Branco)
- Chapter 5 – Groundwater and Human Settlements. (text proposal by Rita Branco)
- Chapter 6 – Groundwater and Industry (text proposal by Rita Branco)
- Chapter 7 – Groundwater, Ecosystems and the Environment. (text proposal by Mathias Kuemmerlen)
- Chapter 8 – Groundwater, Aquifers and Climate Change (text proposal by Francesco Viola)
- Chapter 9 – Regional Perspectives (text proposal by Shafick Adams)
- Chapter 10 – Building the Knowledge Base and Keeping it Up-to-Date (text proposal by Francesco Viola)

The selected chapters only reflect the preferences of the workshop attendees and the final decision to include the proposed texts in the WWDR 2022 will be made by the World Water Assessment Program as the coordinator and publisher of the report.

Following the workshop, the researchers were communicated about the methodology and roadmap for the proposal development process and provided with template documents as a guideline to start drafting their proposals. As underlined earlier, the KH will work together to be able to submit the proposals to the WWAP by **June 18, 2021**.

Annex 1. Agenda

Water JPI Water4SDGs Knowledge Hub Workshop #3: 'Seeking Synergies to Contribute to the UN World Water Development Report 2022: Groundwater- Making the Invisible Visible'

Online Workshop
Thursday 20 May 2021-All times are CEST (i.e. Brussels Time)

PLENARY SESSION		
Link to the Meeting: Zoom (Instructions to join the meeting are provided at the end of the agenda)		
09:30 - 09:50	INTRODUCTION Welcome Address Workshop Agenda and ground rules Tour de Table - introduction of meeting attendants	Osman Tikansak, Facilitator of Water4SDGs Knowledge Hub/Formas
09:50 - 10:10	PLENARY-1 World Water Development Report 2022 Preparations: Editorial roadmap and expected contributions	Osman Tikansak, Facilitator of Water4SDGs Knowledge Hub/Formas
10:10- 10:30	PLENARY-2 Groundwater Resources in South Africa: Challenges and Management Options	Shafick Adams, Water Research Commission, South Africa
10:30- 10:50	PLENARY-3 Groundwater challenges: management, monitoring and remediation some examples	Dominique Darmendrail, Scientific Programme Director/BRGM France
10:50- 11:10	Q&A-Plenary Session	Moderator: Roberto Deidda, Scientific Co-coordinator of Water4SDGs, University of Cagliari/Italy
11:10 - 11:20	<i>Coffee Break</i>	

Seed Group Members' Presentations

11:20 - 11:40	Hydrometeorological states from remote sensing for freshwater pearl mussel conservation and management	Mathias Kuemmerlen, Trinity College Dublin/Ireland
11:40-12:00	Analysis of the hydrological cycle in Sardinia by utilizing satellite data of GRACE Mission	Francesco Viola, University of Cagliari/Italy
12:00-12:20	Micropollutant Contamination of Groundwater: Biodegradation as a promising solution	Rita Branco, Wageningen University/the Netherlands
12:20 - 12:30	<i>Coffee Break</i>	
WRAP-UP SESSION		
12:30-13:00	<p>Discussion and Wrap-up</p> <p>Based on the research presentations, how can Water4SDGs KH contribute to the World Water Development Report 2022?</p>	<p>Moderator: Kevin McGuigan, Scientific Co-coordinator of Water4SDGs, Royal College of Surgeons/Ireland</p>
13:00	Closure	Roberto Deidda, Scientific Co-coordinator of Water4SDGs, University of Cagliari /Italy

Annex 2. Attendees

Water JPI Water4SDGs Knowledge Hub Workshop #3:

Participant name	Participant affiliation	Role
Alessandra Casali	ISPRA	Water JPI member
Dominique Darmendrail	BRGM	Invited Speaker
Esther Diez	ANR	Water JPI member
Francesco Viola	University of Cagliari	Invited Speaker
John Dini	WRC	Seed Group
Kata-Riina Valosaari	AKA	Water JPI member
Kevin McGuigan	RCSI	Scientific Chair
Kati Vierikko	SYKE	Seed Group
Kristina Laurell	Formas	Water JPI member
Lisa Sheils	EPA	Water JPI member
Mamohloding Tlhagale	WRC	Water JPI member
Maria Chiara Sole	FORMAS	Water JPI member
Mathias Kuemmerlen	Trinity College Dublin	Invited Speaker
Monique Berendsen	DGWB	Invitee
Osman Tikansak	Formas	Water JPI member
Prisca Haemers	RWS	Water JPI member
Rita Branco	Wageningen University	Invited Speaker
Rita Lado	University of Porto	Seed Group
Roberto Deidda	University of Cagliari	Scientific Chair
Shafick Adams	WRC	Invited Speaker
Tiyani Chauke	WRC	Water JPI member
Véronique Briquet-Laugier	ANR	Water JPI member