UNESCO'S GROUNDWATER YOUTH NETWORK (GWYN)

ANNUAL NEWSLETTER 2023

Contributors:

- Members of the Communication Committee
- Committee Leads
- GWYN Members

TABLE OF CONTENTS

INTRODUCTION

BY CORAZON ACHIENG

As the year begins, we look back reflectively at our achievements, pay attention to our lessons, and move forward with the wisdom acquired.

The **UNESCO Groundwater Youth Network** was quite active in the past year, having grown from an idea to a reality. It is composed of various committees such as the Communications Committee, the Scientific Committee, and the Partnership committee. The network knows no geographical boundaries with members drawn from countries across the globe whose main goal is to connect young leaders to share ideas on the sustainable management of groundwater.

This newsletter is the culmination of the ideas and work of the Communications Committee as they work to enhance collaboration among groundwater professionals across the globe. The Scientific committee presented a paper titled "Climate change and karst aquifers" during the International Symposium on Drought and Climate change. They emphasized the importance of sharing knowledge on drought prediction to help mitigate adverse climate change in the future.

The highlight of our year was the UN Groundwater Summit which was held from 6th Dec. 2022 to 8th December 2022. It was a culmination of a year-long campaign dubbed, "*Groundwater: making the invisible visible.*" the youth forum gave young groundwater professionals from across the world the opportunity to give their valuable contributions on cooperation that can help in making groundwater visible.

As they say, we are just getting started. We look forward to having more regional events that will help groundwater professionals share their ideas, find ways of collaborating and make significant advances in making the **Invisible, Visible.**

Onwards and upwards!

Corazon Achieng
Vice Chair,
Communications Committee
UNESCO GWYN

THE OUTLOOK OF AND GOALS FOR PRESERVING GROUNDWATER

BY GA-HYEON KIM OF THE REPUBLIC OF KOREA, A MEMBER OF GROUNDWATER YOUTH NETWORK

Definition of Groundwater

Groundwater exists underground in saturated zones beneath the land surface. Unlike the popular belief, groundwater does not form underground rivers. Instead, it fills the pores and fractures in underground materials such as sand, gravel, and other rocks just in a similar way water fills a sponge. Groundwater moves slowly, typically at rates of 7-60 centimeters a day in an aquifer, an area formed by the natural flow exile of rock materials or the pumping of the rock. Because of such slow movement, groundwater mostly remains for hundreds or thousands of years in an aquifer unless pulled out on purpose.

Groundwater is replenished by **precipitation,** whose quality and quantity are unevenly distributed. Its form varies from evaporation through transpiration by plants to infiltration into the pores or cracks of the soil and rocks. An unsaturated zone is located between the land surface and the aquifer water, where a little amount of water exists. After a heavy rain, this zone transforms into a saturated zone with a great amount of water and moisture. Any kind of excess water enters the water table and, at the end, this storage water goes to the aquifer and becomes streams, springs, and wells.

Importance of Groundwater

Even though groundwater occupies **a small percentage of total water on Earth**, it accounts for a great portion of total freshwater, covering roughly 1.7 percent of all the water of the planet and around 30.1 percent of all the freshwater. Out of 5,614,000 cubic miles of groundwater, 54% is saline existing below oceans while the other 46% of groundwater is freshwater located below land surfaces. Regarding the water usage in the United States, for example, 40%of water for public supplies and 39% for agriculture are from non-saline groundwater, which signifies it as the fundamental source of living.

Groundwater is one of the **globe's most important natural resources**. Statistically, groundwater occupies 37% of water supplied from the water department on average of each city for households and businesses. It also provides drinking water for more than 90% of the rural population who cannot get their water delivered from a city's water department or a private water company. Major U.S. cities as San Antonio and Texas heavily rely on groundwater. In those regions, about 42% of the water used for irrigation also comes from groundwater.

Not only the people but also the local wildlife and the river itself rely on groundwater. In the Big Bend region, some parts of Rio Grande-Rio Bravo, more than 50% of the water comes from groundwater during the months when the river volumes get low and its local wildlife prospers. Groundwater is also the main source of wetlands and springs, critically important for conserving freshwater biodiversity and bird migrations.

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Groundwater also controls many **geographical features on Earth.** For example, it creates caves and sinkholes resulting from the dissolution of rocks while forming oases in the desert regions, all of which provide habitats for animals and plants.

Current Problems of Managing Groundwater

The lack of systematic communication and data information on groundwater is one of the most significant problems. According to the Transboundary Water Cooperation report based on Sustainable Development Goal 6.5.2, there are few agreements and international understandings on the management of transboundary aquifers related to groundwater issues. Even though there are more than 150 countries with transboundary groundwater systems, this lack of systematic communication and data information is still an unsolved problem.

Lack of investment with basic studies is also a big problem. Without basic studies, it is impossible to secure the role of groundwater for society and the environment. Specific data researches should be conducted and informed to induce evidence-based decision making and reduce the data gap regarding groundwater quantity and quality.

To overcome those issues, young groundwater professionals should constantly be conscious of this subject. Since the framework of the Sustainable Development Goals for groundwater advancement is set, all we need to do is encourage youth to be more actively involved in this matter.

Goals of Preserving Groundwater

Making an efficient **groundwater management system** is the primary goal. To do so, developing groundwater resources based on planning effective management policies and constantly monitoring the impacts of extraction on groundwater systems are important. Monitoring groundwater extraction and aquifer water levels will provide key information on groundwater resource management.

Groundwater is an extensive, concealed, and inaccessible resource, and its change in quantity and quality is very slow. Those characteristics of groundwater mean that we need to have more elaborate monitoring networks and data interpretation that can thoroughly catch the impacts of groundwater extraction and contaminant loads.

Although groundwater management is an extremely crucial issue, unfortunately, we do not seem to have the proper coordination among national and local agencies and stakeholders that are all involved. Clear data collection and storage protocols need to be agreed among all agencies, and a systematic database along with arrangements for data sharing via the internet should be firmly established.

Since Groundwater occupies 97% of available fresh water, it is critically important that this resource is recognized for its sustainability. However, the Sustainable Development Goals (SDGs) of the 2030 Development Agenda does not explicitly account the significant roles that groundwater plays. Even though Groundwater and SDG targets all include identifications of 'evidence-based' and 'logical' interlinkages, groundwater is poorly recognized and captured at the SDG target level. The society should know that key features of groundwater relevant to the SDGs are its use, **management and sustainability.**

As to groundwater-related studies, there is a lack of globally useful, up-to-date and SDG-relevant groundwater data available, which makes it difficult to make groundwater issues globally and even locally heard. By unveiling the groundwater issues, we should keep emphasizing the importance of preserving groundwater to the degree of being recognizable while working harder to develop the technologies to aid the preservation of groundwater.

GROUNDWATER AT A GLANCE

BY CORAZON ACHIENG,VICE CHAIR AND MEMBER OF COMMUNICATIONS COMMITTEE,UNESCO GWYN

Did you know that 97% of the freshwater in the world is found beneath the earth's surface? It is estimated that over one-third **of the world's population** uses groundwater as their main source of water. To put this into perspective, here is a brief round-up of videos and articles on the state of groundwater across the globe

What to sample *(<5 minutes)*

What does the continued extraction of groundwater mean for the millions who depend on it? This brief **video by UNESCO** highlights how various countries depend on groundwater and the hidden threats of continued abstraction.

What to nibble (<10 minutes)

The rise of sea levels across the globe has been associated with increases in adverse events such as storms and flooding. Groundwater is not immune to the effect of the rising seawater levels as **Simon Cox, a scientist from New Zealand explains** in this video on the rise and fall of urban groundwater.

What to mull over (< 30 minutes)

While the threat of climate change may spell doom for surface water sources, groundwater sources may offer a silver lining. It is estimated that groundwater reserves in Africa are about 20 times larger than reserves found in lakes and other surface sources.

In this article, two researchers highlight **the role of data in predicting the resilience of groundwater reserves in Africa.**

What have you recently learned about the state of groundwater globally?

The **Groundwater Youth Network (GWYN)** is a platform for engaging directly with early career and mid-career groundwater professionals across the globe. Groundwater is the resource which hosts the aquifers which need to be protected. The year 2022 has been very productive for the **GWYN Network,** the Network has taken the initiative to bridge the intergenerational gap through proper communication to find the solution about groundwater issues.

The groundwater youth network is created to increase the understanding of these complex processes. The **UN-Groundwater Summit 2022** in Paris under the theme of ***Making the invisible Visible*** has unlocked the potential by demystifying to bust some common myths. The summit was animated by various plenary sessions, regional dialogues, discussion on transboundary aquifers with a special focus on Africa, and a session on strengthening interface science policy practice. During the summit, **the Youth Declaration on Groundwater** was announced by GWYN Chair, Michel Frem. He has highlighted that the youth are agents of change, innovators, and future leaders of knowledge sharing; sustainable development, use and management of groundwater resources; gender equality and inclusivity. For the recording of the event and summit, *click the available link* .

COMMITTEE ANNUAL REPORTS

The GWYN works to connect different organizations within the Groundwater and Water Disciplines. We are here to network, collaborate, and share opportunities with one another. Together, we can solve modern-day groundwater issues and challenges using innovative and collaborative solutions. The following sections provides an overview of each of the Committees.

PROJECT COORDINATION COMMITTEE- SABINA KHATRI

The Project Coordination Committee aims to promote the GWYN in the regional scale through various activities directly relevant to the regions and coordinate among other committees within GWYN.

The Project Coordination Committee is responsible for organizing groundwater-related activities at the regional level, based on UNESCO regions such as Africa, Arab States, Asia and The Pacific, Europe and North America, and Latin America and the Caribbean. The committee was established to coordinate efforts between different committees within GWYN on various events and projects and to carry out activities on a regional scale. A 16-membered committee was formed in response to open calls for individuals interested in leading their respective regions.

In 2022, the committee made significant strides by holding a "Meet-and-Greet" with all its members on September 16th followed by submitting and presenting a paper titled "African Voices from the UNESCO Groundwater Youth Network" at the 5th SADC Groundwater Conference in November. They also worked towards organizing the first "Groundwater Youth Forum" at the UN Water Summit on Groundwater in December by conducting five regional youth consultations. The outcomes of these consultations were used to create a "Youth Declaration" and a “Video message” at the Summit.

Currently, the committee is working on preparation towards the World Water Forum 2024 being closely coordinated by the Asia and Pacific Region (APAC) along with the networking and intergenerational events in the regional level. The committee aims to engage more groundwater professionals across all five regions and highlight groundwater activities.

OUTREACH COMMITTE- JONATHAN OPOKU OTI

The Outreach Committee seeks to support the groundwater Youth Network reach the general public through social media, media and creative art designs.

The Outreach Committee of the GWYN promotes public awareness through content development and dissemination of the network's activities through social media and other public platforms. This committee works with three working groups names; social media management, Content creation and Graphic Design teams.

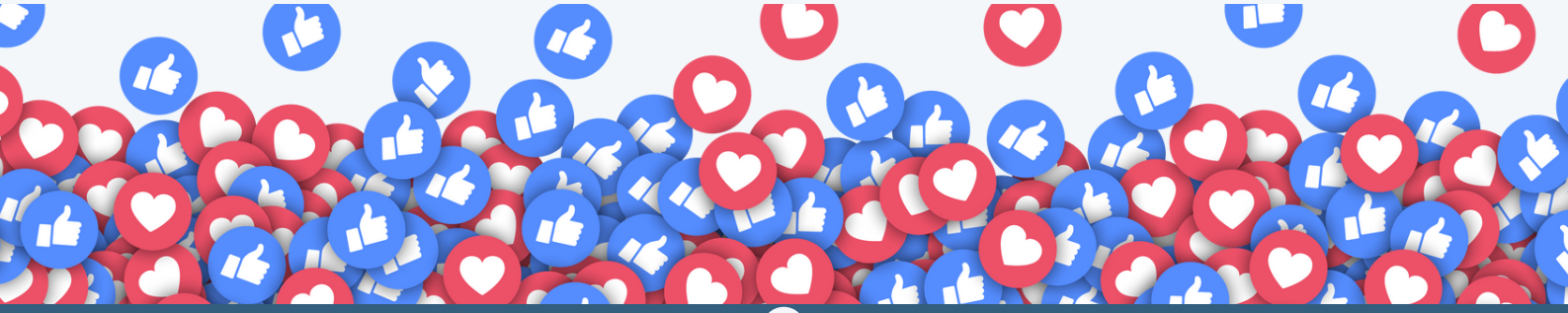
Since the launch of the GWYN in March 2022, the network has reach more than **1000 followers** on social media.

719 FOLLOWERS	**259 FOLLOWERS**	**58 FOLLOWERS**	**25 FOLLOWERS**	**20 FOLLOWERS**

The Outreach committee has also worked with UNESCO office to develop a banner for the UN-Water Summit that took place in Paris in December 2022. In addition, the Outreach team worked with the representatives of the other committees to create a promotional video for the network that was featured during the UN-Water Summit.

The committee is currently working on the videos submitted by the network members on groundwater story across all the regions. These videos will be shared on all platforms once it is ready.

Our next goal is to reach over 1000 followers on all social media platforms and at least 5000 followers in total by **December 2023** to increase networking and promote collaboration between existing water sector organisations and the network.



SCIENTIFIC COMMITTEE- AMIN SHAKYA

In the previous year, the Scientific Committee has participated in few events around the globe. Most notably, Gabriela Calderon, Deputy Head of the Scientific Committee chaired a session at the 3rd IAHR Young Professionals Congress. The operation of the scientific committee has been arranged in terms of working groups.

Each working group has a focused theme where the global groundwater youth and professionals contribute to advance the scientific facets of the groundwater sciences. In the forthcoming year, we look forward to continuing and fostering the working groups.

Additionally, we are always welcome to branch out new working groups based upon the interests of our members. Some ongoing activities from these working groups include two survey forms currently being developed focused on groundwater monitoring and groundwater governance, respectively. Lastly, we look forward to further participate in and engage the global groundwater community across various themes related to the groundwater sciences.

COMMUNICATION COMMITTEE- JOSEPH FICKETT

The role of the Communication Committee is to be an internal regulator of communications between the different members of the network by disseminating information on all available opportunities.

The Communication Committee has had a busy and productive year. We have established two separate committees, the Podcast and Newsletter committees. Under the leadership of Yusuf Salam, the Podcast Committee has recently recorded its very first episode, which will be released in a few weeks. The newsletter committee, chaired by Nusrat Yaqoob, has been in the process of creating this Annual Newsletter and will continue to produce newsletters once per quarter. Together, we have come so far and done so much as a cohesive unit. As we conclude our reflection on this past year, we can not help but look into the future of our committee with much anticipation. The coming year will hopefully bring more opportunities to streamline communication of the network, engage membership, and connect youth professionals from around the globe. We look forward to finding our rhythm, as Vice-Chair Corazon Achieng so eloquently put it, in both the Podcast and Newsletter Committees and anticipate welcoming new membership as the year begins.

PARTNERSHIP COMMITTEE- PABLO NAVAS

The Partnership Committee are intended to formalize, consolidate and amplify the Partnership priorities of GWYN with country/regional support. The work of these Partner Committees is expected to align with the priorities outlined in the GWYN.

The year 2022 was to establish the bases well and define an organizational map of functions since it is important to have solid leadership that allows the implementation and growth of the network. That is why we work on three axes: regulations, associations, members, and allies. For this reason, it was decided to call elections to have a work team that has the capacity to organize and structure all the human capital within the network well.

Knowing that it is not an easy job and that everyone has the right to be elected, the vote was carried out democratically. We have had several meetings with the Management Committee, in order to carry out an action plan according to the needs of our members. In addition, I was invited as a national delegate to participate in the COP 27 SharmEl Sheikh, Egypt, which was beneficial for the GWYN, since contacts were established with members of other organizations and possible new partners.