Groundwater Activities at AMCOW

Online Course on Groundwater Management in African Lake and River Basin Organizations
AMCOW PAN-AFRICAN GROUNDWATER PROGRAM (APAGroP):

AMCOW Agenda for Sustainable Management of Groundwater Resources and Trans-boundary Aquifers in Africa
I. Introductory BACKGROUND – About AMCOW and APAGroP

II. AMCOW’s Key Groundwater Activities

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VII. WAY FORWARD – Collaboration and Partnership
Water resources are critical to socio-economic growth and improvements of both urban and rural livelihoods in Africa.

More importantly, the attainment of 10 out of the 17 SDGs, are clearly directly or indirectly related to Clean Water and Sanitation (SDG-6).

Also, the attainment of 8 out of the 17 SDGs, are clearly directly or indirectly related to tackling the menace of CC (CC-Action -SDG-13).

**THEREFORE, the strive for water security becomes more critical with:**

- future pressures on water resources at both the supply and demand end and
- particularly related to population, climate, and land use change.
In Africa, the crucial role of water in achieving socio-economic development is widely recognized.

The Africa Water Vision for 2025 envisage:

An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment.

- Sanitation and Hygiene has historically attracted attention within the framework of WASH;
- AMCOW’s strategy is inclusive integrated water management for water, food and security.

However, despite the enormous surface and groundwater resources in Africa, achieving water security for Africa presents a challenge due to:

a) Population growth  
b) Rising living standards

c) Land use change  
d) Climate change
AMCOW’s 2018-2030 Strategy has been prepared with the overarching goal of strategically positioning AMCOW effectively to deliver on its two commitments:

1) Assure the dignity of the people of Africa by providing adequate and sustained sanitation services
2) Support MS to develop, manage, and utilize water resources to assure water, food and energy security in Africa.

To realise the above mandate and commitments, AMCOW identified **GROUNDWATER** as a priority intervention area in its Strategic Plan 2018 -2030, and by extension Strategic Operational Plan (SOP) 2020 – 2024.

Consequently, for water Security in Africa, Integrated Water Resources Management (IWRM) focusing on both surface and groundwater at national and transboundary levels is required.
AMCOW is a Delivery Mechanism on Water and Sanitation for the Specialized Technical Committee (STC) of the African Union (AU) on Agriculture, Rural Development, Blue Economy and Sustainable Environment (ARBE).

The African Ministers’ Council on Water (AMCOW) was formed in 2002 in Abuja Nigeria for Political Advocacy and Policy Direction

- 55 Ministers from Member States of the AU
- 15 Members of Executive Council of Ministers
- 25 member of the Technical Advisory Committee
- Executive Secretariat

Vision
An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation and environment

Mission
Provide political leadership, policy direction and advocacy in the provision, use and management of water resources for sustainable social and economic development and maintenance of African ecosystems.
AMCOW STRATEGY 2018 – 2030

**Strategic Priorities (SP)**

- **SP1**: Ensure water security through integrated WRM
- **SP2**: Ensure Safely Managed Sanitation & Hygiene
- **SP3**: Promote water governance and transboundary water cooperation
- **SP4**: Strengthen AMCOW’s governance and delivery mechanisms

**Cross Cutting priorities (CCP)**

- **CCP1**: Enhance water and sanitation resilience to climate change
- **CCP2**: Contribute to adequate and sustainable financing of water and sanitation agenda
- **CCP3**: Improve monitoring, evaluation and knowledge management systems
- **CCP4**: Strengthen gender equality and youth empowerment in water and sanitation
Overview of AMCOW Strategy 2018-2030

A Water Secure Africa with Safe Sanitation for All

Keys Pillars

- Water Security
- Safely Managed Sanitation
- Good Water Governance
- AMCOW Effectiveness

Cross Cutting

- Water and Sanitation Resilience to Climate Change
- Sustainable Financing of the Water and Sanitation Agenda
- Monitoring, Evaluation, and Knowledge Management
- Gender Equality and Youth Empowerment
AMCOW convened the first GW workshop in **October 2019** in Nairobi, Kenya where several experts and representatives of financiers and Member Countries discussed on issues around Africa's GW development and management.

Later, **APAGroP** was formally launched in Kampala Uganda during the series of sideline meetings at the AfWA Congress in **February 2020**.
APAGroP: Aim and Goals

- APAGroP’s principal aim is to leverage on science and reassert to influence groundwater policy and practice in Africa. The goals are:

  - **G1**: To promote sustainable management and utilization of groundwater resources for water security and resilience.
  - **G2**: Promotion of appropriate technologies and practice in groundwater development and management.
  - **G3**: To improve the policy and practice of Groundwater in Africa for better lives and livelihoods.

The APAGroP is to provide continental leadership in sustainable utilization of groundwater for:
APAGroP: Other Objectives and Focus

Other Specific Objectives are:

❖ To promote sustainable management and utilization of groundwater resources for water security and resilience,

❖ To promote appropriate technologies and practice in groundwater development and management,

❖ To improve the policy and practice of Groundwater in Africa for better lives and livelihoods.

❖ To demonstrate benefits of GW development and thus make GW represented in the continent’s major strategic water programs.

❖ To promote information and knowledge sharing, and make GW knowledge from pilot accessible to decision-makers and

❖ To make African Union and Political Heads (presidents, ministers) of member states gain access to GW knowledge and information to improve in-country programs.
WHY Groundwater?

- Globally, there are *increasing dependency on groundwater*, from both national and transboundary aquifers for agricultural and domestic water supply.

- The potential of *groundwater* with respect to domestic and irrigation water supply in parts of rural Africa is high with up to 70% contribution in some cases.

- At least *320 million people in Africa lack access to safe water supplies*. Developing groundwater resources is the only realistic way of meeting this need across Africa.

- There are *increasing dependence of many urban centers on groundwater* (especially in Sub-Saharan Africa) in ensuring access to clean drinking water.

- 75% of the African population dependant on groundwater for basic water supply (UNECA et al., 2000).

- Groundwater-irrigated farming contributed to at least 40% of the world's food production and *70-80% of smallholder irrigated farming* food production in Africa.
Why Groundwater?

- The volume of water stored underground in Africa is estimated to be 20 times more than the freshwater stored in rivers and lakes.
- Groundwater demands are set to increase in the future (due to population increase, climate change, irrigated agriculture and industrial demands)
- GW is also a key resource for climate resilience, environmental protection and tackling poverty and improving socio-economic conditions of the populace.

**Water Security**

It provides inexpensive off-grid distributed water supplies to both rural and urban populations in Africa

**Food Security**

It is also a relatively cheap source of water for small scale agriculture and livestock production

**Safe Water Supply**

It is naturally protected from contamination, thus generally of good quality with little/no treatment in most cases

**Water Resiliency**

It is often resilient to drought, acting as a natural buffer against rainfall variability and Climate Change
**APAGroP – Strategy and Focus**

APAGroP is thus meant to develop programs and initiatives for improving the policy and practice of Groundwater in Africa for better lives and livelihoods.

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**Thematic pillars of APAGroP and cross-cutting leverage on science and practice.**

- **Policy, Governance & Institutional Systems Strengthening**
  - Develop / strengthen national groundwater policy frameworks and institutions
  - Increase investment in groundwater at pan-African and national level
  - Raising the profiles of groundwater in water related development agenda among member states.

- **Groundwater Management & Resource Assessment**
  - Develop / strengthen groundwater management at local, national and regional level
  - Increase uptake of appropriate tools and technologies for resource assessment, monitoring and groundwater protection
  - Improve techniques and adaptable technologies in sustainable development and management of groundwater resources.

- **Awareness, Knowledge Sharing & Capacity Development**
  - Raise awareness and induce governance of groundwater among high-level policy makers.
  - Increase capacity in groundwater resource development and management at national and sub-national level.
  - Encourage knowledge sharing and peer exchange in best groundwater development and management practices among member states.

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**CROSS-CUTTING LEVERSAGES ON SCIENCE AND TECHNOLOGIES**

Increased Knowledge Generation and Partnership among Member States for sustainable Development and Management of Groundwater Resources in Africa
APAGroP: Operational Structure
**APAGroP: Expected Benefits to Member States**

| R1 | Mapping of GW resources for sustainable management and utilization to enhance water security and resilience in Africa. |
| R2 | Capacity development for groundwater practitioners to improve sustainable use of groundwater resources. |
| R3 | A community of practice established for championing best practices, knowledge and information sharing on groundwater. |
| R4 | Appropriate technologies and partnership to drive best groundwater practice amongst member countries. |
| R5 | Awareness creation to secure and retain high level political commitment on GW policy and practice across the continent. |
AMCOW’s Key Groundwater Activities

KEY ACTIVITIES

- Policy Recommendation and Institutional Capacity
- Knowledge creation and knowledge sharing activities
- Groundwater programmes and initiatives (e.g., PatWaM, PaWaQ)
- Training, GW-Education and Capacity Building Activities
AMCOW Contribution Transboundary Groundwater and Aquifer Management: 

Pan African Transboundary Water Management (PATWaM)
Facts and Need for TB-Groundwater/Aquifer Management

- Seventy-two (72) TBAs have been mapped in Africa and these underlie 40% of the continent, where 33% (381 million) of the population lives, often in arid or semi-arid regions.
- Only eleven (7) TBAs have been subjected to more detailed studies, while cooperation has been formalised for only seven TBAs in Africa, most in North Africa and the Sahel zone.
- Of the forty-seven mainland African countries, only Sierra Leone and Equatorial Guinea have no known TBAs.
- Currently, more than 2 billion people are affected by water shortages in over 40 countries, mostly in Africa.
- Estimated 2.4 billion people will live on the African continent, compared to the current population of 1.1 billion by 2050 with the attendant increase in the demand for water.
L/RBOs offers great potential for Africa's development (hydropower, agriculture and industrialization).

- Agenda 2063, the Africa We Want
- African Water Vision 2025,
- SDGs 2030

AMCOW recognizes L/RBOs as important building blocks for effective management of water at the regional and continental levels for development

Therefore, WRM within the framework of Transboundary Water Cooperation at the L/RBOs level can offer an important means:

- to manage transboundary waters in an equitable and sustainable way
- to ensure sustainable conjunctive water use and transboundary aquifer management
- to maintain peace and security within the riparian member states.
Aim and Objectives of PATWaM

To advance transboundary water cooperation through...

1) Promoting peace and sustainable water resources development

2) Promoting equal participation and mutual trust across the riparian borders while building necessary networks and collaborations

3) Promoting social and economic well-being... and the ability of future generations to meet their water needs

4) Promoting cost-efficient benefits that protect both public health and the environment as a means to improve the life and livelihoods of the citizens of the member states

5) Addressing the concerns about the impacts of climate variability and climate change on water resources
Key Segments of PATWaM

On **surface water**: Enhance institutional capacity of the riparian member states with respect to transboundary water management and cooperation.

On **groundwater**: Raise the profile of groundwater aquifer management within the framework of integrated water resources management (IWRM) approach of the L/RBOs.
PATWaM Coordination Cycle and Activities

1. **PATWaM rolled out** by AMCOW Secretariat

2. **Facilitate** greater understanding and cooperation among the riparian member states

3. **Pilot** regional case studies of selected transboundary water organizations

**KEY ACTIVITIES**

- Conduct Stakeholders Involvement through the inception phase
- Conduct Gap Analyses & Needs Assessments
- Undertake Targeted Advocacy for Decision Makers and Training Support for LRBOs in Africa
- Development of Action Plans for TB-Water and Aquifer Management Strategies
- Development of Guidelines, Tools and Standards
This programme will focus on capacity strengthening with respect to Policy, Legal and Institutional frameworks of surface and groundwater management at national and transboundary levels within the Lake/River Basin Organizations (L/RBOs) in Africa, while leveraging on science and data-based evidence to create cooperation and partnership across the riparian borders.
Data-driven Decisions in Transboundary Groundwater Management

The focus of the action plans will be on integrated Surface water and TB Groundwater Management. The thematic action plans will involve activities on:

❖ Strategy towards addressing the capacity strengthening in legal, policy and regulatory frameworks of TB water and aquifer management at national and transboundary levels of the L/RBOs.

❖ Development of hydrological and hydrometeorological monitoring of the drainage system within the L/RBOs.

❖ Development of strategy for sources area protection and water quality monitoring process both at upstream and downstream levels across the transboundary borders.

❖ Aquifer delineation and hydraulic characterization as well as water level and recharge monitoring process.

❖ Development of protocol and legal framework for water sharing and related catchment cooperation agreements for effective integrated TB water and aquifer management.
AMCOW PAN-AFRICAN WATER QUALITY (PAWaQ) PROGRAMME
Groundwater quality and protection issues

- Focus is made on (Ground)water access (in terms of quantity)
- **Urban groundwater pollution:**
  - Sanitation
  - Land use, and planning
  - Uncontrolled urbanisation
- **Groundwater natural quality occurrence**
  - Fluoride, arsenic etc
- **Source (ground)water protection**
  - Microbiological water quality
  - (Uncontrolled) Mining activities
  - Agricultural fertilizers and pesticides
Pan Africa Water Quality Initiative

❖ As part of AMCOW mandate, water security in terms of both quantity and quality are considered critical.

❖ AMCOW acknowledges the centrality of water resources as a critical tool for economic growth and overall sustainable development.

❖ AMCOW is therefore developing a program - the AMCOW Pan-African Water Quality Programme in conjunction with IWMI.

❖ The ultimate goals are:

  ❖ creation of a strong, water quality data base and a self-driven water quality and pollution control initiatives in Africa through PAWaQ

  ❖ promotion of a collective action to ensure protection of water quality and enhance water security in Africa.
Scope of AMCOW PAWaQ Programme

❖ Current and emerging key issues (technical, environmental, financial, social and institutional/policy) faced by the Water Quality sectors in urban and rural Africa

❖ The general analytical capacity of countries (including Government, private sector, NGOs) on water quality aspect

❖ Interrogate Water Quality related initiatives launched in past years in Africa, including their approaches and successful levels

❖ Identify key international players in the Water Quality sector and establish appropriate collaboration mechanisms

❖ Clear transformational aim, with a set of good fit regional interventions on water quality monitoring and pollution control

❖ Take stock of ongoing African and international initiatives with direct or indirect links to Water Quality, and to promote North-South learning.
Current PAWaQ Activity: Online Survey

❖ As part of a background study to support the envisaged Pan African Water Quality, AMCOW in conjunction with IWMI is conducting an assessment of water quality monitoring status across African countries.

❖ In the first two phases of this project, a situation analysis of water quality monitoring in Africa will be carried out and will describe efforts to manage deteriorating water quality.

❖ In the latter three phases, research innovations that could advance water quality management in Africa will be considered and stitched into the design of a new PAWaQ.

❖ Key outcomes of the PAWaQ will be to enable the establishment of monitoring and management of water quality that will be adopted by all member states.

❖ The programme will also enable Africa to participate in the World Water Quality Alliance (WWQA), where it can be used to enable further scrutiny of a multitude of water quality issues.

❖ The programme will also provide a continent-wide initiative to collect and to provide data to larger repositories for pollution monitoring and control.
The scope of the questionnaire covers four broad areas:

- Assessment of the human capacity for water quality monitoring, water quality testing and data interpretation
- Assessment of laboratory water testing capacity with respect to availability and state of water testing equipment
- Assessment of the key water pollutants and pollution sources at county level
- Assessment of the initiatives and measures currently deployed against water pollution and to mitigate risks from polluted waters.
AMCOW Contribution to Groundwater Education and Cap-Building
Why GW Education and Cap-Building in Africa?

By 2025, 60% of the world population (>5 billion), will be living in cities and mostly in Africa; thus (ground)water knowledge and expertise are required.

Groundwater is the largest freshwater reservoir in Africa with about 20 time more than the freshwater lakes and rivers; the need for proper management.

Growing population and increasing competing demands for groundwater for WASH, small holder agriculture and other industrial uses in Africa.

Growing urbanization and the increasing risks of over-exploitation and contamination through human activities and land-use changes.

Inadequate technical, financial, and institutional capabilities in groundwater project and related infrastructures development.

Groundwater plays a huge role in adaptation; hence the need for innovative and proactive management approach in the face of climate change.
The potential for human resources development in the water sector depends to a great extent on the educational and related resources in the country;
Hence, SDG-6 targets are dependent on capacity development as outlined in SDG 6a.

“Expand international cooperation and capacity-building support to developing countries in water- and sanitation related activities and programmes”.
AMCOW Contribution to Cap-Building in Sustainable GW Management in Africa

Arising from the above key importance of water security and within the framework of AMCOW mandate to:

*Support MS to develop, manage, and utilize water resources to assure water, food and energy security in Africa,*

AMCOW identified **GROUNDWATER** as a priority intervention area in its Strategic Plan 2018 -2030, and by extension Strategic Operational Plan (SOP) 2020 – 2024.

Therefore, the rollout of APAGroP as Africa’s flagship groundwater intervention is intended to:

- enhance human capacity development and information exchange among the Member States through Capacity building and knowledge sharing.
- Facilitating exchanging the knowledge, experience and best practices in GW-development and management the among the member states.
AMCOW Contribution to Cap-Building

On the basis of the fact that successful **capacity development** implies **effective human capability** and **better institutions** that ensure sustainable management of groundwater resources:
AMCOW Knowledge Management Activities

AMCOW Library

Sharing Africa’s water and sanitation sector information and knowledge

Knowledge creation and Digitization

Knowledge Hub of Hubs
AMCOW Key Priority Areas in Cap-Building

Within the framework of AMCOW mandate and by extension Strategic Operational Plan (SOP) 2020 – 2024 to:

Support MS to develop, manage, and utilize water resources to assure water, food and energy security in Africa,
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<th>RECOMMENDATIONS</th>
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<td>Education and capacity building wrt groundwater resilience under climate change, at different education levels.</td>
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<td>National Water Education and International cooperation in co-creation of groundwater knowledge</td>
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<td>Promoting open peer-to-peer learning between national governments in order to improve capacities and education on groundwater resources in Africa.</td>
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<td>Increasing financing of research collaboration in groundwater and groundwater data sharing in Africa.</td>
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<td>Remote E-learning Tools: As an cost-effective emerging teaching and capacity building tools in face of pandemic</td>
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<td>Encouraging multi-disciplinary training involving all water-related practitioners (environ'talists, economists, engineers, social scientists).</td>
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<td>Creation of short courses on water management for policy-makers, at senior managers without technical water backgrounds;</td>
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SUMMARY AND CONCLUDING THOUGHTS

AMCOW / APAGroP: Collaborations and Partnership
Data driven Groundwater Decision, Way Forward and Policy Recommendations
Stakeholders and Groundwater Networks and Target

- Member States (and their Key Implementing Institutions)
- Regional Platforms and Institutions (RECs, L/RBOs, Transboundary Aquifer Management Frameworks, etc)
- Consumptive Sectors (Agric, Water Supply, etc) through appropriate Platforms
- Research Organizations and Institutions of Higher Learning (IHL)
- Private Sector (Linking Research to Action and Industry)
- Donor Agencies (e.g. SIDA, AfDB etc) and Civil Society Organizations (CSOs)
- International Bodies and Organizations (UNESCO-IHP, IWMI, BGS, BGR etc)
- Gender Participation and Youth involvements
FOCUS and Expected OUTCOMES

The overall intent of AMCOW Groundwater Programme is to highlight the social, economic, and environmental dimensions of groundwater with respect to improved livelihood and overall socio-economic development of Africa, while focusing on the underlying science, governance, and finance within the framework of the need for sustainable utilization and management of groundwater.

R1: Increased understanding of the strategic and vital roles of groundwater in ensuring water and food security in Africa.

R2: Promotion of groundwater profile at the highest level of governance and political agenda in Africa.

R3: Promotion of appropriate strategies for integration of groundwater agenda into the transboundary water management.

R4: Increased understanding of groundwater policy and governance challenges in Africa within the framework of IWRM.
WAY FORWARD: Need for Data Driven Decision Making

- Reliable and adequate **Data** vis-à-vis informed **GW Decisions** are crucial to sustainable development and management of GW-Resources in Africa.
- This leads to common issues at all levels of the groundwater **D-I-K** pyramid. THUS in the need for data-driven and science-based decision making.
- The flow from **DATA to INFORMATION to KNOWLEDGE to informed DECISIONS** requires different types of capacity:

**Types of Capacity needed**

1) Technical & Training capacity
2) Financial capacity / Donor support
3) Institutional support / capacity
4) Governance support / capacity
Data Driven Groundwater Decisions

- GW data requires collection and usually quality-assured and organised into a database
- GW data may be relevant at local, national, or international level (e.g. Uganda’s Water Information System or IGRAC’s GW Information System)
- GW data should be categorised, analysed and brought together with other types of data to produce INFORMATION

**Types of data:**

1. Geophysical and remote sensing data
2. Drilling logs (lithology and thickness),
3. Well completion records and pumping test data,
4. Groundwater levels and abstraction data,
5. Yield and functionality data,
6. Water quality data
7. .......etc.,

Reliable and adequate GW Data vis-à-vis informed GW Decisions are crucial to sustainable development and management of GW-Resources in Africa.
WAY FORWARD: GW Data & GW Decisions

This leads to common issues at all levels of the groundwater D-I-K pyramid

1) Data collection – missing data, poor quality data, fragmented data
2) Data analysis and
3) Data interpretation
4) Data storage/management
WAY FORWARD: Need to unlock finance for GW Infrastructure

- Water permeates all aspects of life on Earth and sustains all forms of life, livelihoods and well-being and contributes to the sustainability of ecosystems.
- Water is an essential component national development that creates and maintains jobs in all sectors of the economy (primary & secondary production sectors and services sector (UNDP, 2006; OECD, 2012);

In other words, **half of the global workforce** is said to be employed in water and natural resource-dependent industries (ILO, 2013).
The BIG QUESTION is how do we improve groundwater resources management without: a) Capacity Building and Training  
   b) Public and Private Investments

HENCE, the need for **political will** and **recognition of investments** in both capacity and infrastructural development in groundwater sector **as good business.**
Moving Forward: Policy Recommendations

FINANCING OF KNOWLEDGE BASE
Development of knowledge base at national and regional levels (with global partnerships for effective capacity development in groundwater management).

TECHNOLOGY TRANSFER
Technology and know-how transfer as an “agent of change” to contribute towards transformation.

ALL LEVEL INVOLVEMENT
Capacity Development at all Levels (individual, community, organization and institutional levels).

TRANSFORMATIONAL
Transformational Capacity Development with sustainability plan over time within countries and regions.

PARTNERSHIP AND SUPPORT
National Govts. and External Development Partners (EDPs) (involvement, support and collaboration).

POLICY RECOMMENDATIONS
WAY FORWARD: Collaborations & Supports

Stakeholders and GW-Network Collaborations: Who are the different stakeholders (at both demand and supply ends) and how these could be inclusive engaged?

Policy / Institutional Framework:
What are the policy and Institutional frameworks to holistically drive the overall sustainable GW development?

Institutional / Donor Supports:
What are available resources and Donors’ supports to enhance capacity building to drive GW development and management?
AMCOW-UNESCO SYNERGY on Groundwater Programme

❖ This UNESCO facilitated workshop is quite timely and worthwhile for sustainable groundwater governance.

❖ The workshop is in line with the core objective of the flagship programme of AMCOW i.e. APAGroP regarding capacity building in GW-development and management.

❖ Hence, the Workshop is expected to contribute to:

   a) Better appreciation of the concepts and principles of effective groundwater governance in transboundary water catchment areas.

   b) Capacity building in respect of both national and international legal dimensions of groundwater governance and transboundary cooperation.

   c) Synergy between the domestic (national) and international water law in order to avoid or prevent conflicts in transboundary water catchment areas.

❖ Therefore, this training workshop of the GGRETA project aimed at improved groundwater management and governance at the local, national and transboundary levels can be regarded as timely and as investment in the right direction.
THANK YOU FOR YOUR ATTENTION