SOUTH AFRICA'S CONTRIBUTION TO THE 2023 WATER CONFERENCE THEME ON "WATER FOR CLIMATE RESILIENCE AND ENVIRONMENT".

I. Introduction

As sustainable development is constrained by water while Climate change, Resilience and Environment impacts water security, it is impossible to decouple sustainable development, climate change, resilience, environment from water. This calls for holistic planning and coordination to **promote policy coherence and resource use efficiency**. The current Water decade for action, requires significant clear game changers. The water sector and water community must consider widening the net for public and private investment to bring the Sustainable Development Goals (SDGs) and vision of Paris Agreement to life for the benefit of all.

To achieve this, Member States must consider channelling, available funds from their fiscus allocations towards sustainable and resilient water infrastructure. This will respond to the concern raised at the 2018 High Level Political Forum (HLPF), that Member States are not on track to achieve SDG-6, on Water and Sanitation, and that there is a need to accelerate and scale-up the scale and speed required to achieve the SDGs and goals of the Paris Agreement.

With Climate Change comes increase of temperatures globally with severe consequences to the environment. In many regions of the World, warming has already surpassed 1.5 degrees Celsius above pre-industrial levels. More than one-fifth of all humans live in regions that have already seen warming greater than 1.5 degrees celsius in at least one season. Climate-related risks were found to be generally higher at lower latitudes and for disadvantaged people and communities such as those in Africa. The consequences and damage to life on this planet and the environment will be catastrophic unless a united global effort is made to address the causes and implement mitigation actions within our respective countries. It is a major challenge to hold back the changing climate, but we can implement adaptation measures to become resilient and mitigate risks.

South Africa is bringing a wealth of knowledge and experience within the international arena towards the Co-Chairing the session on 'Water for Climate, Resilience and Environment'. The first-hand experience of the impact of Climate Change on water is being experienced through severe droughts, that got to be known as "Day Zero" in the City of Cape Town and currently in the Eastern parts of our country, the city of Nelson Mandela Bay, including the recent disastrous Kwa-Zulu Natal floods that destroyed the Water infrastructure of the metro.

South Africa has applied its own status to mitigating the above challenges through a variety of initiatives and interventions such as:

1.1 Innovative Funding

Government of South Africa funded the development of climate change response adaptation strategy for the water sector in 2014 and is currently still being implemented. The Department of Water and Sanitation is reviewing and

updating that strategy to take account of sanitation aspects as well as emerging information on climate and water at the cost of €348 000. The implementation process also entails undertaking vulnerability assessment to inform appropriate adaptation action. This work helped identify areas of South Africa that need to be prioritized for adaptation.

The Department of Science and Innovation in South Africa is currently funding a €116 000 project on climate change and water security under the Water Research Commission. South African researchers collaboratively work with the Kenyan researchers to conduct a comparative analysis of climate change impacts to future development and economic growth for priority water-linked sectors in the Limpopo River Basin in South Africa and the Mara River Basin in Kenya. Anticipated outcomes include climate risk characterization and well-defined subsectors impacted by climate change together with proposed intervention strategies

The average annual cost to achieve the SDG water and sanitation access targets is 2.3%-2.7% of South Africa's GDP ($US 7-7.6 billion p.a. to 2030). The lowest cost scenarios are those that include extensive Water Conservation and Demand Management. Capital expenditure need is dominated by renewal of existing infrastructure. The 27-32% ($US 2 bill and $US 2.5 bill/annum) funding gap can be reduced by increased collection rates, better allocations of unconditional grants by municipalities and increased development charges, but a 17% gap ($US 1.3 bill/annum) still remains. Applying appropriate and effective Water Conservation and Demand Management activities will considerably reduce the shortfall. The same can apply Globally.

1.2 National Water and Sanitation Master Plan (NW&SMP)

The National Development Plan (NDP), developed in collaboration with the Netherlands, sets out the vision for South Africa by mentioning the balance between the economy, socio-economic development, and environmental sustainability.

The National Water and Sanitation Master Plan (DWS, 2018), in tandem with the macro national vision, issued an ambitious and timely call to action for the water sector, including (i) the provision of equitable access to reliable water supply, (ii) protection, management and development of the nations' water resources in a manner that supports justifiable and ecologically sustainable economic and social development, and (iii) transformative access to water to redress the racial imbalances created by apartheid. The journey towards achieving these objectives begins with understanding the extent and nature of the Non-Revenue Water (NRW) which South Africa and Japan is implementing in all Provinces of our country.

1.3 Sustainable Development Goal 6 (SDG6)

A key driver of the NW&SMP is SDG6 which is being driven by the Department of Water and Sanitation. South Africa has developed arguably the most effective operational structure for the implementation of SDG6 on the African continent. It is a logical design that includes experts that cover all the different disciplines required to achieve Target and Indicator objectives and implemented with a systematic approach that identifies respective gaps and offers interventions to close those gaps through South Africa's National Water & Sanitation Master Plan in particular. In addition, the structure has brought in a number of cross-cutting Task Teams that include critical inclusion of issues such as Climate Change, Interlinkage (Synergies and Trade-Offs) with the other 16 SDGs in terms of their water and sanitation needs and sector involvement – the sector being critical for closure of the projects aligned with the NW&SMP. Gender, Disability and other vulnerable group issues are also firmly integrated into the process

1.4 Water Conservation and Demand Management

South Africa is a water-scarce nation receiving insufficient and unreliable rainfall. The country receives a mean annual precipitation of 497mm/year, almost 50% less than the global average of 860mm/year. The country reduces this water insecurity problem by engineering dams and importing water through inter-basin transfer schemes.

The lowest cost scenarios of addressing our infrastructure backlogs and with minimal funding requirements are those that include extensive Water Conservation and Demand Management activities to reduce non- revenue water. As such, the Department is funding interventions to reduce water losses both in the municipal and agricultural arenas through the implementation of the National Water & Sanitation Master Plan.

Aggressive Water Conservation and Demand Management means that universal basic servicing can be achieved without a significant increase in total water demand. The cost of Water Conservation and Demand Management is approximately 1% of the total capital cost requirements which is significantly positive for the environmental impact of the water service.

South Africa currently experiences a high average water use of 273 l/c/d with 45% Non-Revenue Water. It has set itself a target of 175 l/c/d by 2030 which it will not achieve without drastically influencing technology and behaviour of all water users.

Consumers all over the world experience similar challenges. Only 2.5% of Earth's water is freshwater - the amount needed for life to survive. Almost all of it is locked up in ice and in the ground. Only a little more than 1.2% of all freshwaters is surface water, which serves most of life's needs. 20.9% of fresh water is found in lakes. Rivers make up 0.49% of surface freshwater. Although rivers account for only a small amount of freshwater, this is where humans get a large portion of their water. (US Geological Survey 2022).

With the constrained amount of fresh water available to an ever-expanding global community then issues of Water Conservation and Demand Management are critical for water sustainability.

2.5 Renewable energy

South Africa has high potential for renewable energy exploitation and has set itself the target of 17.8 GW of new renewable energy generation capacities to be installed by 2030. The stimulation of the renewable energy industry in South Africa will contribute to this target as well as to sound socio-economic development, job creation and a growth path that is both environmentally friendly and sustainable. Amongst other efforts to promote renewable energy development, the country has committed to scaling up the recovery of energy from waste in order to meet the 2030 target. Since the Constitution stipulates that municipalities are responsible for waste service provision, they have an important role to play in harnessing waste for energy purposes. The South African Local Government Association (SALGA) and the South African-German Energy Programme (SAGEN), implemented by GIZ, have entered into an agreement to promote renewable energy at the local level of government. The collaboration aims to strengthen local governments' capacity to implement renewable energy projects and to fast-track the facilitation of such projects within their areas of jurisdiction.

As indicated in the South African Green Drop Report, when considering climate change objectives, municipalities are presented with opportunities to reduce energy demand through energy efficiency measures, or to generate electrical and heat energy, thereby reducing cost and reliance on external energy suppliers.

1.6 Governance and institutional arrangement

The guiding principles for achieving good governance and institutional arrangement are:

•Water resource management at the appropriate level: The institutional vision provides for protection, use, development, management and control of water resources to be carried out at the appropriate level, considering efficiency benefits related to economies of scale.

•Clear definition of roles and responsibilities: The roles and responsibilities of the three spheres of government and of the envisaged water resource and water and sanitation services institutions are clearly defined, with overlapping mandates being eliminated wherever possible. The imperative of co-operative government is recognized.

•Coherence between national, regional and local water related strategies and plans: All water resource management and water and sanitation services strategies, plans and instruments at local, regional and national level, must be aligned to achieve coherence.

•Collaboration and partnerships: The importance of collaboration and partnerships between all stakeholders and beneficiaries is recognized, including between all spheres of government, the private sector and civil society.

•Alignment: Institutions will be aligned throughout the water value chain to ensure the efficient, equitable and sustainable protection, use, development, conservation and control of water resources and the provision of improved and sustainable water and sanitation services, taking cognizance of the need to reflect the cultural, gender and racial diversity of South Africa. Realignment of institutions promotes economies of scope and scale in support of sustainability in the water sector.

•Financial sustainability: Realignment must enable institutions to leverage finance for water infrastructure and sustainable management.

The provision of bulk water services infrastructure requires serious intervention and support - which varies from management and new investment to refurbishment and replacement. This requires comprehensive funding, institutional capacity as well as improved governance and drive. South Africa is developing the necessary capacity to support and intervene, making use of both public and private sector mechanisms, appropriately funded and financed.

A Water Partnerships Office has been established with the purpose of supporting effective long-term contracting with the private sector, and the DWS has partnered with National Treasury, the Department of Cooperative Governance, Municipal Institute of South Africa, Provincial governments, South African Local Government Authority (SALGA), development finance institutions and others in support of this programme. The Water Partnerships Office is a partnership between the Department, the Development Bank of South Africa (DBSA) and SALGA, led by the Department of Water and Sanitation RSA, will play a key role to support effective long-term contracting with the private sector, with the view to harnessing private sector skills and commercial and blended finance to improve water services outcomes.

A key mandate and purpose of this Office is to support effective long-term contracting with the private sector, with the view to harnessing private sector skills and commercial and blended finance to improve water services outcomes.

In general, municipalities do not have the skills required to facilitate public private partnerships. One of the aims of establishing the WPO is to create a central pool of these scarce skills which can be drawn on by municipalities.

The intention is to facilitate public private partnerships through offering streamlined services, draft tender specifications, procurement support, contract templates and contract management, as well as draft funding term sheets and loan agreements. The Office will also offer financial structuring, pre-feasibility and feasibility studies and other project preparation and development services in support of PPPs.

2 Conclusion

To reach universal access to clean water internationally, national governments, development partners, financial institutions, and other stakeholders must work together to close the financing gaps between the current country budgets worldwide and the total investment needed, and support countries to access capital for sustainable, climate-resilient, and critical infrastructure.

Addressing such fundamental issues are vital to the success of SDG6 and the management of sustainable liveable cities within the climate change scenarios we find ourselves in.

With that has come a rising awareness in richer countries that investment in development brings benefits to donors and recipients alike. There are therefore reasons to be optimistic that fund flows to the water sector will accelerate this decade, underpinned by climate adaptation finance. Blended finance remains an important pathway to achieving SDG 6, provided the international community can unlock the shackle of conservatism and path dependency to access financing that is consistent with the scale of the opportunity. South Africa is currently implementing the Just Energy Transition, which will contribute to the mitigation and adaptation plans of our country.

- this is true both in South Africa and the global platform. The United Nations Climate Change Conference COP27 agreement to provide “loss and damage” funding for vulnerable countries hit hard by climate disasters is most welcome

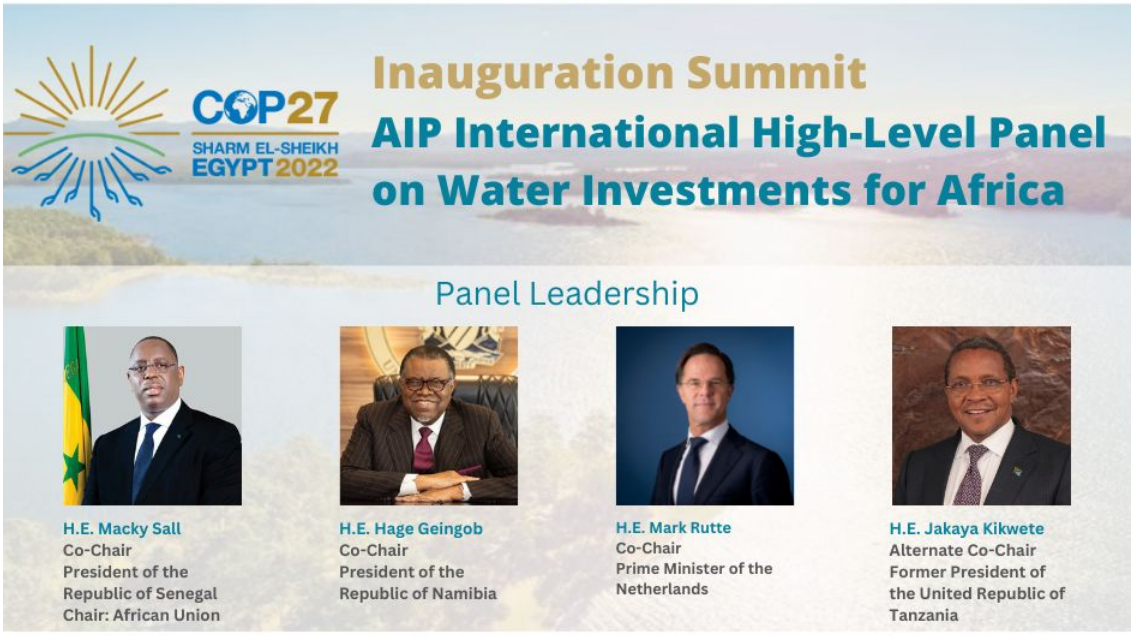
3 Guiding Question

- How can the commitments of Cop 27 and the support offered be best utilized to address the financial shortfalls of poor too medium economies? What strategies are in place to maximise impacts for investment?

  See attached link of the Africa intervention to sustainable Water and Sanitation Infrastructure Progragram, as a major intervention mechanism, led by a high-level panel. The Africa Water Investment Program (AIP).

Global Water Partnership Africa

Continental Africa Water Investment Programme (AIP) High Level Panel Inaugurated at COP27



Official COP27 Climate Change Conference Side Event
8 November 2022, 14.00-16:00 GMT+2, Sharm El Sheikh, Egypt

AIP CONTINENTAL AFRICA WATER INVESTMENT PROGRAMME

Dear Partner,

During 2022, we were repeatedly reminded of the urgent need to make investments in **water security central to climate adaptation activities** - **especially in Africa**. Over 36 million people were affected by extended and ravaging droughts in the Horn of Africa this year; more than 600 people died in flooding during Nigeria's worst floods in a decade; and close to 1000 people were killed in severe storms in Southern Africa. **Every single region of the continent was affected by extreme weather events this past year** and water was the connecting thread between them.

Flood and drought related emergencies rightfully force us to prioritise water-related climate

development potential is at stake. Sub-Saharan Africa **loses 5% of its GDP** each year due to a lack of water and sanitation. The continent's **youth population is expected to grow 42% by 2030**, which gives us the opportunity to modernise and transform Africa's economy. But we cannot do this without increased investments in sustainable and climate resilient water systems; not when **one in four jobs are water dependent**, nor when our women and girls spend 2.5 otherwise productive hours **collecting water to meet basic needs**.

It is for these reasons that we are encouraged to see the **needle moving in the global United Nations Climate Change negotiations to reflect a higher profile of water security** as a medium of adaptation and enhancing climate resilience. For the first time, the United Nations Climate Change Conference **outcome document adopted at COP 27 in Sharm el Sheikh, Egypt recognised that water systems have a critical role to play in delivering climate adaptation benefits** and urged parties to further integrate water into their adaptation efforts.

Importantly, **Heads of State and global leaders from around the world united to call for urgent investment in Africa's water and sanitation sector**. The **International High-Level Panel on Water Investments for Africa** was formally inaugurated during the Heads of State Segment, by H.E. Macky Sall, President of the Republic of Senegal and Chair of the African Union, H.E. Mark Rutte, Prime Minister of the Kingdom of Netherlands and H.E Jakaya Kikwete, Former President of United Republic of Tanzania, alternate Panel Co-Chair and Board Chair GWPSA-Africa; supported by GWPSA-Africa in collaboration with AUDA-NEPAD.

At least $30 billion/year needs to be invested to meet Africa's SDG 6 target, yet current investments are between USD $10 and USD$ 19 billion/year. The objective of the Panel is to **develop actionable pathways for mobilising USD $30 billion annually by 2030**, for implementing the Continental Africa Water Investment Programme (AIP) to close the existing water investment gap in Africa.

A **High-Level Panel Expert Advisory Group** will support the Panel. The group is co-chaired by the African Union Commission and AUDA-NEPAD, and made up of over 40 local and international experts across various water related sectors.

The Panel's work is complemented by the AIP-PIDA Water Investment Scorecard, a first of its kind **mutual accountability tool to enhance transparency, track progress, identify bottlenecks, gaps and promote peer to peer learning** in the mobilisation of water investments in Africa. The Scorecard was adopted by the Assembly of the African Union Heads of States and Government in Feb 2022.

Ten African countries have so far piloted the AIP-PIDA Water Investment Scorecard: Malawi, Benin, Cameroon, Tunisia, Uganda, Zambia, Kenya, Tanzania, Central African Republic and Togo. In November 2022, Malawi and Benin became the first countries to formally validate their first scorecards.

Collaboration with AUDA NEPAD on transboundary PIDA water projects has resulted in **technical assistance to over eleven transboundary water projects across Africa** with 3 projects receiving funding for project preparation.

Enhancing **gender equality and climate resilience in the planning and decision processes and institutions for water investments** is central to the AIP. The AIP programme on water, climate, development and gender equality (AIP-WACDEP G) supported the African Union Commission to strengthen their continental policy coordination mandate and the African Ministers Council on Water to develop the integrated Youth Gender and Social Inclusion Strategy.

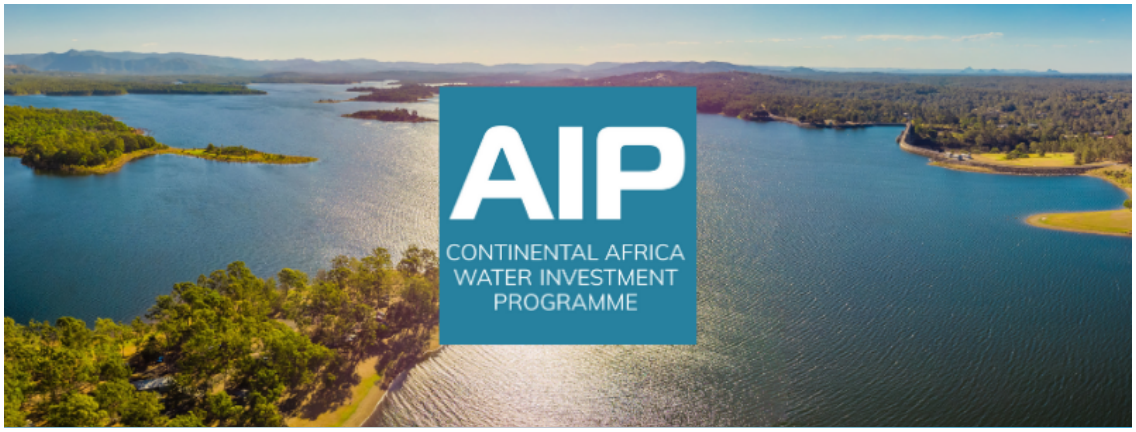
Sahara Aquifer System) were **supported to develop tools that will enable governments to address systemic inequalities in decision-making, planning, and implementation of water investments**, by strengthening gender and climate resilience institutional and investment planning processes.

UNDP, in collaboration with UNICEF, GWP Africa and the SADC Water Fund hosted by the Development Bank of Southern Africa (DBSA), initiated the process to **assess the need and potential of for the AIP International Blended Investment Facility to leverage public-private finance**.

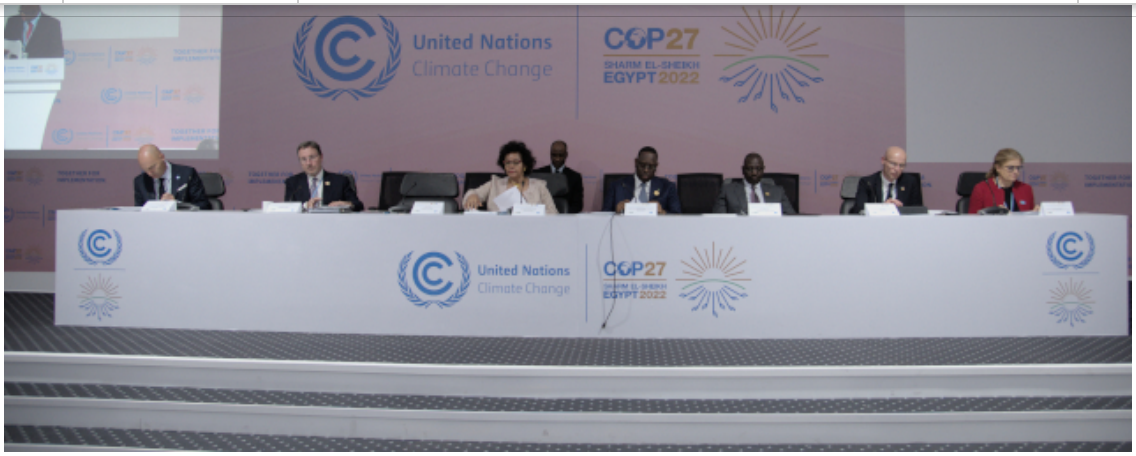
Multi-million US dollar national water investment programmes were launched by Presidents of Zambia ($5.7 Billion) and Zanzibar ($665.5 million) with the support of AIP; with the goal of mobilising the water and sanitation investments necessary to support the countries' development agendas and close the water investments gap in these countries.

As 2022 draws to a close, we remain grateful to our partners across and beyond Africa for their consistent support and collaboration. As we prepare for the **UN 2023 Water Conference in March 2023,** we commend the Co-Chairs of the AIP High Level Panel, Heads of States and panel members for their leadership and commitment to transform water security and sustainable in Africa. We reaffirm our commitment and **continued collaboration with AIP partners to enhance water security for all towards the SDGs and Agenda 2063**.

Alex Simalabwi
Executive Secretary: GWP-Africa
Director- Africa Water Investment Programme
Global Head-Climate Resilience

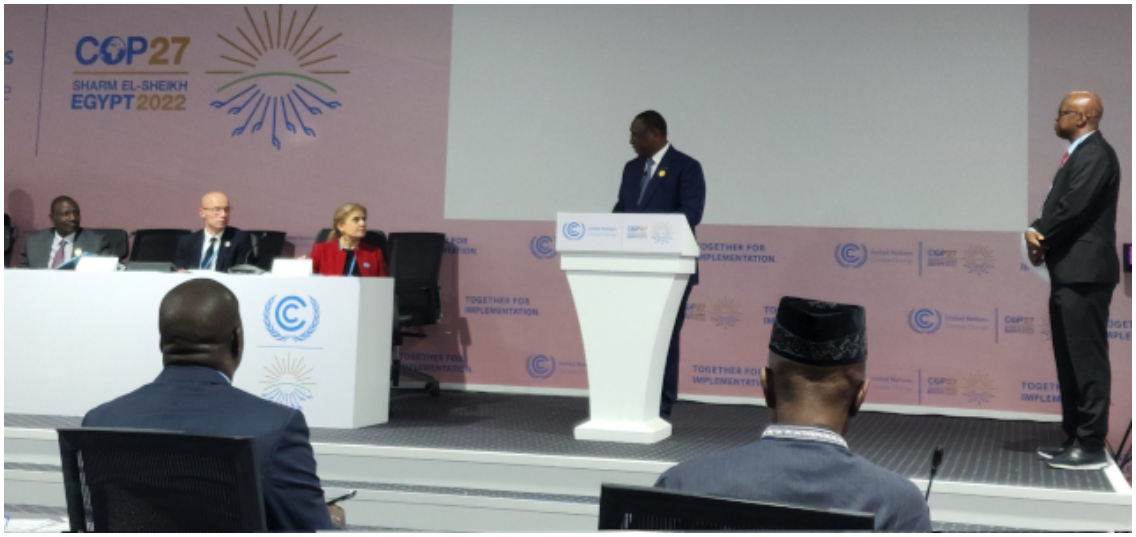


Continental Africa Water Investment Programme (AIP) High Level Panel Inaugurated at COP27



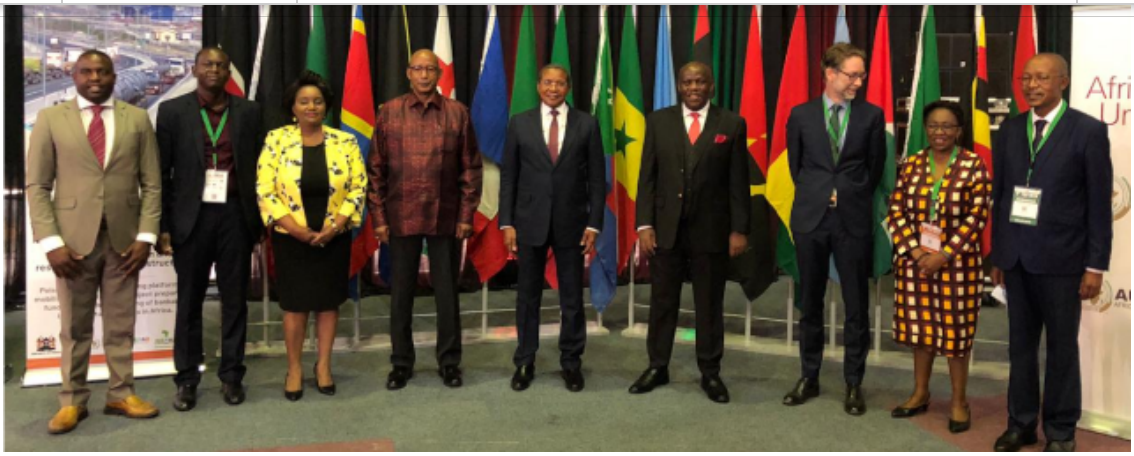
The High-Level Panel for Water Investments in Africa at COP27

The High-Level Panel on Water Investments in Africa was inaugurated on 8 November 2022, during an official side event at the 2022 United Nations Climate Change Conference (COP27), in Sharm el-Sheikh, Egypt. During the high-level inauguration event hosted by H.E. Macky Sall, President of the Republic of Senegal in his capacity as Chair of the African Union (AU) and co-chair H.E. Mark Rutte, Prime Minister of the Netherlands, Heads of State and global leaders from Africa and the global north united to call for urgent investment into Africa's water and sanitation sector. Read More.



"There is therefore a need to close the financial gap by intensifying advocacy and, above all, action"- H.E. Macky Sall, President of Senegal and Chair of the African Union

Malawi & Benin first countries to validate assessment to track progress on water investments



H.E Jakaya Kikwete, GWP Africa Chair and Former President of the United Republic of Tanzania (Centre), H.E. Dr. Ibrahim Mayaki, then CEO: AUDA-NEPAD and former Prime Minister of Niger, (fourth from left), Mr. Alex Simalabwi, GWP Executive Secretary and Head Africa Coordination Unit, (Extreme left), other High-Level delegates at the Formal Launch of the AIP-PIDA Water Investment Scorecard, in Nairobi, Kenya, in February 2022.

Stakeholders from across government, civil society, and the for-profit sector from Malawi and Benin were the first to formally validate an assessment on water investments which supports the Continental Africa Water Investment Programme (AIP), being implemented under the African Union's development arm AUDA NEPAD's Programme for Infrastructure Development in Africa (PIDA). The assessment tool, officially known as the AIP PIDA Water Investment Scorecard, is supporting African countries to track progress, identify bottlenecks, and take action to accelerate investment needs for achievement of SDG 6 on water and sanitation.

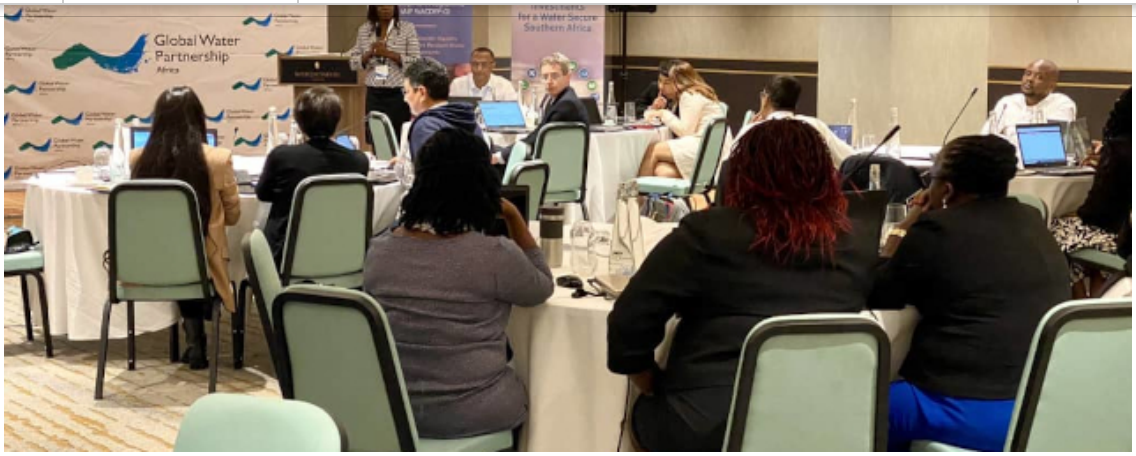
Malawi's Ministry of Water and Sanitation, with support from GWP Malawi, undertook the validation exercise on Tuesday, 22 November 2022, while Benin held its own from 24 to 25 November 2022. During the meetings, GWPSA made virtual presentations on the validation and scoring process before stakeholders undertook the exercise in groups. Among others, stakeholders assessed and scored on themes such as the enabling environment for water investments, water investments and financing and investment performance and sustainability. Read more about the Scorecard here.

GWP Africa assesses progress on integration of gender and climate resilience in implementation of water investments

GWP's Climate Programme team meet in Zambia to discuss integration of gender and climate resilience in implementation of water investments

GWP's Climate Programme team convened in Lusaka, Zambia, on 15-17 November to review results, capture lessons and define the focus and scope for the implementation of the Continental Africa Water Investment Program-Gender Transformative Water Climate and Development Programme (AIP WACDEP-G) during the next three years (2023-2025). The coordination meeting for the climate programme focused on reviewing phase I achievements/challenges, programme expansion to other African countries, identifying opportunities for phase II and reviewing how AIP WACDEP-G and the Green Climate Fund (GCF) readiness programmes can strengthen project implementation.

The AIP WACDEP-G Programme aims to transform gender inequalities at scale by promoting gender-transformative planning, decision-making and institutional development for climate resilient water investments in Africa. The programme has so far been able to conduct studies that have highlighted gender inequality issues and gaps relating to water security and climate resilience building. The programme has made a case of why addressing issues of gender inequality is critical for ensuring water security and building climate resilience. Read more about the programme here.



GWP Africa's Gender Advisor, Mrs Litumelo Mate - Sievers, facilitating a session on gender

Regional Updates

Malawi tackles obstacles to access to water and sanitation

The Ministry of Water and Sanitation in Malawi is championing a process to understand and find solutions to the country's three major barriers to the achievement of Sustainable Development Goal 6 on water and sanitation so that the country can focus on interventions that directly address the challenges.

The three barriers, each of which have been assigned to a task force, include flawed coordination and regulatory frameworks, inadequate water investments and climate financing, and advocacy for strengthened leadership in the water sector. These were identified through a multi-layered consultative process under the Global Water Leadership (GWL) Programme, which is being implemented in Malawi by the Global Water Partnership and UNICEF. Read More.

Principal Secretary in the Ministry of Water and Sanitation Mr. Elias Chimlambe (seated 4th from left) and Mrs. Deborah Muheka, AIP Malawi Coordinator (seated at the centre) pictured with members of the three taskforces on water investments and climate financing; advocacy; and coordination and regulatory framework

Continental African Water Investment Programme (AIP) to strengthen resilience of smallholder farmers in the horn of Africa

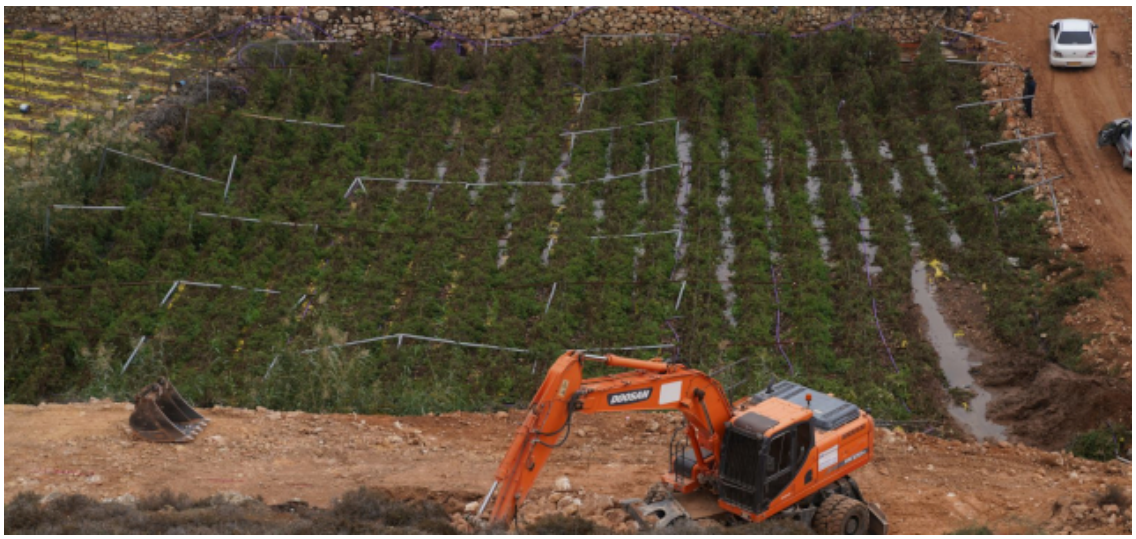
The AIP project, 'Strengthening Drought Resilience for Small Holder Farmers and Pastoralists in the IGAD Region' (DRESS-EA) in the horn of Africa is supporting smallholder farmers in Djibouti, Kenya, Sudan, and Uganda to strengthen resilience to droughts. Funded by Adaption Fund and implemented by Sahara and Sahel Observatory (OSS) with support from Global Water Partnership Eastern Africa (GWPEA), the Project is implementing interventions to among others strengthen resilience of smallholders' farmers to droughts.

Project partners held the 3rd Regional Steering Committee (RSC) meeting, where National Executing Entities of the project namely: Djibouti, Kenya, Sudan and Uganda; appointed Dr. Chris. K. Kiptoo, the Principal Secretary of the Ministry of Environment and Forestry of Kenya, as the new chair, taking over from Djibouti. The meeting was also attended by the Regional Executing Entity, which is GWPEA and representatives of Regional Implementing Entity, which is Sahara and Sahel Observatory (OSS).

In Kenya alone, drought has affected over 20,000 livelihoods, especially the smallholder farmers and pastoralists and the DRESS-EA project is a catalyst for resource mobilization for climate adaptation and resilience within the changing environments. Read more.

Delegates from Djibouti, Kenya, Sudan, and Uganda attend the regional steering committee meeting for the DRESS-EA Project.

GWP applying tangible Water-Energy-Food-Ecosystems (WEFE) solutions in 3 pilot farms in the Middle East and North Africa (MENA)



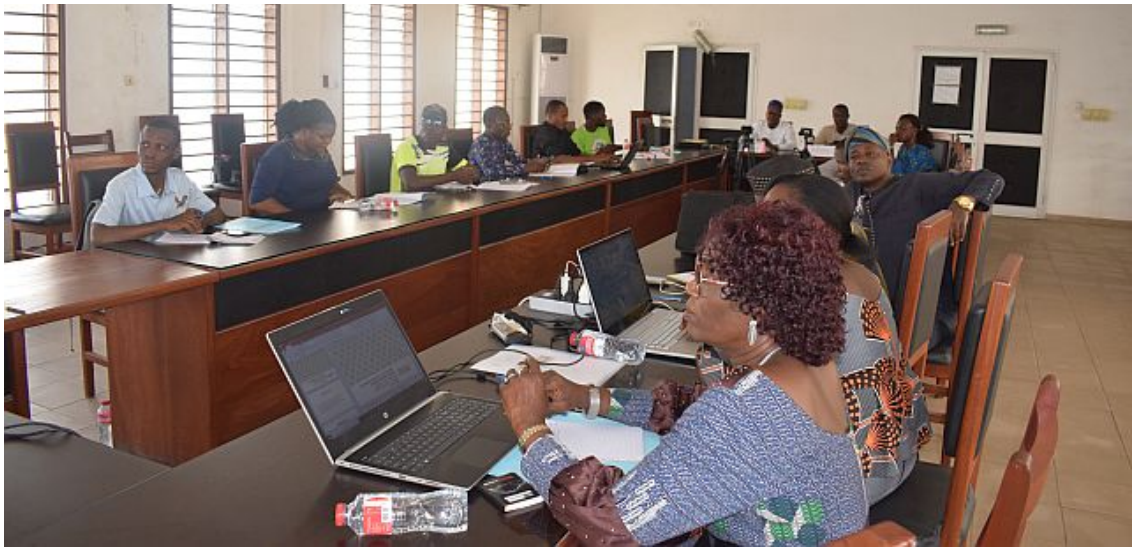
Construction of wetlands at each of the 3 farms in Al-Salt, Jordan and another 3 in Sa'ir, Palestine, to provide tertiary treatment to wastewater from the Wadi Shuayb Wastewater Treatment Plant in Jordan and the Wadi Al-Arroub Plant in Palestine.

GWP in the Mediterranean and North Africa (GWP-Med) is applying innovative Water-Energy-Food-Ecosystems Nexus solutions in farms in Jordan and Palestine to improve water management and build climate resilience in some of the most water-scarce nations of the world. The initiatives are being implemented under the 'MENA Water Matchmaker II project, funded by the Union for the Mediterranean and Swedish International Development Cooperation Agency (SIDA).

The Matchmaker II project aims to demonstrate pilot agricultural Water-Energy-Food-Ecosystems (WEFE) Nexus solutions, provide additional water and higher-quality water resources, reduce energy costs and minimize carbon footprint. Work is underway in three farms in Al-Salt, Jordan, where newly constructed wetlands will provide tertiary treatment to wastewater from the Wadi Shuayb

the solar systems will cover the irrigation pumping for the farms, as well minimize the carbon footprint. Further reading here.

Benin civil society organize media café on water and sanitation laws



The media café brought together journalists from radio, newspapers, online publications, and traditional and web television

GWP Benin, together with the water non-state actors framework (CANEA) are running a media campaign aimed at raising the media's awareness around various laws of the water sector. The efforts are meant to contribute to the media's better understanding of the laws regarding water. The media campaign involves television and radio broadcasts, debates on different media outlets and a digital campaign to disseminate the important provisions of various water related laws.

The campaign was preceded by a water, sanitation and hygiene (WASH) Media Café, which brought together various categories of media: television, radio, newspapers, online written press and Web TV and the focus was on the new law on public hygiene management. Read More.

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