



## Sub Theme 1: Water Security, Infrastructure, Investments, and Innovation

### Lead Conveners:



### Meeting Room: Parallel Room 1: THE NIGER

**Concept:** AWW-7 has as its theme “Toward Achieving Water Security and Safely Managed Sanitation for Africa”. The choice of the theme is an amplification of the current perspective of AMCOW in its recently approved strategy 2018-2030 concerning what needs to be done to improve water security and safely managed sanitation in the continent. AMCOW posits that sustainable development in Africa will not be achieved without greatly improved water security, and that significant investment must be made in Africa’s water management institutions, its infrastructure, data gathering and information systems and its ability to make trade-offs where needed, compromises when possible, and synergies that show how to achieve “win-win” situations between water, agriculture, and energy.

### Ensuring Water Security

Measures and strategies are required for assuring water security and reliability in Africa through both natural and and built infrastructure to increase Africa’s water storage capacity, manage flood and drought and ensure protection against water-related disasters and water-borne pollution.

The agricultural sector and the rural economy, on which the majority of Africa’s populations depend for their livelihoods, are under threat from the negative impacts of climate change and increasing climate variability. Projections which show a general increase of up to 1.4°C by 2020 in average temperatures for Africa are predicted to result in increased rainfall variability and incidences of extreme weather conditions. This presents a far greater challenge than scarcity in that both sides of the equation (too little water and too much water) need to be managed, and managed under greater uncertainty. The complexity of this challenge is further put into context by the fact that higher temperatures will result in changes in vegetation cover and, in turn, changes in runoff and groundwater recharge characteristics, with consequences on water resources availability due to quality effects.

While there may be uncertainties over the exact nature of the impacts, there is general consensus that climate variability and climate change will impact on the hydrological cycle, which will change water resources distribution and accessibility. Changing rainfall patterns and rising temperatures will negatively affect cropping systems and will increase the occurrence of diseases such as malaria. Growing uncertainty with regard to rainfall and shifting crop water requirements, threaten Africa’s largely rain-fed agricultural sector, while risks and uncertainties to economic productivity and political stability are growing with the increasing evidence of droughts, floods and other water related disasters.

As many of the negative impacts are anticipated to operate through water, addressing Africa’s water infrastructure deficit – in a manner that both increases storage capacity and assures water security and reliability – represents a great opportunity to leapfrog to more efficient and sustainable solutions towards climate change adaptability and mitigation, water-related disaster risk reduction and management and sustainable environment and natural resources management. Governments and development partners also need to invest more in information systems and institutions that manage infrastructure planning and investment. Improved knowledge and institutional capacity is a necessary first step towards addressing water insecurity.

It is thus crucial for policy makers to recognise not only the role of water as a primary medium through which climate change will have an impact on development, but also that water resources management should, therefore, be the linchpin for adaptation and mitigation to climate change in Africa.

## Objectives

The seminars and side events within sub-theme 1 will be aimed at achieving the following general objectives:

- Promote investments and support development of water resource infrastructure.
- Promote knowledge and information systems and facilitate investments on development of infrastructure for increased water storage, reduction of water disasters, and sustainable water supply for multiple uses.
- Share lessons of progress and good practices in water security management investments plans
- Promote the use of an inclusive range of existing technologies, innovative business models, and other creative approaches critical to achieving significant sanitation progress in member countries.
- Promote and support development of national and basin-wide water management information and decision support systems including various applications and models (e.g. hydro-economic models) based on the latest advances in earth observation and ICTs.

## Sessions

No. 1 Mon 29 <sup>th</sup> Oct  14.00 – 15.30	Title	<b>Towards an Africa Water Investment Programme, opportunities and challenges</b>
	Convener	GWP
	Co-Convener(s)	AUC, AMCOW, AfDB-AWF, World Bank, CRIDF
	Contacts	Hycinth Banseka, hycinth.banseka@gwpcaf.org
	Objectives	Promote innovative mechanisms for strengthening the business case for investments in water, energy and environmental security as key pillars of Africa’s agenda for stimulating industrialisation; creating employment; implementing AU Agenda 2063; the AfDB High Five Priorities; the SDGs; and the Paris Agreement on climate change; and – in turn – addressing the root cause of irregular water related immigration.
Description	In recent years the focus of most governments in Africa has shifted to the urgent need to industrialise as a first step to advance economic growth, and to do so in an inclusive way to alleviate persistent poverty. The ambition is to build robust, competitive and climate resilient economies; accelerate employment and labour productivity growth; and, as a result, deliver inclusive socio-economic development and livelihoods improvement. The express political will notwithstanding, numerous logjams still exist that have resulted in stagnation of sorely needed investments and, in turn, an impeding infrastructure gap.  There is an urgent need to overcome particular challenges in mobilising the	

		<p>investments required to meet the targets of the Africa Water Vision 2025 for:</p> <ol style="list-style-type: none"> <li>i. basic water supply and sanitation;</li> <li>ii. water productivity in industry, irrigated agriculture, energy, tourism and transport; for conservation and restoration of environments; and,</li> <li>iii. developing appropriate tools and indicators for measuring the contribution of water to development, and thus provide a basis for highlighting the pivotal role of water resources as an essential ingredient in the advent of a green economy and sustainable development in Africa.</li> </ol> <p>Through promoting the application of the principles endorsed by the UN High Level Panel on Water (HLPW) for Valuing Water; and advocating for activities to catalyse change, the session will draw attention to ongoing effort to respond to the three generally accepted bottlenecks in the delivery of the infrastructure needed to underpin economic growth and transformation in Africa, namely:</p> <ol style="list-style-type: none"> <li>i. the need for investment guarantees for water management, the fundamental aspects of which are not only a public responsibility, but also require 15 – 25 years for the tangible benefits to be realised;</li> <li>ii. the need for Member-States-led, integrated economic analyses to highlight the pivotal role of effective water management and adequate sanitation and related services provision in the economy; and where development is most urgently required to facilitate growth; and,</li> <li>iii. the need for effective transaction management to enable development planning to be effectively translated into both tangible infrastructure assets and related solutions, which will contribute to sustainable growth and prosperity for all.</li> </ol>
No. 2 Mon 29 <sup>th</sup> Oct  16.00 – 17.30	Title	<b>AfDB High Five and Water Security</b>
	Convener(s)	African Development Bank
	Co-Convener(s)	African Water Facility
	Contacts	Jean Michel Ossete, AWF (J.OSSETE@AFDB.ORG)
	Objectives	In 2015, the AFDB launched its five development priorities, known collectively as the High Five that drive its investment activities in concert with its Regional Member Countries. The objective of this session is to outline the AFDB High Fives, and Proposed Water Policy, and build an understanding on how they support IWRM development across Africa.
	Description	<p>The session offers a forum for AFDB to present and discuss its High Fives more broadly, highlighting results as well as outlining their implications and potential for the water sector and financing. The High Fives include:</p> <ul style="list-style-type: none"> <li>• Light up &amp; Power Africa,</li> <li>• Feed Africa,</li> <li>• Industrialize Africa,</li> <li>• Integrate Africa,</li> <li>• Improve the quality of life for the people of Africa.</li> </ul> <p>The High Fives are important to the water sector as they drive the investment approach of the AFDB and the Nexus approach. With water forming the cornerstone for energy, agriculture, social well-being, and industrialization activities, as well as creating regional linkages, there are both upstream and downstream implications for water resources development.</p>

		<p>The following agenda is proposed:</p> <ul style="list-style-type: none"> <li>• Introductory remarks by the Moderator (5min)</li> <li>• Presentation of the AFDB High Fives, and the connections to the water sector, given by the Director, AfDB's Water Development and Sanitation Department and representatives from different AFDB Complexes</li> <li>• (8 mins per High Five – Total 40 mins)</li> <li>• Discussion on the Draft Water Policy (10 min).</li> <li>• Questions and Answers Session" (30 min)</li> <li>• Closing remarks (5 min).</li> </ul>
No. 3 Tue 30 <sup>th</sup> Oct  09.00 – 10.30	Title	<b>Water Secure Africa (WASA) Initiative: Harnessing Big Data to Improve Water Management</b>
	Lead Convener	International Water Management Institute
	Co-Convener(s)	AMCOW, National Water Resources Commission/Authority of Ghana, Sierra Leone, Kenya and Tanzania
	Contacts	Timothy O. Williams (t.o.williams@cgiar.org)
	Objectives	The objective of this session is to share information and generate interest in a research-for-development initiative launched by IWMI, with African and international partners, to help transform Africa's 'data poor' water management environment by leveraging the latest earth observation and information and communication technologies to strengthen Africa's water security.
Description	<p>This session fits well into sub-theme 1 on Water Security. Demographic, economic and climatic changes have given rise to a 'perfect storm' of water security challenges that threaten to undermine growth, food security, sanitation and ecosystems. Past efforts to address Africa's water security challenges have been hampered by inadequate planning and investment due to lack of reliable long-term data and capacity to assess the implications of change for water security at national, sub-regional and continental levels. The WASA initiative seeks to capture and enhance the power of the Open Data Cube (ODC) technology, an unprecedented platform of historical and 'near-real' time satellite imagery, to develop a range of extensions and applications to provide timely free water data, in an easily accessible and geographically specific form, to meet the urgent information needs of decision makers. Examples of these applications might include geo-specific: assessment of water balances, water productivity, irrigation efficiency, sanitation services, early drought and flood warnings, local groundwater potential and indications of ecosystem degradation. These extensions and apps when scaled up from basin- to continental- level will form the foundation of an Africa Water Security Information System that will be developed.</p> <p>The session will start with a presentation by IWMI on the WASA Initiative focusing on why WASA is needed, what it will do, how it will leverage ODC innovation and be implemented, and the expected beneficial outcomes. A panel discussion featuring partners will provide the perspectives of a range of national and international organizations and potential beneficiaries. The session will end with audience participation in the form of comments and Q&amp;A.</p>	
No. 4 Tue 30 <sup>th</sup> Oct	Title	<b>Demonstrating political leadership in the African Water Revolution</b>
	Convener	SIWI
	Co-Convener(s)	
	Contacts	katherine.madden@siwi.org

11.00 – 12.30	Objectives	The objective of this session is to demonstrate leadership and seek new commitments to scaling up and financing green water and rainfed agricultural solutions across Africa.
	Description	<p>The African Water Revolution is an emerging initiative to ensure water security for small holder farmers across Africa through financial investments and political leadership. The idea emerged from the 2016 Malin Falkenmark Symposium at World Water Week, where experts called for a revolution to alleviate the world water and hunger crisis.</p> <p>The African Water Revolution will build on existing knowledge to maximize the capture, storage and utilization of green water and rain-fed agriculture. Green water is infiltrated rainfall water which is stored in the upper layers of the soil and available to plant roots which enhance food production and reduce vulnerability to climate variability and climate change.</p> <p>Through integrated green and blue water approaches, this initiative will establish a robust portfolio of blended finance solutions to help farmers reduce seasonal failures and move them towards income generation. These financial solutions must be embedded into a broader sustainability strategy including a supportive policy and regulatory context.</p> <p>African governments are already demonstrating commitment to increasing water security for farmers. This session seeks to profile this commitment and illustrate the role of local and national government in creating an enabling environment for green water investments. And seeks to identify what else is needed to increase awareness of green water solutions and to scale up water security in Africa.</p> <p>Led by Stockholm International Water Institute (SIWI), Stockholm Resilience Centre (SRC) and the Sustainable Development Goals Center for Africa (SDGC/A), the Africa Water Revolution is an exciting example of how cross sectoral investments can influence water security and increase resilience.</p>
No. 5 Tue 30 <sup>th</sup> Oct  14.00 – 15.30	Title	<b>Water Wise: The time is now to apply Smart Water Management</b>
	Conveners	UNESCO i-WSSM
	Co-Convener(s)	UNESCO Division of Water Sciences
	Contacts	<a href="mailto:kslim@unesco-iwssm.org">kslim@unesco-iwssm.org</a> ; <a href="mailto:blee@unesco-iwssm.org">blee@unesco-iwssm.org</a>
	Objectives	The objective of the session is to share the perspectives, knowledge and best practices of SWM as a technologically innovative tool and solution to enhance the water security of Africa.
Description	<p>Today's water resources management challenges are becoming more complex and interconnected. Water resource managers from local to global levels of government are finding new ways to cope with these changes, adapt to greater uncertainties and manage systemic risk. The key to addressing these challenges lies in gaining a better understanding of current water system operations, asset performance and what the future is likely to bring. This understanding leads advanced water management with ICT, appropriate technology, and data that is available, in exponentially its increasing volume and variety, from a multitude of sources including operating infrastructure, environment, customers, equipment providers, and many others.</p> <p>In this regards, SWM as an integral part of the solution for water management challenges is becoming an area of increasing interest as governments from around the world integrate smart principles into their urban, regional and national strategies. The potential application of smart systems in water management is</p>	

		<p>wide and includes solutions for water quality, water quantity, efficient irrigation, leaks, pressure and flow, floods, droughts and much more.</p> <p>For effective and efficient SWM and applications of various ICT tools in the water sector, developing countries should develop and prioritize their policy actions and governance accordingly. Also, the need for cost-effective and efficient approaches to address these multiple challenges is evident. Water utilities and others are looking to SWM to deliver these needs. Regarding this, we should think about solution of economic growth in developing country and SDG's realization through SWM with various ICTs.</p> <p>In this session, invited experts will bring their knowledge and skills in water resources management, technology, engineering, planning and policy to share insights.</p>
No. 6 Tue 30 <sup>th</sup> Oct  16.00 – 17.30	Title	<b>Hydro Climate Services for Water Security</b>
	Convener	UNESCO IHP
	Co-Convener(s)	
	Contacts	a.amani@unesco.org; R.Jayakumar@unesco.org;
	Objectives	The overall objective of the session is to improve our understanding about Hydro Climate Services and Water Security in Africa.
Description	<p>According to the current state of art, the session will share experiences on climate risk management and adaptation, including available hydro climate services such as floods and droughts early warning system and build capacity on climate risk assessment methodologies, techniques and tools. The workshop will also share best practices on climate risk management and adaptation through lessons learn from case studies, including disaster risk reduction and climate vulnerability assessment in Africa. The workshop will also improve the science-policy dialogue and develop a set of recommendations for an improved water security in the countries. Key note</p> <p>Case studies            Science Policy Panel discussion</p>	
No. 7 Thurs 1 <sup>st</sup> Nov  09.00 – 10.30	Title	<b>Groundwater's contribution to Africa's Water Security</b>
	Conveners	UPGro with AMCOW
	Co-Convener(s)	
	Contacts	Sean Furey (sean.furey@skat.ch); Dr Andrew Bullock (andybullock61@btinternet.com);
	Objectives	To establish the relevance of groundwater within the overarching trajectory of Africa's water security - including the Africa Water Vision, the SDGs, and National Growth and Poverty Reduction Strategies. To complement an authoritative baseline, recent research will highlight how innovation remains important to unlocking knowledge of groundwater's potential and limits.
Description	The session will feature a keynote presentation on Groundwater's contribution to water security. A convened panel (including representatives from the Africa Groundwater Network and AMCOW) will give their national, sub-regional and pan-African perspectives. An open floor will allow for additional perspectives from the floor.	
No. 8 Thurs 1 <sup>st</sup> Nov	Title	<b>Aquifer exploration as a key for water security in Africa</b>
	Convener(s)	<b>BGR</b>
	Co-Convener(s)	

11.00 – 12.30	Contacts	<a href="mailto:ramon.brentfuehrer@bgr.de">ramon.brentfuehrer@bgr.de</a>
	Objectives	The objective of the session is to share experiences, knowledge and best practices of aquifer exploration and sensibilize about the untapped potential of groundwater resources for water security.
	Description	<p>Groundwater is the most important resource for water security in the 21st century. This is especially the case in arid and semi-arid regions, where groundwater for agricultural production has the potential to be the cornerstone for food security and resilience. Use of groundwater can boost agricultural production, provide secure drinking water, improve rural incomes and strengthen farmers' ability to withstand climate shocks and water variability. There is still a large unused potential in Sub-Sahara Africa for groundwater irrigation that is currently practiced on only 1 % of the cultivated land, compared to 14 % in Asia.</p> <p>Groundwater is still playing a secondary and minor role in national and regional plans, which is also due to the lack of data on groundwater flows and potential. However, groundwater is increasingly intended as a supplementary or sole resource to maintain and extend agricultural production. For this, a greater knowledge of groundwater resources is crucial, in order to prevent groundwater depletion or degradation..</p> <p>The seminar aims to highlight the untapped potential for the agricultural groundwater development in Africa and the need for further groundwater exploration.</p>
No. 9 Thurs 1st Nov  14.00 – 15.30	Title	<b>Innovations in water quality monitoring</b>
	Convener(s)	UN Environment's Global Environment Monitoring System for Freshwater (GEMS/Water)
	Co-Convener(s)	<ul style="list-style-type: none"> <li>• School of Biological, Earth &amp; Environmental Sciences and Environmental Research Institute, University College Cork, Ireland;</li> <li>• International Centre for Water Resources and Global Change (UNESCO-IHP) at the Federal Institute of Hydrology, Germany — TBC</li> </ul>
	Contacts	<a href="mailto:kilian.christ@un.org">kilian.christ@un.org</a> , <a href="mailto:kaisa.uusimaa@un.org">kaisa.uusimaa@un.org</a>
	Objectives	The objective of the session is to showcase the important role of water quality as an essential part of ensuring water security
	Description	<p>The session will fall under subtheme 1: "water security: infrastructure, investments and innovation" and showcase the essential role that water quality plays in ensuring water security. Water quantity and water quality are closely linked. Having adequate quantity of water is not sufficient if the quality is inadequate to support ecosystem services, such as providing drinking water, fisheries and input for industry and other economic activities. This session will explore developments in determining water quality and highlight how investments in monitoring are not only necessary, but are justified.</p> <p>Innovative approaches to water quality monitoring will be highlighted which can reduce costs of monitoring and deliver information directly to communities and decision makers. Examples of case studies using citizen science monitoring programmes, and the latest advances in Earth observation data collection will be showcased.</p> <p>The economic case for investments in water quality monitoring infrastructure will be presented by highlighting how economic savings can be made in better and more timely management as a result of investment in monitoring.</p> <p>Within the field of transboundary water management, water quality monitoring and management presents many challenges for political and scientific co-operation. A successful case of transboundary cooperation on water quality will be showcased and opportunities for replication in other regions will be discussed.</p>

		The session will close with a panel discussion involving representatives from governments, academics and civil society.	
No. 10 Thurs 1 <sup>st</sup> Nov  16.00 – 17.30	Title	<b>Managing climate change risks to water resources and hydropower: new research findings and lessons on approaches to climate risk management</b>	
	Convener	South South North	
	Co-Convener(s)	TBD	
	Contacts	Jean-Pierre Roux/Declan Conway/James Cullis?	
	Objectives	To summarise new research on climate variability and climate change in southern Africa; to highlight the significance of climate risks to reliable hydropower productions; to present case studies of climate risk assessments (river basin and urban); to discuss and synthesise key lessons for practice.	
Description	Speakers will include experts from the Future Climate For Africa programme and complementary projects on climate risk in Africa. Panelists will discuss the practical implications of the findings, focusing on management and policy. The session will integrate in-person and virtual presentations.		
Paper / Panel Sub Topics / Allotted Time		Presenters	Moderator / Rapporteur
1	Welcome and agenda (5min)	Prof. Declan Conway - Grantham Research Institute	Moderator: Prof. Declan Conway Rapporteur: Mr Jean-Pierre Roux
2	Climate variability and hydropower development in Africa (8-10min)		
3	Hydropower and energy system risks in the Lusaka city region (8-10min)	Dr James Cullis – Aurecon	
4	Economic impact of electricity outages in Lusaka – video + virtual comments (5 min)	Mukelabai Ndiyo - TBC	
5	FCFA case studies of hydropower and climate change: Malawi and Tanzania (15 min)	Dr Ajay Bhave / Prof Julien Harou / Prof Japhet Kashaigili (TBC)	
6	[Placeholder: CRIDF]	TBC	
6	[Placeholder: CRIDF]	TBC	
7	Panel discussion (speakers) and Q&A 15min		
8	Wrap-up: Key messages for AMCOW audience (5min)	Prof Declan Conway	