



4th Arab Water Forum
المنتدى العربي للمياه

4th Arab Water Forum

“Sharing Water ... Sharing Destiny”

Final Report

26-28 November, 2017

المجلس العربي للمياه



Arab Water Council



وزارة الموارد المائية والري
جمهورية مصر العربية
Ministry of Water Resources and Irrigation
Arab Republic of Egypt



4th ARAB WATER FORUM

«Sharing Water ... Sharing Destiny»

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FINAL REPORT

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Finally, this report would not have been possible without the leadership and guidance of H.E. Dr. Mahmoud Abu Zeid, the President of Arab Water Council, Dr. Hussein El-Atfy, the Secretary General.

Executive Summary

Many Arab countries are struggling to manage their water resources sustainably and efficiently and to expand coverage of water supply and sanitation services. Rising demands, climate change, intersectoral competition and urbanization are exacerbating the region's water scarcity challenges. Now conflict has combined with weak institutional performance and contributed to an intensification of water challenges and a deterioration of water services.

The Arab Water Council (AWC) catalyzes collective actions during and in between each Arab Water Forum which seeks to advance the cause of water. Serving as a stepping-stone towards regional collaboration on water challenges, the Forum is a unique platform where the water community and politicians and decision makers from the region can work together to create joint solutions. The AWC seeks to guarantee continuity from one forum to another.

The 4th Arab Water Forum was organized under the theme “Sharing Water ...Sharing Destiny”. More than 350 participants from 23 countries convened in Cairo on November 26-28, 2017 to discuss five sub-themes, namely:

- 1. *Water and Sustainable Development,***
- 2. *Water, Food, Energy and Climate Nexus,***
- 3. *Water Quality and Ecosystem Livelihood,***
- 4. *Sustainable Solutions for Shared Water Resources, and***
- 5. *Water and Science, Technology and Innovation.***

In the background as cross-cutting issues are water governance and finance with SDGs as the overarching theme.

Water and Sustainable Development

The World Leaders in 2016 adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. The Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. Special reference to water is given by SDG-6 although role of water is heavily underlined in most of the other SDGs.

The subject of SDGs was raised in the Forum's sessions where at least 8 sessions reaffirmed the need to keep the momentum for a dedicated SDG for water in order to achieve water security in the region.

A High Level Dialogue on Water in Sustainable Development was organized by AWC and LAS with the aim to assess the progress made so far by the Arab countries collectively and individually with respect to SDG 6 and other related goals. The session gave the message that strong partnership is needed between governments, civil society, private sector, development partners, International community and development funds to achieve SDGs in the region.

Arab countries have the primary responsibility for follow-up, review and report the progress made in implementing the Goals, which will require quality, accessible and timely data collection. Regional follow-up and review will be based on national-level analyses and contribute to follow-up and review at the global level.

Water, Food, Energy and Climate Nexus

The Water-Energy-Food (WEF) Nexus approach has been a subject of the Arab Regional Dialogue since 2014 which contributed to a better understanding on how this approach could contribute to address the challenge of resource scarcity and to achieve Water, Energy and Food securities through mainstreaming the nexus in sectoral policies, planning and programs.

On the issue of WEF Nexus, the AWC together with the Development Partners have been active on several fronts. Broad consultation on the theme was made possible during the Forum organized by GIZ with the support from FAO, UNESCO, LAS and AWC, addressing strategic issues related to water, food and energy interdependencies under changing climate and highlighting the on-going policies in the region where GIZ, ESCWA and FAO are implementing various initiatives in partnership with countries and regional organizations.

International institutions such as GIZ, FAO, ESCWA, UNESCO and others play also an important role in supporting the implementation of pilot nexus projects in the Arab countries to achieve SDG's.

As an application of the current knowledge gathered so far on the subject of non-conventional water resources (NCWR), an ambitious regional program on sustainable development of NCWR in the Arab region within the WEF nexus would be of great importance to the region. Details will be worked out as a regional joint activity by AWC, UNESCO and FAO.

Today, many reasons cited as to why we should be concerned with climate change and its impact on water resources. It is clear that adaptation is urgently needed,

and it is closely linked to water and its role in sustainable development. Developing and adopting highly adaptive water investment, infrastructure and resource management approaches presents genuine development opportunities.

Water Quality and Ecosystem Livelihood

Water quality aspect is a major dimension in managing and developing conventional and non-conventional water resources. Water quality has to be included in the WEF nexus as an essential element for sustainable development from economic, social and environmental perspective.

Notably characterized by its environmental diversity, the region needs to guarantee water availability for its growing population and economy, expand sanitation services, advance in the conservation of the quality of its water bodies and protect its land and marine ecosystems with the insertion of ecological aspects in decision making.

Sustainable Solutions for Shared Water Resources

Shared water plays a pivotal role in the overall Arab water security as more than 60% of the Arab surface water originates from outside the countries' political borders through major rivers. Accordingly, water sharing of these rivers is subject to political conflicts as most of these rivers are still without clear and comprehensive agreements that organize the water shares particularly neighboring countries outside the Arab region.

Shared water resources must be seen as a mean for cooperation and peace, and for promoting equitable allocation of water resources and their benefits. Good political will and respect of international

laws, promoting win-win and no-harm solutions are key for cooperation and management of shared water resources among Arab countries and other riparian states.

Water in territory under occupation in Palestinians home land still deprive them from managing their own water resources or getting their basic rights to access clean water and safe sanitation. Occupation control on Palestinian water resources is used as weapon for collective punishment of helpless civilians when their people up-rise claiming freedom. Moreover, it left them live in serious unhealthy environment.

As the Arab Region inherently shares transboundary water resources, the integrated management of shared water resources, partnership and sustainable use by each state is particularly of interest. AWC, LAS, ESCWA and FAO contribute in the partnering efforts along with country led efforts.

Water and Science, Technology and Innovation

The science and technology sub-theme focused on the implementation of scientific and technological innovations in water management to help countries tackle regional water challenges and ensure sustainable development. The sub-theme aimed at encouraging the sharing of information and technological action tools for imminent water challenges in the region. The Forum offers exceptional opportunities to expand the knowledge of current and emerging desalination and water reuse technologies.

Arab Regional Inputs to the 8th World Water Forum

The outcome of the 4th AWF presented in this report provides the input of the Arab region in the upcoming 8th WWF. Specifically, the participants recommended the following:

- The Arab region should organize its presence in the 8th WWF by assigning clear roles and responsibilities and ensure the participation of the region class speakers.
- Enhance the Arab participation in the “Citizen Forum” with an emphasize on the water situation in remote areas/ conflict areas.
- More collaboration is required to unify our voices and messages specially that we share common challenges in the region. Water under occupation and transboundary water management are the main issues to be presented and discussed in the 8th WWF.
- The AWC will participate in the Regional Process of the WWF8 as a co-convenor for Theme 2 on “People” with a Topic on “Enough Safe Water for All” and for Theme 3 on “Development” with a Topic on “Water, Food & Energy Security”.

LIST OF ABBREVIATIONS & ACRONYMS

ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
ADB	African Development Bank
AWC	Arab Water Council
AWF	Arab Water Forum
CC	Climate Change
CEDARE	Center for Environment and Development for the Arab Region and Europe
CMI	Center for Mediterranean Integration
DAAD	German Academic Exchange Service
DFID	Department for International Development, UK
ESCWA	United Nations Economic and Social Commission for Western Asia
ET	Evapotranspiration
EU	European Union
FAO	Food and Agriculture Organization
GEF	Global Environmental Facility
GEMI	Global Environmental Management Initiative
GERD	Grand Ethiopian Renaissance Dam
GIZ	The Deutsche Gesellschaft für Internationale Zusammenarbeit
IHL	International Humanitarian Law
IHRL	International Human Rights Law
IWL	International Water Law
GLAAS	Global Analysis of Assessment of Sanitation and Drinking Water
ICARDA	International Center for Agricultural Research in the Dry Areas
ICBA	International Center for Biosaline Agriculture
ICT	Information and Communication Technology
IDA	International Desalination Association
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Program
LAS	League of Arab States
LIS	Land Information System
MENA	Middle East and North Africa
MoU	Memorandum of Understanding
MWRI	Ministry of Water Resources and Irrigation, Egypt
NARSS	National Authority for Remote Sensing and Space Sciences
NASA	National Aeronautics and Space Administration
NCWR	Non-Conventional Water Resources

NENA	Near East and North Africa
NGO's	Non Governmental Organizations
NWRC	National Water Research Center
REC	Regional Environmental Center
RICCAR	Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region
RKP	Regional Knowledge Platform
SDGs	Sustainable Development Goals
SIDA	Swedish International Development Agency
SOW	State of the Water
UN	United Nations
UNDP	United Nation Development Program
UNEP	United Nation Environmental Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISDR	United Nations Office for Disaster Risk Reduction
USAID	United States Agency for International Development
WB	World Bank
WEF Nexus	Water, Energy, Food Nexus
WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorological Organization
WWC	World Water Council
WWF8	Eighth World Water Forum
WWTP	Waste Water Treatment Plant

Overview of the Forum

The Arab Water Council (AWC) organized the 4th Arab Water Forum in Cairo on 26-28 November 2017, under the auspices of the League of Arab States (LAS) and the Ministry of Water Resources and Irrigation (MWRI) in Egypt. The Forum slogan and main theme was “**Sharing Water...Sharing Destiny**”. More than 350 participants from 23 countries attended the Forum including Arab and International Leaders, Present and Former Ministers, Heads of Regional and International water and water-related organizations as well as experts, scientists, practitioners, parliamentarians and members of the civil society and media.

The Arab Water Forum is the region largest tri-annual water-related event, which is a great opportunity to build political commitments and trigger actions on critical water issues to help achieve sustainable development of water resources leading to water and food security, economic growth, social welfare and protection of the environment.

The 4th Arab Water Forum’s main theme was addressed through 23 substantive sessions including 2 plenary sessions, 3 special meetings and 18 special thematic sessions. These sessions revolve around five sub-themes, namely: (i) **Water and Sustainable Development**, (ii) **Water, Food, Energy and Climate Nexus**, (iii) **Water Quality and Ecosystem Livelihood**, (iv) **Sustainable Solutions for Shared Water Resources** and (v) **Water and Science, Technology and Innovation**. These sessions brought experts, managers and practitioners from international, regional and national organizations to engage into interactive discussions and debate about the state-of-the art in knowledge, actions and experiences.

In addition to the technical sessions and side events, an **Arab Water Expo and a Fine Art Gallery** took place during the Forum.

The **Opening Ceremony** of the Forum was attended by 850 distinguished national, regional and international politicians and experts and included speeches of Excellencies Dr. Mahmoud Abu Zeid, President of AWC, Dr. Mohamed Abdel Aaty, Minister of Water Resources and Irrigation of Egypt, Ambassador Ahmed Abu Elgheit, Secretary General of LAS, Mr. Hashmi Kennou, Representing President of World Water Council, Mr. Al-Sadik Al-Mahdy, Former Prime Minister of Sudan, Prince Khalid Bin Sultan, Chairman of Prince Sultan Bin Abdulaziz International Water Prize and Honorary President of AWC. Their speeches highlighted several challenges facing the water sector in the region including increasing water demand and sectoral competition causing more stress on already stressed water resources, climate change and extreme events, lack of knowledge and technical capacities, deterioration of peace and security in the region and its implications on water and food security, water terrorism and upstream hegemony in shared river basins, in addition to the so called cyber war over water. These challenges are threatening the achievement of SDGs especially SDG 6 on water.

Several solutions were recommended in their speeches such as benefit sharing and regional cooperation on water and food security especially in transboundary basins and aquifers, formulation of agreements and establishment of organizations for shared water resources management based on the principles of win-win and no harm for all riparian states and adopting the principles of International Water Law while taking sustainability into account, assessment of both surface water and wastewater and adoption of Water-Food-Energy Nexus approach, institutional strengthening and capacity building, raising awareness, investment of multipurpose water infrastructures, research and development in water desalination technologies, climate change adaptation and mitigation measures, increase water efficiency and productivity and adopt new irrigation techniques, civil society and stakeholders involvement.

A **High Level Dialogue** was organized on the first day of the Forum by the AWC and LAS under the title “**Water in Sustainable Development**” with an aim at a rapid assessment with respect to SDG6 and other water-related goals. The Dialogue shed light on constraints and means to achieve the set goals by 2030.

A **MoU** was signed between CEDARE, AWC and Ministry of Energy and Water in Somalia in the field of IWRM.

The outcomes of the 4th Arab Water Forum are the major regional inputs from the Arab World into the 8th World Water Forum.

This report as well as all power-point presentations of the sessions are available on the Forum’s website.

PROGRAM AT-A-GLANCE

* SM: Special Meeting - SS: Special Session - PS: Plenary Session

Day 1 - Sunday, 26th November (Opening)				
13:30 - 15:30	Opening Ceremony & Keynote Address			
15:30 - 16:00	Official Opening of the Arab Water Expo & Fine Art Gallery			
16:00 - 17:30	SM 1: High-Level Dialogue on Water in Sustainable Development (AWC/LAS) By Invitation	SS 1: Role of Media in Raising Awareness on Water Resources Management (MWRI-Planning Sector/AWA-AWC/EU/ AWC Youth Network/LAS /HCWW)	SS 2: Arab Region on the way to the World Water Forum 8: Towards Active Contribution (LAS /AWC /WWC-8th WWF)	
18:00	Dinner			
Day 2 - Monday, 27th November				
9:30 - 11:30	PS 1: Water and the Sustainable Development Goals (SDGs): Progress in the Arab Region (FAO/ESCWA/LAS/WFP/AWC)			
11:30 - 12:00	Coffee Break			
12:00 - 13:30	SS 3: Regional Water Security in the MENA Region (World Bank/CMI)	SS 4: The Regional Environmental Center Activities in the MENA Region (REC)	SS 5: Arab State of the Water & Sustainable Development (CEDARE/AWC/OFID/LAS)	SM 2: Promotion of Integrated Investments in the Water Sector in the Arab Region (EU/LAS)
13:30 - 13:45	Coffee Break			
13:45 - 15:15	SS 6: The Debate of Equating Improved Irrigation Efficiency to Water Saving (FAO/AWC/IWMI)	SS 7: Arab Water Under Occupation... The Main Challenges to Achieve SDGs (PWA/LAS)	SS 8: Climate Change and Water: Impacts and Adaptation Measures (ESCWA/NWRC)	SM 3: SDG-Climate Nexus Facility (AWC/UNDP/UNEP/UNISDR/WFP) By Invitation
15:15 - 16:00	Lunch Break			
16:00 - 17:30	SS 9: Promoting the Use of Non-Conventional Water in the Arab Region (AWC/UNESCO/FAO)	SS 10: Shared Waters in the Arab Region: Potential Transboundary Impacts & Cooperation Opportunities (CEDARE/AWC/LAS)	SS 11: From Traditional knowledge to Innovation: The Role of Modernization in Improving Water Use in Agriculture (ICARDA/FAO/AWC)	
19:00	Colorado State University CSU Alumni Special Event (Colorado State University/CEDARE) By Invitation			

Day 3 - Tuesday, 28th November

9:30 - 11:30	PS 2: Water, Food, Energy, Climate Nexus: Solutions for the Arab Region (GIZ /AWC/LAS/FAO/UNESCO)			
11:30 - 12:00	Coffee Break			
12:00 - 13:30	SS 12: The Use of Solar Energy for Development of Mega Projects in Egypt (FAO/MWRI/ADB)	SS 13: Scaling-up the Safe Use of Recycled Water in the Arab Region (IWMI/ICARDA/FAO/Sida)	SS 14: Shared Water and Water Security in the Arab region (ESCWA/LAS)	SS18 (A): Use of Remote Sensing Technology in Integrated Water Resources Management (Case Study: Egypt) (NARSS/WB)
13:30 - 13:45	Coffee Break			
13:45 - 15:15	SS 15: The Regional Knowledge Hub: An Advanced ICT Platform to Address CC Impacts (FAO/ESCWA/GIZ/ICBA/USAID)	SS 16: IWRM as a Tool for Sustainable Development in the Arab Region (EU)	SS 17: Water Desalination Industry: Regulation, Legislation and Investment in Light of ARWADEX Efforts (ARWADEX)	SS18 (B): Use of Remote Sensing Technology in Integrated Water Resources Management (Case Study: Egypt) (NARSS/WB)
15:15 - 16:00	Lunch Break			
16:00 - 17:30	Closing Session			

Back-to-Back Workshops:

1. Focal Points Meeting: 3rd Arab State of the Water Report Focal Points Validation Workshop (AWC/CEDARE/OFID) (November 25-26, 2017)
2. Expert Group Meeting on Pursuing Improved Shared Water Resources Management within the Framework of Global and Regional Agreements (ESCWA/LAS) (November 29, 2017) **By Invitation**
3. CWPf Project 1st Supervision Mission (AWC /WB) (November 29, 2017) - Side Meetings (November 26/28, 2017) **By Invitation**

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CHAPTER 1: THEMATIC SESSIONS

Throughout three days, the 4th Arab Water Forum witnessed a considerable number of thematic sessions where many topics have been presented and discussed tackling the five themes of the Forum. Those thematic sessions were divided into: 2 Plenary Sessions (PS1 and PS2), 3 Special Meetings (SM1, SM2 and SM3) and 18 Special Sessions (SS1 to SS18). For each session and meeting, a main convener and co-convener(s) were responsible of the sessions' agenda, speakers and presenters.

Following is a brief of all the sessions held during the Forum including the sessions' topics and conveners, an overview of the sessions, the most important discussions that took place during each session, the main messages captured from the discussions and the recommendations deduced from the deliberations.

I-Plenary Sessions

I.1 Water and Sustainable Development Goals Progress in the Arab Region (PS1)



Lead convener: FAO

Co-convener: ESCWA, LAS, WFP, AWC

Objectives

- Draw lessons for the Arab Region on the sustainable development targets/ indicators/goals related to water resources;
- Identify and confirm the role of each institution, UN organizations, governments, civil and private sectors towards their efforts in achieving SDG 6;

- Define problems in the applicability of various SDG6 indicators to Arab countries;
- Specify the ways the Arab Countries need to explore to voice their concerns on methodologies to estimate and monitor indicators of SDG6.

Discussion Highlights

- Water scarcity and food security are inter-related and are closely linked to the energy sector. The so called water-food-energy nexus is highly relevant to the Arab States.
- Importance to raise awareness at state and local levels that water is not simply a commodity, access to water is a human right which incorporates equity concepts.
- Substantial reduction of the number of people suffering from water scarcity. It is defined as a goal (SDG 6), but it is not currently being measured or reflected in any of the indicators.
- As the Arab Region inherently shares transboundary water resources, the integrated management of water resources, partnership and sustainable use by each state is particularly of interest. Within this respect AWC, LAS, ESCWA and FAO contribute and support country led efforts.
- Multi-organization initiatives are already established for separate groups of SDG 6 targets. For targets 6.1 and 6.2 (drinking water, sanitation and hygiene) WHO-UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) is in place; an inter-agency initiative GEMI (Global Environmental Management Initiative) is responsible

for supporting monitoring SDG targets from 6.3 to 6.6 (water quality, scarcity, water resources, ecosystem impacts), whereas GLAAS (Global Analysis of Assessment of Sanitation and Drinking Water) initiative is under the umbrella of UN Water Agencies in addition to WHO.

- Measuring “access to pipes” is defined as a monitoring mean but in the Arab Region, pipes might exist without water resource, so each global indicator is not necessarily applicable to the specific conditions of the region. Occupation is another special circumstance; freedom on water management is not meaningful under occupation.
- SDG 6 targets and their monitoring means through indicators are relatively clear, but there exists lack of clarity with regards to implementation mechanisms and financial mechanisms with which those targets would be achieved.
- State-level awareness, actions and dedication are the most important means to engage all stakeholders. The states should involve representatives from all groups of the society, local institutions, private and civil sector in their decision making, otherwise their action plans would not succeed.
- SDG 6 states proportion of people under water stress in its definition but the High Level Political Forum did not incorporate this measure as an indicator. Given the high population growth and already scarce water resources, this indicator would have been highly meaningful for all Arab Countries. Regional High Level Forum whose decisions would feed into the High Level Forum in April 2018 is a possible platform to raise its inclusion.
- There is a need to look at both the Goals and indicators of the SDGs to identify the implications for water.

Key Messages/Priority Actions or Solutions

- The Arab Region is reaching a critical turning-point towards sustainable development and therefore a strong alliance is needed at all levels.
- Transboundary water agreements, access to water under occupation and armed conflicts are distinctive issues in achieving SDG 6 in the Arab World.
- Regional and National specificities of countries can be acknowledged when pursuing progress across the SDG6.
- The proportion of population under water stress is defined in SDG 6 but no separate indicator exists, if created, that would be highly relevant for Arab Countries.
- The implementation of the Action Plan for the Arab Water Security Strategy which promotes integrated water resources management for sustainable management is facing lack of funding.
- Project selection mechanisms for funding purposes need to be transparent and allow participation of the stakeholders.
- Financial commitment at state level is critical in achieving cross-cutting water related sustainable development goals.

Recommendations/Commitments

- Cooperation on transboundary water is a must for the Arab region “Water needs to be considered as a collector not a sector”
- Importance to involve representatives from Countries applying for funds in the evaluation and selection process.
- Mobilization of resources at national, regional and international levels to implement the Arab Water Strategy.

- Involvement and cooperation of civil society for the design and implementation of national work plans to achieve SDGs.
- Commitments of Regional and International Organizations to the Arab Region in the process of achieving SDG#6:
 1. ESCWA Regional High Level Forum involving the Ministerial Council (Before April 2018).
 2. Arab Ministerial Water Council Meeting (May 2018)
 3. Second Sustainable Development Report in the Arab World (First half of 2018)

Discussion Highlights

- Links between the Water-Energy-Food (WEF) sectors and the importance of nexus approach to achieve WEF Security are highlighted.
- Application of the nexus approach in the Arab region is needed for: enhancing water, energy and food security and efficiency and supporting transition to green economy and securing human rights.
- Water should be seen as a comprehensive framework of life and not just a sector.
- Several successful applications of Nexus approach in some countries of the region were highlighted such as:
 - » Sudan experiences in involving ministries of water resources, electricity and agriculture in the national committee of natural resources.
 - » The initiative in Sudan to establish a Water University involving all disciplines supporting the nexus approach.

I.2 Water, Food, Energy, Climate Nexus: Solutions for the Arab Region (PS2)



Lead convener: GIZ

Co-conveners: LAS, FAO, UNESCO, AWC

Objectives

- Articulating the analysis of current challenges to achieve water, energy and food security (WEF) nexus.
- Formulating trajectories for the adoption of a WEF nexus approach under the present institutional landscape.
- Highlighting the ongoing policies in the Arab region and in pilot countries where LAS, GIZ, ESCWA and FAO are implementing various initiatives in partnership with countries and regional organizations.
- Addressing the relevance of the WEF nexus approach to the region and ways to move its adoption from regional policy into implementation programs.
- Focusing on the importance of studying the evapotranspiration effects for conservation of losses as it affects the environment, energy, agricultural efficiency and food security.
- Developing new and creative ideas for applying the nexus approach and contributing for resources sustainability/security of WEF and SDG's implementation.

Key Messages/Priority Actions or Solutions

- Knowledge gap on WEF nexus needs to be bridged by research and contribution of universities

- Governments of the Arab region have to create the enabling environment for the private sector to invest in nexus projects.
- There is a need for a comprehensive and clear strategy for the observing the WEF nexus in planning and implementation of future projects.
- There is a need for master plans, monitoring systems, financial support plans and effective governance to achieve nexus goals.
- Nexus approach implementation will support the adaptation and resilience measures of climate change impacts.
- The regional cooperation is a key factor to achieve the nexus implementation in the Arab region.
- International institutions such as GIZ, FAO, ESCWA, UNESCO and others play an important role in supporting the implementation of pilot nexus projects in the Arab countries to achieve SDG's.
- FAO supports projects focusing on anticipating the development trajectories in 2030 in specific countries and analysis of all alternatives to reach these goals considering inter-sectoral (nexus) policies.
- ESCWA started efforts on nexus mainstreaming in 2012 by developing the regional commission for the Arab region and the inter-governmental inter-sectoral dialogue on nexus needs, priorities and partnerships.
- ESCWA developed the road map for food security and the human rights to water, energy and food. Many projects are currently in progress such as Water-Energy access capacity development for achieving SDG's, capacity development toolkit for the region, water agriculture project, jointly implemented with SIDA to promote food and energy capacity development in the region and enhance cooperation between sectors.

Recommendations/Commitments

- GIZ in collaboration with partners supports mainstreaming of nexus into sectoral policies and institutions in the Arab region, and this contributes to the sustainable development of the region.
- FAO regional offices with SIDA and through partnerships initiated regional projects to undertake the implementation of the nexus approach through assessment to achieve SDG 6.4 with its water use efficiency indicator and how to reach sustainable consumption and reduce water stress.
- Future projects supported by ESCWA include water agriculture security project, dialogue between sectors in the region, renewable energy application project with SIDA, and nexus approach to implement SDG's
- Leverage of systems efficiency and institutional reform is needed to adopt nexus approach in the region.
- Countries need to consider the importance of the Capacity building component to achieve nexus implementation.
- Encouraging the private sector to invest in the nexus projects by creating the enabling environment and the needed supporting legislations.
- Raising awareness and capacity building on quantified nexus interconnections and benefits.

II. Special Meetings

II.1 High Level Dialogue on Water in Sustainable Development (SM1)

A High Level Dialogue on Water in Sustainable Development was held on the first day of the Forum with the aim to assess the progress made so far by the Arab Countries collectively and individually with respect to SDG 6 and other related water goals.



Lead convener: AWC

Co-convener: LAS

Objectives

- To engage decision-makers and top-level water stakeholders in dialogue on water, since it is understandable that solutions in water management can only be implemented via shared vision, political will and leadership.
- To provide an Arab shared vision and propose an integrated approach for accelerating the achievement of SDG 6.
- To suggest solutions for mitigating/removing limiting factors for achieving more tangible results.
- Provide input to Arab contribution in the Political Process of the 8th World Water Forum.

Discussion Highlights

Four discussion points were raised and discussed:

- To which extent the SDGs have been transformed from global aspirations to actions by the Arab countries collectively and individually? Specifically what actions have been done so far?

- What are the constraints that might obstruct making progress in the water sector whether they are political, economical or social? And what do you propose to overcome them?
- What are the tools and mechanisms in place to monitor and review the progress in achieving the SDGs with respect to water? And what are the institutional arrangement in place for this purpose?
- What are the most important recommendations for water stakeholders in the Arab countries and their development partners for achieving the SDGs?

Key Messages/Priority Actions or Solutions

- All 17 SDGs are interlinked, thus interactions require careful analysis.
- Improving national and regional capacities in accessing global and regional funds.
- Importance of encouraging investments in water, sanitation and hygiene programs by providing an enabling environment of regulations and proper legislations to ensure maximum and long-term benefits.
- There is a need to join forces to overcome financial constraints that hinder achieving the SDGs in many of the Arab Countries.
- The Role of the private sectors and the Arab development funds in supporting water investments in the Arab region.
- Updating the Arab Water Security Strategy to accommodate the SDGs' indicators.

Recommendations/Commitments

- Facilitate opening communication channels with Arab Funds through LAS Sustainable Development Department.

II.2.Promotion of Integrated Investments in the Water Sector in the Arab Region (SM2)



Lead convener: EU

Co-convener: LAS

Objectives

- Exchange views on the proposed next steps to be taken in the framework of promoting integrated investments in the Arab Region.
- Explore means of cooperation and potential areas of co-finance in water sector in Egypt.

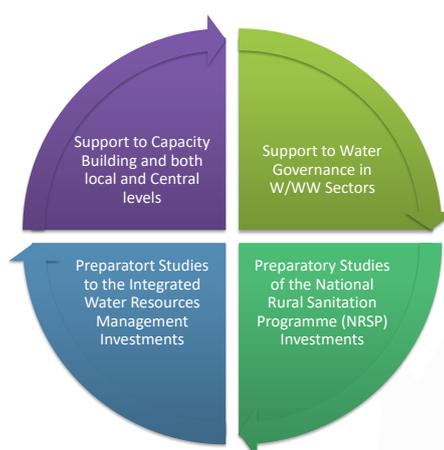
Discussion Highlights

- The role of EU External Investment Plan and other donors in Egypt and MENA region.
- Water sector priorities include: Enhance availability of fresh water resources – improve water quality – enhance the efficiency of water use – improve enabling environment for planning and implementation.
- The Water Sector Reform Program, phase II (preparation of national water resources plan, financial reform and capacity building of Water and Wastewater Holding Company ...etc).

- Cooperation between Ministry of Housing and Ministry of Water Resources and Irrigation of Egypt in depollution project of Kitchener drain in Egypt.
- Cooperation between the government and the private sector in water issues.

Key Messages/Priority Actions or Solutions

- Role of Germany in water sector and its financial support with almost 700 M EUR.
- Supporting the different phases of water projects in Egypt, e.g. National Water Resources Plan in its final phase.
- Proposed potential high priority soft support would include: Support to capacity building on local and central levels, Support to water governance in water and wastewater sectors, Preparatory studies to the integrated water resources management investments, and Preparatory studies of the national rural sanitation programme investments.



II.3. SDG-Climate Nexus Facility* (SM3)



Lead convener: AWC

Co-convener : WFP, UNDP Finance Initiative, UNISDR

Objectives

- Exchange ideas and thoughts with all development partners in the region on the proposed next steps to be taken under the framework of the Facility.
- Discuss investment priorities based on national requirements.

Discussion Highlights

- Highlighting key elements, outcomes of the initiative. Partners highlighted their contributions and special interest in the initiative.
- How links could be established with the Sustainable Development and International Cooperation Department and their related committees.
- Integrating all nexus pillars in a nexus approach is a complex task that requires multi-disciplinary efforts from several sectors. Overcoming such complexity needs proper investigation and consideration.

Key Messages/Priority Actions or Solutions

- The importance of linking science and data to policy-making (Evidence-Based Decision making).
- The critical need for integrated approaches particularly in fragile environments.

- The importance of mapping regional strategies and filling the gaps between existing initiatives to achieve the SDGs.
- The importance of sustainable finance and green economy in enhancing the sustainable development efforts.
- The importance of access to environmental analysis to be integrated with social and economic analysis.

Recommendations/Commitments

- Facilitate opening communication channels with Arab Funds by LAS (in the upcoming few months through LAS Sustainable Development Department who plans to organize several meetings).
- Several organizations confirmed their interest to join the Initiative (WMO, ICARDA, DAAD, IUCN and UNEP GEMS Water) in the upcoming few months through LAS and AWC.

III. Special Sessions

III.1 Role of Media in Raising Awareness on Water Resources Management (SS1)



Lead convener: Ministry of Water Resources and Irrigation (MWRI), Egypt

Co-convener: Arab Water Academy/ AWC, EU, Arab Water Council Youth Network, Holding Company for Water and Wastewater, LAS

Objectives

- Define the role of media in raising awareness on water resources management issues.
- Suggest means to optimize this role to influence the public behavior including all members of the society with regard to the use and conservation of water resources in terms of quantity and quality.

Discussion Highlights

- The role of the Media Unit at the MWRI, Egypt in raising different stakeholders' awareness on water issues through various activities: conferences, workshops, contests, social media, MoUs with different religious and private institutions...etc.
- The role of Arab Water Academy in transferring knowledge on water issues to the high managerial level in the Arab region.
- The role of Arab Water Council Youth Network in increasing the youth awareness on water issues.

Key Messages/Priority Actions or Solutions

- Media wars in the present era are substituting military wars.
- The important role of art and drama in raising awareness on water.

Recommendations/Commitments

- Water challenges are national issues. Accordingly, media should support national goals and strategies disseminating and considering water issues messages as priority.
- Developing media strategy and availing the findings of studies and facts related to water issues for the public in the Arab region.
- The awareness on water should be consistent with all the visions, norms and at both national and international law principles. It should also be innovative, modern and informative.

III.2 Arab Region on the Way to the World Water Forum: Towards Active Contribution (SS2)



Lead convener: LAS

Co-convener: AWC, WWC

Objective

- Present the WWF8 structure and processes and discuss ways of contribution to voice out key messages of the region to the global water community.

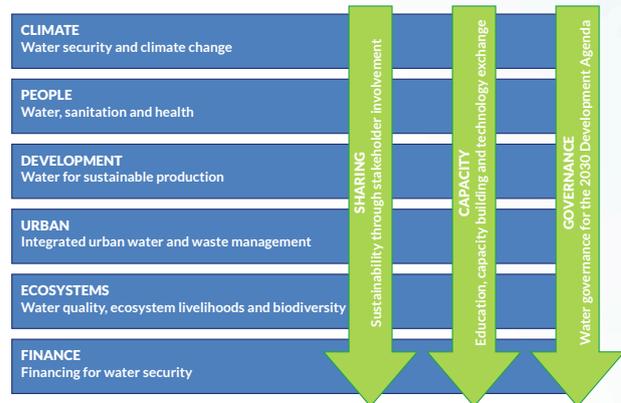
Discussion Highlights

- The WWF is considered as the biggest platform that gathers experts from the globe to discuss water issues.
- The processes of participating in the Forum include Regional Process, Thematic Process, Political Process, Citizen Forum Process, and Sustainability.
- The 4th Arab Water Forum outputs will be used as inputs in the regional report that will be submitted during the WWF8. This report will highlight the messages we need to present in the WWF8.
- As per the political process, it was stressed on the importance of actively participating in the Prep-COM meetings that will be held in Paris in order to discuss the Ministerial Declaration that will be issued at the end of the Forum.
- The thematic process will be through addressing one of the six themes (Climate, People, Development, Urban, Ecosystems, and Finance) and three cross cutting issues (Sharing, Capacity, Governance) selected for the WWF8 which reflects priority areas for a changing world with growing uncertainties.

Key Messages/Priority Actions or Solutions

- AWC is always keen to participate in the Thematic and Arab Regional Processes of the World Water Forum.
- Water under occupation and transboundary water management challenges are the main issues needed to be presented and discussed during the WWF8.
- The need to highlight the issue of water security in the Arab region.

- Need for more collaboration to unify our messages specially that we have common challenges in the region at the national and regional levels.



WWF8 Thematic Framework

Recommendations/Commitments

- The Arab region will convene a high panel session on “Water and the forced immigration”.
- The AWC is committed to participate in the Regional Process of the WWF8 and applied as a co-convenor of two thematic sessions: Theme 2 on “People” with a Topic on “Enough Safe Water for All” and for Theme 3 on “Development” with a Topic on “Water, Food & Energy Security” subject to approval of the WWF8 Thematic commission.
- The Arab Region should be more engaged in the Citizen Forum and Political process.
- The contribution to the Region report is welcome with a special focus on transboundary water, people and development and water under occupation. The report should also reflect all segments of society.

- The Region should organize its presence by assigning clear roles and responsibilities to participants from the region and ensure the participation of world class speakers.
- The Region should focus on the Inter-regional sessions to convey its key messages to the world.
- Encouraging, supporting and strengthening the participation of NGOs, CSOs and the youth in the forum to convey the Arab Region's messages.
- Ensuring good coordination between different entities and strengthening the collaboration between them as well as between government & NGOs.
- The Arab Region should use short media clips/videos as an efficient strategic mean.
- The Arab Region should optimize access to existing sponsorship opportunities for wider participation.
- Draw on comments and perspectives of the Arab Region on the report entitled "Beyond Scarcity: Water Security in the Middle East and North Africa".
- Contribute to build a framework for better understanding the challenges and opportunities that exist in the field of water security in the region.

Discussion Highlights

- Progress at the country level from the last World Bank Report (10 years ago).
- Potential use of the WB Water Security Report to assist in building national/regional action plans
- Youth rights versus proactive participation from their side to help addressing water issues
- Generic Security report vs country specific one.

Key Messages/Priority Actions or Solutions

- Water security is about much more than just coping with water scarcity.
- Water governance challenges are the common denominator of water insecurity in the region.
- Strategies that focus on 'supply side' solutions have made limited progress towards water security.
- Global experience shows that technology, policy and institutional management need to evolve together to achieve water security.

III.3 Regional Water Security in the MENA Region (SS3)



Lead convener: World Bank

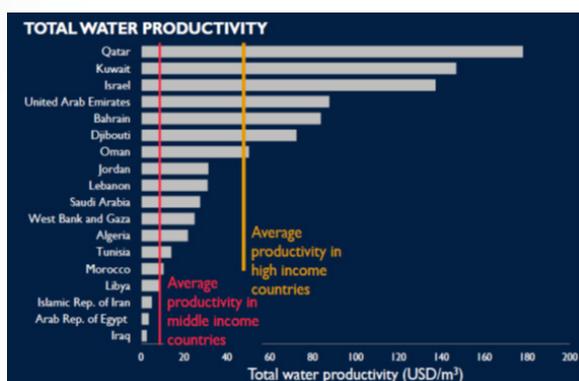
Co-convener: CMI

Objectives

- Focus on water security in the MENA region: Sustainable water management, delivery of services and water-related risks such as climate change, trans-boundary water management and water in fragile settings and trying to find solutions for water security in the region.

Recommendations/Commitments

- Sector reform to achieve financial viability.
- Include Youth and gender in addressing water issues in the MENA Region
- New consciousness is required for sustainable management
- Achieve commercial viability and develop technologies to make water affordable
- Carefully addressing the water security issue to avoid internalizing it for governments to look at.
- Increase capacity building.



III.4 The Regional Environmental Center (REC) Activities in the MENA Region (SS4)



REGIONAL ENVIRONMENTAL CENTER

Lead convener: The Regional Environmental Center (REC)

Objectives

- To introduce general facts about the REC.
- To focus on the objectives and achievements of the WATER SUM project

- To discuss the common challenges related to IWRM, including Water and Security and the SDG6.
- To open a platform for discussion about current need, modalities and prospects for future collaboration.

Discussion Highlights

- REC, established 25 years ago, carried out major projects in Europe and other regions, main areas of expertise (Environment, Water Resource Management, Climate Change, Natural Resources) and its activities to support the SDGs.
- Water SUM project overview and achievements: Project duration: April 2014 – March 2018, budget: 7.26 M Euro funded by SIDA, beneficiaries: Egypt - Jordan - Tunisia.

Objectives:

- » Build the capacities of national authorities for IWRM;
- » Create common understanding among water practitioners and stakeholders on regional water issues;
- » Strengthen skills for dealing with climate change impacts on water resources.
- » Knowledge transfer and good practices exchange
- Keynotes from beneficiary's countries on project benefits and future needs:
 - » Tunisia: numerical analysis and modeling trainings in the field of flood management as well as early warning systems.
 - » Egypt: More than 174 trainees from different sectors in national or regional workshops in different areas of water

management in addition to the exposure gained and networking skills improved. Future training needed in transboundary water management and ground water modeling.

» Jordan: Many activities were organized in different fields, and need for future support to address the challenges of calculation and monitoring the indicators of SDG 6.

- REC vision towards transboundary water management is to provide a platform for exchange of experiences and lessons learned, reaching common understanding of needs and challenges and achieving joint programs at the basin scale.

Key Messages/Priority Actions or Solutions

- The successful transfer of knowledge and skills to actors in the water management arena is expected to bring institutional and behavioral change; in addition to boost development in participating countries, share new methods for improved water management and to improve planning at all levels.
- Water SUM is the first Project implemented by REC in the MENA Region; the last three years were sufficient to better know the countries and identify their needs.
- Water SUM Project helps to move from strategies and plans on climate change to applications on the ground by providing documentation and training on applications and modeling in addition to providing knowledge and know how.

Recommendations/Commitments

- Further cooperation, knowledge transfer and capacity building are needed in the Region through REC.

III.5 Arab State of the Water & Sustainable Development (SS5)



Lead convener: CEDARE

Co-convener: AWC, DFID, LAS

Objectives

- Present an update on the State of the Water in the Arab Region reflecting preliminary information from the 2015 3rd Arab State of the Water Report, prepared by CEDARE, AWC, and LAS.
- Present SDG6 on Water and the associated targets and identified indicators to measure progress made in achieving these targets.
- Elaborate on the methodology put in place for assessing some of the SDG6 indicators and to raise awareness on efforts needed by the countries in the region to work towards achieving the SDG6 targets.
- Provide an opportunity to have a common understanding between government officials in the Arab Region, UN Organizations relevant to SDG6, and other development agencies working in the region on the required capacity, not only to develop plans for achieving the SDG6 target, but also the required capacity for monitoring and evaluation of progress made in achieving the SDG6 targets.

Discussion Highlights

- Preliminary information of the 3rd Arab State of the Water Report, the main issues of water resources in the Arab Region, Global Environmental Management initiative (GEMI) and Global indicator framework of SDG 6 especially SDG 6.3.2 (proportion of bodies of water with good ambient water quality)
- Importance to complete the country data and request countries to expedite data supply so that the report reflects the real state of water
- Many researches are not implemented and the transition to the application stage is required.

Key Messages/Priority Actions or Solutions

- Although many Arab countries have recently increased investment in water resources infrastructure and dams, the Arab World still faces many economic, political and climate change challenges.
- Many variables that have taken place in the Arab world recently among which the political circumstances and the displacement of some population from their original land were reflected on the report data.

Recommendations/Commitments

- Adding the data ratio to the country space as well as adding the range of some data to clarify report data and information (CEDARE).
- Building capacities of countries in the field of data delivery for sustainable development objectives (Arab Water Academy, CEDARE, AWC, GEMI).
- Producing the report on both the local and regional levels and a focal point should be appointed to accomplish this task (CEDARE).

III.6 The Debate of Equating Improved Irrigation Efficiency to Water Saving (SS6)



Food and Agriculture
Organization of the
United Nations



Lead convener: FAO

Co-convener: AWC, IWMI

Objectives

- To shed light on the misleading assumption that irrigation efficiency leads automatically to water saving.
- To provide insights on 1) how possibly restoring a balance between sustainable supply and consumption of water and 2) what are the conditions for taking advantage of the benefits of hi-tech irrigation without jeopardizing sustainability.

Discussion

- Does improved irrigation technology save water? If so, in what scale?
- Does it increase productivity?
- Regulations that must be implemented with promotion of improved irrigation.

Key Messages/Priority Actions or Solutions

- Modern irrigation technology can save water on the farm-scale, but can increase basin scale water consumption.
- There is a need for water accounting, and based on its results policies to affect water allocation/abstraction/use should be determined.

Recommendations/Commitments

- Water accounting should be conducted, and the results should be used to decide policies affecting water use/allocation/abstraction.

III.7 Arab Water under Occupation ... The Main Challenges to Achieve SDGs (SS 7)



Lead convener: Palestinian Water Authority

Co-convener: LAS

Objectives

- To present and analyze the status of water under occupation in Arab lands.
- To shed light on the economic, social, health and environmental impacts of Israeli violations on the lives of people in these lands. The session will legally analyze Israel's governance and use of transboundary water resources in compliance with general principles of customary international law, rules provided by International Humanitarian law (IHL), International Human Rights Law (IHRL) and International Water Law (IWL).
- To set recommendations considering the existing international and political changes. and to use the political and diplomatic channels to force Israel as the Occupying Power, to stop its illegal water resource depletion policies in Arab lands under occupation, and examine new mechanisms for mobilizing international public opinion towards the human right to water, especially in Palestine.
- To set recommendations for sharing at the 8th World Water Forum and at future international water events.

Discussion Highlights

- The importance of drawing the world attention towards the Israeli violations in exploiting the natural resources in the territories under occupation.
- Coordination and collaboration between the different actors in the Arab region is crucial to deliver clear messages about the situation in the territories under occupation.
- All the Palestinian parties have to resolve their differences and take a united position to face the Israeli violations and to empower their position in the international forums.

Key Messages/Priority Actions or Solutions

- Establish an Arab network in order to monitor the water situation in the Arab region.
- Mobilize the regional and the international public opinion to defend the Arab rights in the light of International water law principles.
- The importance to enhance communication with the international organizations working in the Arab region (UNEP- UNESCO).
- There is a need to establish a specialized center on hydro diplomacy in order to build capacities capable of dealing with all the controversial issues in a diplomatic and scientific way.
- Enhance the coordination and collaboration between different entities participating in the WWF 8 in order to deliver a concrete, strong & unified message to the international community.
- Efforts have to be exerted to resolve the differences of the Palestinian to face the Israeli violations and to empower their position in the international forums.

- Apply the rules of international water law with transparency in order to achieve peace and stability in the region.
- Effect of climate change on aquifers water level and water quality degradation.

Recommendations/Commitments

- The importance of unifying the political position of the Arab countries.
- The importance of setting a clear strategy concerning the Arab participation in the WWF8. It is also necessary to enhance the Arab participation in the Citizen Forum of the WWF8 with an emphasize on the water situation in remote areas/ conflict areas.
- Strengthen the coordination between the Palestinian authority and LAS in order to form a team tasked to reinforce the coordination with the international organization.
- Importance of having an effective management tools for the aquifers at national and regional level.
- Continuous monitoring and assessment to protect Oases ecosystems.
- Models are not 100% reliable, there is uncertainty, but they can give us indication.

Key Messages/Priority Actions or Solutions

- Study the impact of sea water rise on the Nile Delta.
- Study the impact of climate change on fresh water resources
- Integrate hydrological/economical models for forecasting

III.8 Climate Change and Water: Impacts and Adaptation Measures (SS 8)



Lead convener: ESCWA

Co-convener: NWRC

Recommendations/Commitments

- Link research related to climate change to policy-making and planning investment projects.

Objective

- Share experience from the regional initiative RICCAR and national efforts on climate change impacts and climate change adaptation strategies and measures in Egypt.

Discussion

- Implications of climate change are witnessed in several ways such as changes in the Nile inflow, sea level rise, changes in agricultural water consumptions, and increase in the vulnerability of the Nile Delta.

III.9 Promoting the Use of Non-Conventional Water in the Arab Region (SS 9)



Food and Agriculture
Organization of the
United Nations

Lead convener: AWC

Co-convener: UNESCO, FAO

Objectives

- Demonstrating the outcome of phase 1 on promoting the sustainable development and use of non-conventional water resources.
- Provide clear indications on what are the scope of work and specific activities that could be implemented during phase 2 for promoting the use of non-conventional water resources.

Discussion Highlights

- Highlights on the outcomes of the five policy briefs produced in phase 1 underlining the challenges and opportunities of the use of non-conventional water resources.
- Informing on Egypt's Road map on Desalination, Brackish water use guidelines, and wastewater reuse opportunities.
- Among several activities listed in the framework of actions that was formulated during phase one, choices have to be made for the next phase.
- Priority actions for phase II of the NCWR initiative (2010-2020)

Key Messages/Priority Actions or Solutions

- The future of "Arab Water Security" will largely depend on the development of non-conventional water resources (NCWR), which offer great potentials but also include many challenges.
- Regional cooperation and sharing of best experiences and technology development are key for advancing the agenda of NCWR.
- AWC and its partner could play a leading role and help the region to engage in a concerted effort in promoting the use of NCWR.

Recommendations/Commitments

- Draft a detailed plan for phase II including capacity building, knowledge transfer through information sharing and initiating pilots.
- By providing the enabling environment, the Arab region needs to identify and build up NCWR related portfolio of projects which could be further supported and financed.

III.10 Shared Waters in the Arab Region: Potential Transboundary Impacts and Cooperation Opportunities (SS 10)



Lead convener: CEDARE

Co-convener: AWC, LAS

Objectives

- Present the Potential impacts of current upstream activities and infrastructure development on the transboundary rivers originating outside the Region. Potential impacts on Egypt, Sudan & Somalia will be presented.

- Discuss the cooperative management opportunities on shared waters.
- Cooperation and prior consultation between Ethiopia and the adjacent countries on planned water projects (Djibouti, Eritrea, Sudan, South Sudan, Somalia, Kenya and Egypt) is essential to eliminate and avoid disputes and maintain peace and security in the Horn of Africa and East Africa.

Discussion

- Using of all available water resources (Green + Blue) to assess the actual uses and needs of the different countries
- How to calculate the natural River Nile flow after GERD
- Are there any other uses from GERD Reservoir other than Hydropower generation?
- Different scenarios, describing the effect of filling and operating of GERD on Sudan and Egypt, were presented.
- Water conflicts among riparian countries may cause political instability. And political conflicts may cause water conflicts.

Key Messages/Priority Actions or Solutions

- Unilateral decisions from upstream riparian country on a shared river may threaten the peace and stability in the related region.
- Transparency and data sharing related to shared rivers are important and are not considered as violating the upstream riparian country sovereignty or penetrating its internal issues.
- Cooperation, integration and win-win alternatives are the solution to water tensions.
- The current International water conventions may need to be revised because they did not succeed so far in preventing water disputes in the region.
- The mega development agreed-upon projects should receive international funds from the different international agencies.

Recommendations/Commitments

- Constituting an alliance of downstream riparian countries of different River basins is needed to form a common voice.
- Developing a suitable entity or commission to manage the shared river basin.
- Development corridor projects such as (Victoria-Mediterranean road) and a similar corridor on the Eastern Nile presents good examples for cooperation.
- Regional entities such as AWC, CEDARE, and ESCWA can play a vital role in developing dispute and conflict resolution mechanisms among riparian countries on a shared basin.
- The presented Study on the GERD potential impacts on Sudan and Egypt should be presented at the 8th WWF.

III.11 From Traditional Knowledge to Innovation: The Role of Modernization in Improving Water Use in Agriculture (SS 11)



Lead convener: ICARDA

Co-convener: FAO, AWC

Objectives

- Demonstrate how traditional and indigenous knowledge of water management in agriculture can help improve modern technologies to meet water scarcity and food security.
- Discuss innovative approaches to increase water efficiency and productivity in agriculture.

Discussion

- If the MENA region doesn't optimize the use of water in 20 years, there will be catastrophic results. The price of doing nothing is enormous.
- Water-Food-Energy nexus; how do we bring everyone together to achieve zero hunger and the SDGs.
- Can we really benefit from indigenous knowledge especially in the dry area? Yes we can modernize old practices of the region.
- We cannot just focus on water, we need to look at agriculture and the environment as a whole.

Key Messages/Priority Actions or Solutions

- We can only achieve progress by working together
- Traditional knowledge can help us lead to innovative practices in water management

- Some of the climate change challenges are not new, we have dealt with similar challenges before.

Recommendations/Commitments

- Look at agro-ecology as a whole.
- Capacity building is a must.
- Institutional reform should be part of modernization.

III.12 Use of Solar Energy for Development of Mega Projects (SS12)



Food and Agriculture Organization of the United Nations



AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DEVELOPPEMENT

Lead convener: FAO

Co-convener: MWRI, ADB

Objectives

- Highlight the use of solar energy in irrigation sector and the present efforts exerted by the Government of Egypt.
- Demonstrate the solar energy applications in irrigation sector.
- Discuss the feasibility and financing scaling up.

Discussion Highlights

- The different challenges facing the Arab region such as population growth, lack of awareness of water key issues, and the gap in energy.
- The use of solar energy as one of the main renewable sources of energy and its application in abstraction of ground water.
- The developed solar fields in Egypt as a promising example of the use of renewable energy.

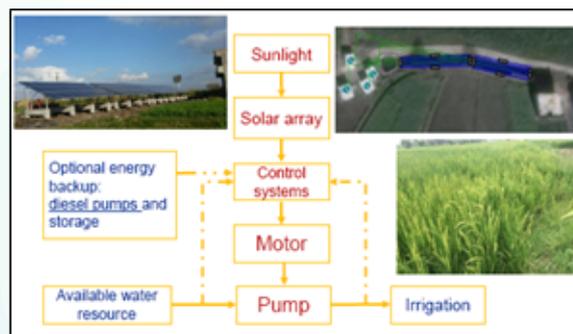
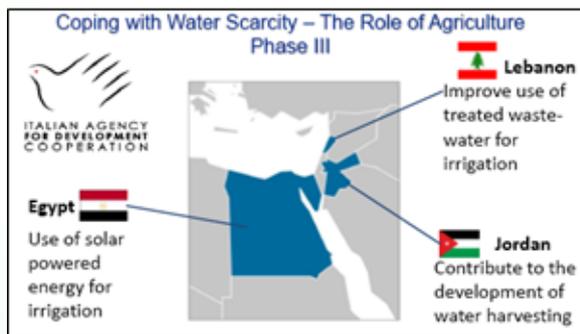


Ground water pumping using solar energy in Egypt

- Mega-Scale Solar Energy Projects and the Distributed Renewable Energy Systems in the Arab countries
- The 2030 plan to reach 20% solar energy of the total needs of energy in Egypt
- Demonstrating the FAO supporting projects in using solar energy such as the irrigation projects in the Nile delta and in other Arab countries such as Jordan and Lebanon.

Key Messages/Priority Actions or Solutions

- The use of renewable energy has become one of the key potential alternatives to close the gap between the power supply and high energy demand projects.
- Promoting the use of solar energy in Mega developmental projects.
- Promoting the role of research and advanced technologies of solar energy production, feasibility and use.
- The important future role of the renewable energy to meet the needs of the energy sector.
- Developing new technologies and methods to reduce the cost of renewable solar energy development.
- There is a considerable potential opportunities for electrical works relative to renewable energy market in Egypt.



FAO Projects for using solar energy in irrigation

Recommendations/Commitments

- The New and Renewable Energy Authority of Egypt intends to invest in renewable energy and solar energy research to come with new technologies that are cost effective such as the cost effective solar panels.
- Large-scale renewable energy projects are one of the main elements to attract Foreign Direct Investments,
- Based on the current devaluation of renewable energy prices, competitive bids may replace Feed-in-Tariff (FiT) in the coming phase.

III.13 Scaling-up the Safe Use of Recycled Water in the Arab Region (SS13)



Lead convener: IWMI

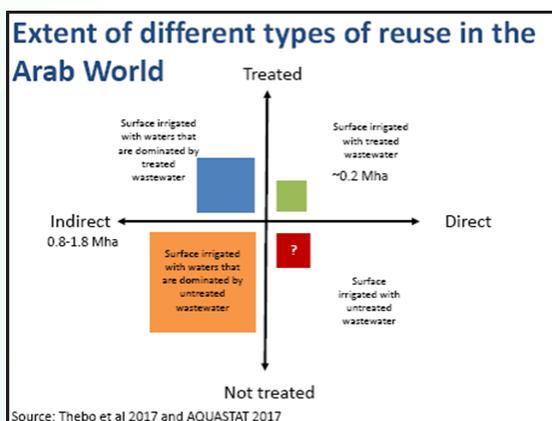
Co-convener: ICARDA, FAO, SIDA

Objectives

- Present key challenges and opportunities for safe reuse based on years of research.
- Discuss promising solutions to upscale the safe use of recycled water in agriculture and aquaculture in the Arab Region.
- Discuss and highlight examples of success with replication potential in the Arab region.

Discussions

- Factors aggravating scarcity in the region: CC, population growth, urbanization, internal immigration, pollution and wastewater, limited amount of safe water.
- The tremendous importance of the reuse potential for improving irrigation efficiency.
- To what level do we need to improve the quality of recycled water for safe reuse?



Types of reuse in the Arab world

- Challenges facing the reuse in the region and opportunities for up scaling.
- Countries seek solutions in the region. Recycling is still untapped resource.
- Unsafe reuse is more common, and indirect reuse is more frequent.
- Challenges include cultural barriers and distrust. Advocacy and awareness campaign is a solution over stringent regulations, low-cost treatment technology, flexible regulatory frameworks are solution. Institutional fragmentation, requires coordination mechanisms as a solution. Economic incentives and financial models for cost recovery can be solutions.
- Replicating bright examples and success stories and learning from other countries, such as As Samra WWTP, Jordan. This helps in cost recovery of the investment. Key of success in this project: interest of all sectors and parties are met.

Key Messages/Priority Actions or Solutions

- There is confusion in the water resources balances. Treated sewage water is not a new resource but a recycled resource.
- The barriers for water reuse are mostly lack of finances in the region. Investment cost is high, thus sewage water is used directly without treatment.
- Grey water can be used by treating it at the household to release stress on use of resources.

- Water reuse barriers in Palestine include the occupation barrier that hinder the treatment of water, socioeconomic level, institutional fragmentation, water law interpretation, political will, enabling environment, the proper managers of WWTP, competition between sectors on the use of wastewater, increasing demand rather than filling the water gap, institutional competition in using wastewater, lack of incentives, proximity of the WWTP and financial resources for the collection and treatment.
- Location of WWTP may weaken the reuse option due to availability of treated water in the presence of fresh water.
- The most important barrier is the lack of real commitment from the countries as well as the financial constraint for maintenance of the WWTP.
- Successful examples:
 - » CEDARE involvement with 6 ministries in Egypt to develop 2030 wastewater reuse strategic plan.
 - » New wastewater reuse code in Egypt was established in 2015.
 - » Saudi Arabia is including the private sector in financing the recycling and use of recycled water.
 - » FAO led few projects for low cost treatment in some countries but political barriers are there. Success is on social level to improve acceptance of farmers and increase their awareness, involvement of farmers in all stages of these projects to get their engagement.
 - » In Palestine: the enabling environment, laws are developed. Planning of a WWTP was combined with a reuse scheme. Awareness programmes to farmers, and farmers to farmers visits between countries to learn and know and exchange local experiences.
- » Grey water units cost 1000 us\$ for a household, examples in Matrouh Gov. Egypt.
- » El-Gona touristic compound on Red Sea includes a large WWTP locally and reuses tertiary treated water where hygiene is guaranteed 100 %.
- Grey water does not have any biological problems only chemical and odor problems which can be treated.

Recommendations/Commitments

- Awareness raising on use of grey water is needed.
- Acceptance of the use of recycled water is no more a major challenge as in the past.
- AWC invites IWMI to join the efforts and collaboration in projects using recycled water.
- Shift from piloting to national planning in wastewater reuse.
- Barriers that should be overcome to increase water reuses: negative media, tariffs, taboos, changing perception of users, lack of political will, location of reuse WWTP.
- Separating grey and black water helps in accepting the approach.
- Use of existing technologies and new technologies such as constructed wetlands in water treatment and reuse.

III.14 Shared Water and Water Security in the Arab Region (SS14)



Lead convener: ESCWA

Co-convener: LAS

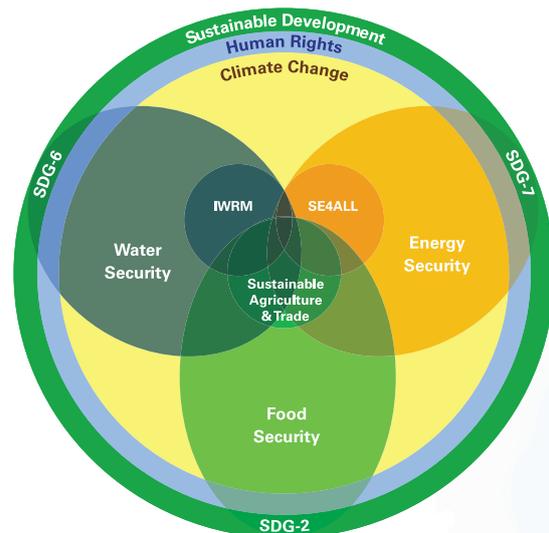
Objectives

- Highlighting the importance of cooperation in attaining water security under shared water resources in the Arab region.
- Exploring the main components of water security for the region in a shared water context and how has the Arab Water Security Strategy adopted by the League of Arab States addressed these issues.
- Exploring the international and regional frameworks to enhance cooperation and water security applicability to the region.
- Exploring the complications that water scarcity and externality of water resources impose on water security in the region
- Investigating how countries manage conflicting demands and internal and external factors on the limited water resources.

Discussion Highlights

- Presenting the key challenges facing the Arab world specially water scarcity issue.
- The shared surface and groundwater resources in the Arab region.
- Impact of climate change on water resources in the Arab Region.
- Water Scarcity and Water Security in the region focusing on:

- » Available water and supply-demand relationship
- » Access to improved drinking water
- » Virtual water.
- » Opportunities of non-conventional water resources
- Introducing water Security key issues and definitions from Agenda 2030.
- Shared waters guidelines and agreements for water security with a focus on Shared Water and Water Security in the Arab region.
- Key international water law to ensure water security in a transboundary context
- Discussing the Empowering of women in water diplomacy and presenting a basic mapping of the challenges in Palestine, Lebanon and Jordan
- Introducing the shared water security from Iraq perspective case study



Key Messages/Priority Actions or Solutions

- Water Security in the Arab region is highly dependent on external factors of which shared water is critical while the significance of scarcity and natural resource endowments can't be highlighted enough.
- Importance of capacity development for Arab negotiators on management of shared water resources issues.
- Developing a regional legal framework on shared waters in the Arab region.
- Availing funding for shared water resources technical projects serves as an entry point for cooperation between riparian countries.

Recommendations/Commitments

- Improving cooperation on shared water resources management between Arab states is a priority for water security in the region.
- To promote the inclusion of women at all levels of decision-making in order to empower them, given the positive role that women can play in Water Diplomacy.

- To assist countries carry out relevant assessment for water resources management under various climate change scenario and drought conditions.
- This knowledge-based platform will help countries of the region to develop in-depth analysis and assessments of present and projected development scenarios to increase their resilience and sustainability.
- To illustrate the type of resources the RKP will provide, the advanced ICT tools that will be used, and the possible processing capacity that countries can benefit from.

Discussion Highlights

- The regional collaborative platform for the regional initiative.
- Three platforms on ET and water productivity from FAO, climate change (RICCAR) from ESCWA, and drought monitoring and early warning from ICBA are introduced. How these products were shared through ICT.
- RICCAR is to assess the impact of climate change on freshwater resources in the Arab Region. In total, 11 organizations worked to produce RICCAR. Climate change impact assessment and climate change vulnerability assessment were conducted. It has features of:

- » Two emission scenarios, high and moderate emission scenarios.
- » 50 km scale and 25km for some extreme event analysis.
- » Two reports are available online including the documentation and data to promote research.
- » Producing Website for static information and a Data Portal.

III.15 The Regional Knowledge Hub: An Advanced ICT Platform to Address CC and Water Management (SS15)



Lead convener: FAO

Co-convener: ESCWA, GIZ, ICBA, USAID

Objectives

- To update participants on the knowledge products and ICT tools that will be available through the Regional Knowledge Platform.

- » Regional climate modeling to the end of century that uses ensemble products for each scenario.
 - » Output is for Arab domain and sub-domains. And it also produces outputs for different time frames of 20 yrs. Output is available at daily temporal resolution
 - » Extreme climate indices were also produced.
 - » Hydrological modeling was also conducted. There are several sub-domains and uses of different emission scenarios.
 - » Integrated vulnerability assessment, exposure and sensitivity, and adaptive capacity are the 3 determining parameters for vulnerability. Each component has indicators. These data are also available in GIS maps/factsheets/spreadsheets etc.
- Drought products (RDMS) from ICBA were produced in collaboration with University of Nebraska, USA.
 - For MENA region, future drought condition analysis was done. Climate indices were the outputs. This information will help countries counteract to future challenges.
 - Currently, drought is managed by crisis reaction. Composite drought index was produced (precipitation, ET, soil moisture, and vegetation stress) for MENA RDMS project implemented in Tunisia, Morocco, Lebanon, and Jordan. Also vulnerability and impact assessments were conducted for past and future.
 - WaPOR project aims to monitor land and water productivity, identify land and water productivity gaps, propose solutions to reduce the gaps, contribute to increase of agricultural production while sustainably using the water resources.
 - Remote sensing products were mainly used for this project and produced by a consortium of private and public institutions.

Key Messages/Priority Actions or Solutions

- The WaPOR project provides database, water and land productivity assessment, water accounting, and capacity development.
- The whole map covering Africa and Middle East are in 250m resolution, while 100m and 30m resolution maps are currently under development. Resolution maps for selected regions are/will be produced by 2019. WaPOR is the web-portal produced from this project.
- All data are publicly available, and analysis products, models, API are/will become available to public.
- Technologies behind database for ET and water, climate change and drought, and regional knowledge are introduced.
- Regional Knowledge Platform (RKP) will combine data from all three products mentioned above.
- ET and water productivity information are useful for irrigation scheme level or larger scales, and WUA and extension can use the data. However, using the data for individual farm management may be difficult due to small land size typically found in this region.
- For the first time it was possible to have ET data with 100m resolution for every 10 days. This allows monitoring for water accounting. Climate change data provide information for analysis for local, national and regional for water resources management).

- Technology is developing quickly. Water accounting, remote sensing, water productivity are new to the region. FAO, ICBA, and ESCWA are conducting capacity building in this region.

Recommendations/Commitments

- Continue Improving the portal over time as technology develops. Spatial resolution will improve in future.
- Various technologies were used. For future, improvement opportunities exist for finer spatial resolution from satellites and drones and also real-time soil moisture data. On the computation side, use of artificial intelligence can be introduced.

III.16 IWRM as a Tool for Sustainable Development in the Arab Region (SS16)



Lead convener: EU

Objectives

- To discuss whether IWRM concept is applied within the Arab Region and particularly in Egypt in particular, and.
- To determine the extent and level through which IWRM is applied.
- To identify the different administrative entities: Integrated Irrigation Districts, different hydrological levels of canals (from main canals up to mesqa level), and water users associations.
- To assess current situation of these entities and organizations.
- To analyze the contribution of EU support (and other IFI's) in the implementation of IWRM concept.

Discussions Highlights

- The Egyptian experience in the application of IWRM in institutional reform and integration.
- The required change in IWRM to support sustainable development.
- Translating the IWRM principles into actions are a-region-country specific.
- The SDG's include a new direct target for implementation of IWRM (target 6-5-1).
- IWRM should support the indicators development for the SDGs.
- The definition of the water sector as a combination of all parties dealing with the national resources (water, agriculture, housing, ...)
- Economic welfare is a tool to calculate the basin welfare.
- Egypt is unique with huge experiences in productive water management. EU took a review to WRM in the country based on integrated service delivery and not allocation of water.
- Four basic pillars were introduced in Egypt case: pillars of the IWRM plan:
 - » development of additional new water resources
 - » making better use of existing resources
 - » protecting health and the environment
 - » support to the enabling environment

Key Messages/Priority Actions or Solutions

- IWRM needs to be well understood by the water sector itself at its different levels.
- The four key pillars for the IWRM under SDG6-5-1 need to be well established.
- The SDG's gave new direct target for implementation of IWRM by target 6-5-1.

Recommendations/Commitments

- Economic data in relation to water should be available.
- Communication and information plans for public awareness is a key issue.
- IWRM should support the indicators development for the SDGs.

III.17 Water Desalination Industry: Regulation, Legislation and Investment in Light of ARWADEX Efforts (SS17)

Lead convener: ARWADEX Academy



Objectives

- To discuss the challenges facing the desalination industry in the region and suggest the appropriate paradigm to overcome them.
- To illustrate how to make the desalination industry an attractive prospect for investors.

Discussions

- In light of the current challenges that face the Arab region in terms of water scarcity, there is a need to adopt new techniques that increase our water resources such as the desalination industry.
- The necessity of developing regulations and legislations between the parties of this industry including the public sector, legislative bodies, investors, developers and plant operators.
- The importance of establishing partnerships with the private sector as an investor in this domain in order to participate actively in the operation and maintenance of the desalination plants.
- ARWADEX is acting as a platform to develop guidelines, regulations and legislations; in addition it can support the decision makers to take well based informative decisions.
- The current cost of desalinating 1 m³ of water is about 1 USD.
- The importance of creating platform for knowledge transfer between experts from the different Arab countries.
- Key Messages/Priority Actions or Solutions
- There is a need to increase the role of research institutes as well as the academia in the field of desalination.
- Increase the role of private sector in the desalination industry
- Expand the use of desalination industry in the Arab region specially Egypt in order to face the challenges concerning the water scarcity.
- Regulations and good legislations accelerate the economy progress and encourage the investor.

Recommendations/Commitments

- The governments should encourage the Arab investors to participate in this industry. The governments have to create an enabling environment to encourage the investors to get involved in the desalination industry.
- The governments should focus on localization of the desalination technology.
- Strengthen the cooperation between the AWC and the academic and research institutes to create a knowledge portal to facilitate the knowledge transfer between the different stakeholders.

III.18 Use of Remote Sensing Technology in Integrated Water Resources Management (Case Study: Egypt) (SS18)

Lead convener: The National Authority of Remote Sensing & Space Sciences (NARSS)



WORLD BANK GROUP

Co-convener: The World BANK

Objectives

- To shed the light on the latest results and findings of the GEF project “The Regional Coordination for Improved Water Resources Management and Capacity Building Program”.
- To highlight the advanced operational systems for water resources management and monitoring that were introduced to the Egyptian Community.

Discussion Highlights

- The project activities include: Groundwater monitoring system, Evapotranspiration measurement system, Crop mapping / productivity analysis, Hydrological modeling and monitoring (LIS).
- Sharing the project progress and key developments.
- Introducing the Land Information System (LIS) components and modes of operation.
- Applications of the project:
 - » Locating near-surface groundwater in Western Desert of Egypt: Potential areas for Agricultural Development,
 - » Natural discharge of groundwater along Faults in the Sahara: Evidence for past and recent Activities,
 - » Study of impact of land surface initialization on the forecast of extreme weather events over Egypt
 - » Using NASA Land Information System (LIS) Software at Nile Delta Region” in application of Evapotranspiration and Drought Severity Index”
 - » Quantifying essential water management variables from space: Applications in Egypt.
 - » Comparative analysis between the NASA (LIS) software outputs and other models applied at Eastern Nile Basin.
 - » Project of Water balance and deep percolation estimates in Nile River basin.

Key Messages/Priority Actions or Solutions

- Grace data can be used to identify the amounts of extraction and could be utilized to develop sustainable or optimum utilization of the NSAS.
- Grace data can also be used for identifying potential recharge areas for agricultural expansions.
- The creation of a customized Egyptian Land Data Assimilation SYSTEM (ELDAS) is a very important step to ensure sustainable use of such an important system that could benefit stakeholders in improving water use efficiency and water productivity.

Recommendations/Commitments

The LIS system should be operationalized in Egypt as it has proven different advantages in water resources monitoring and irrigation activities.

It is recommended to study the hydroclimatic changes under different scenarios to estimate future stream flow projections specifically for the Nile basin and the management of the Ethiopian DAM.

CHAPTER 2: KEY POLICY MESSAGES OF THE 4th AWF

This chapter summarizes the different key policy messages emerged from the sessions as relevant to the five themes of the forum.

Theme 1: Water and Sustainable Development

- The Arab countries still face many socio economic, political, hydro-political and climate change challenges in spite of the recently developed practical solutions in the field of water resources management and increased investment in reform and infrastructure.
- Sustainable Development calls for concerted efforts towards building an inclusive, sustainable and resilient future for our people and societies. Strong partnerships established between civil society, private sector, the Arab development funds and international community in achieving the SDGs can beat water scarcity challenges and support investments in the Arab region in the fields of water, sanitation and hygiene by providing an enabling environment.
- All 17 SDGs are interlinked with respect to water which require careful analysis and adoption of an integrated approach in implementation.
- Importance of improving national and regional capacities in accessing global and regional funds in order to overcome financial constraints that hinder achieving the SDGs in the Arab region.
- There is a strong linkage between IWRM and SDG as expressed by indicator 6.5.1 (Degree of integrated

water resources management implementation). It is also important to differentiate between IWRM and WEF Nexus.

- Mainstreaming WEF Nexus into sectoral policies and institutions in the Arab Region can contribute to sustainable development in terms of its economic, social and environmental dimensions.
- The Arab Region is reaching a critical turning-point and a strong alliance is needed at several levels. LAS, AWC and development partners can assist in addressing the water scarcity challenges and improve transboundary water management, water access under occupation and conflict in order to achieve SDG 6 in the Arab World.
- Regional and national specificities of countries can be acknowledged when pursuing progress across the SDG 6. For example, the proportion of population under water stress is defined in SDG 6 but no separate indicator exists, if created, that would be highly relevant for Arab Countries.
- Project selection mechanisms for funding purposes need to be transparent.
- Updating the Arab Water Security Strategy to accommodate the SDGs' indicators and mobilizing funds to implement its Action Plan.
- There is a need for strong alliance at several levels: people (including youth and gender), private, public, policy, governance and finance in order to design and implement national work plans to achieve SDGs especially SDG 6 and to address water issues.

- Adopting technologies, building partnerships and opening communication channels with Arab Funds through LAS Sustainable Development Department to foster the achievement of SDG 6 and to make water affordable.
- The “2015 State of the Arab Water Report” shows interesting findings for shaping the future water related policies of the region. Some new variables were reflected in the report among which the political circumstances and the displacement of some population from their original land.
- Commitments of Regional and International Organizations to support the Arab Region in the process of achieving SDG 6 include; e.g. ESCWA Regional High Level Forum involving the Ministerial Council (Before April 2018), Arab Ministerial Water Council Meeting (May 2018), Second Sustainable Development Report in the Arab World (First half of 2018).
- Knowledge gaps on WEF nexus need to be bridged by awareness, research and contribution of universities.
- Non-conventional water resources (desalinated water, treated wastewater, drainage water brackish water) play an important role in filling the supply-demand gap. However, their use have high energy demands to be secured.
- The future of “Arab Water Security” will largely depend on the development of non-conventional water resources (NCWR). The NCWR-Arab regional initiative could mobilize political, financial, legal and technical support required for sustainable development of NCWR in the region.
- Create an enabling environment to encourage private sector involvement in nexus projects.
- Energy efficiency programs are key criterion in new desalination and wastewater treatment plants and upgrading old ones.

Theme 2: Water-Food-Energy-Climate Nexus

- Sustainable supply of water, food and energy under current accelerating population and economic growth rates and climate change represents a major challenge faced by all Arab Countries.
- Water-Food- Energy Nexus faces numerous challenges including conflict between water, agriculture and energy policies, the disconnection between related to sectoral institutions, lack of data, and inefficient legal frameworks. Yet, lots of opportunities exist for improving and implementing the Nexus Approach.

Theme 3: Water Quality and Ecosystem Livelihood

- Water quality aspects should be a major and inseparable dimension in managing and developing conventional and non-conventional water resources.
- While non-conventional water use plays important role in meeting future demands, their sustainable use involves quality and environmental challenges that should be carefully addressed to ensure safety of human health as well as marine and land ecosystems.

- The development of a new code on the use of treated wastewater in Egypt gave more flexibility in its use.
- After, a successful phase of launching the “Non-Conventional Water Resources Initiative”, AWC invites development partners to join and collaborate in continuing its effort to operationalize the sustainable use of non-conventional water resources.
- Awareness, adequate policies, sharing experiences, up-scaling best practices, involving local communities and using low-cost technology are elements to enhance water quality and mitigate any adverse effect of non-conventional water resources.
- Transparency and data sharing in shared rivers do not undermine upstream country sovereignty.
- Promoting the inclusion of women at all levels of decision-making in order to empower them, given the positive role that women can play in Water Diplomacy.

Theme 5: Water and Science, Technology and Innovation

Theme 4: Sustainable Solutions for Shared Water Resources

- Water security in the Arab region is highly dependent on external factors of which shared water is critical while the significance of scarcity and natural resource endowments are not highlighted enough.
- Improving cooperation on shared water resources management between riparian countries is vital issue for water security in the region.
- Transboundary water management, water access under occupation and conflict are distinctive in achieving SDG 6 in the Arab World.
- Availing funding for shared water resources technical projects serves as an entry point for cooperation between riparian countries.
- Unilateral decisions from upstream riparian countries on a shared river into downstream riparian countries may threaten the peace and stability in the basin.
- Applications of up-to-date science and technology are the key means for producing more with less water and mitigate the impact of climate change.
- The successful transfer of knowledge and skills to actors in the water management arena is expected to bring institutional and behavioral change; in addition to boost development in participating countries, share new methods for improved water management and to improve planning at all levels.
- Building up local and regional alliances for building capacity and knowledge hubs in technology development.
- Developing a national strategy to use solar energy in mega projects considering the comparative advantage of the sun-shine hours in the Arab countries.
- Promoting the role of research and advanced cost effective technologies of solar energy production, feasibility and use.
- Supporting the R&D initiatives to locally produce the technological elements for desalination and wastewater.

CHAPTER 3: CONCLUDING RECOMMENDATIONS

A. *At The Institutional Level*

For Arab Water Council

- AWC would continue its role from one Forum to another to enhance knowledge sharing and catalyze collective actions towards regional collaboration on water challenges to create joint solutions.
- AWC should up-scale its effort to promote the role of AWC Youth Network for increasing the youth awareness and their involvement in water issues.
- The AWC-Arab Water Academy has to intensify its capacity building, knowledge enhancement and experience sharing programs at the high policy-making and managerial levels to strengthen water management and improve negotiation capacity on transboundary water at the highest levels

For Arab States

- Arab countries have the primary responsibility for follow-up and review of the progress made in implementing the SDGs, which will require quality, accessible and timely data collection. Regional follow-up and review will be based on national-level analyses and contribute to follow-up and review at the global level. However, the development of regional monitoring mechanism is important for monitoring the overall regional progress.

- There is a need for strong regional alliance at several levels: people (including youth and gender), private, public, policy, governance and finance in order to design and implement national work plans to achieve SDGs especially SDG 6 and to address water issues.
- The “Arab Water Security Strategy” should be updated to accommodate the SDGs indicators and mobilize funds to implement its action plan.
- LAS Sustainable Development Department should facilitate opening communication channels with Arab Funds to support the Arab states regional NGOs in achieving the SDGs.
- Investments in water, sanitation and hygiene programs should be encouraged by providing an enabling environment of regulations and proper legislations to ensure maximum and long-term benefits.
- Arab States to support CEDARE to finalize the “2015 State of the Arab Water Report”. At National levels, focal points should be provided with all the relevant information, while at regional level support and cooperation of the Council of Arab Ministers are extremely important to implement this important task.

For Development Partners

- Regional and international development partners are invited to continue and scale-up their valuable role in supporting the Arab countries in their endeavor towards combating the scarcity challenge and achieving the SDSGs.
- Development partners are invited to join the AWC efforts and collaboration in projects and initiatives related to non-conventional water resources, recycled water, climate change and nexus programs.
- Further cooperation and knowledge transfer are needed in the Region through regional and international organizations and institutions based on acquired experience in the Arab Region and its needs.
- Capacity building and institutional development programs could be organized on regional and national scales and on the stakeholders/end-users levels.

For 8th World Water Forum

- The Arab region should organize its presence in the 8th WWF by assigning clear roles and responsibilities and ensure the participation of the region class speakers.
- Enhance the Arab participation in the “Citizen Forum” with an emphasize on the water situation in remote and conflict areas.
- More collaboration is required to unify Arab voices and messages specially that they share common challenges in the region. Water under occupation and transboundary water resources

are main issues to be presented and discussed in the 8th WWF, since they are representing serious constraints to achieving the SDGs and the water security in the Arab region.

- Different Arab institutions are expected to contribute or organize thematic sessions. The AWC has applied to participate in the Regional Process of the WWF8 as a co-convenor for Theme 2 on “People” with a Topic on “Enough Safe Water for All” and for Theme 3 on “Development” with a Topic on “Water, Food & Energy Security”. Confirmation of the WWF8 Organizers are still pending at mid-January.

B. At the Thematic Level

Water-Energy-Food Nexus

- There is a need to attract the private sector investments beyond water projects and to have new investment projects focusing on nexus approach implementation.
- Trajectories for the adoption of a WEF nexus approach are to be formulated under the present institutional landscape and ongoing policies in the Arab region and in pilot countries where LAS, GIZ, ESCWA and FAO are implementing various initiatives in partnerships with countries and regional organizations.
- Leverage of systems efficiency and institutional reform is needed to adopt nexus approach in the region.
- Research is needed to develop cost effective technologies for renewable solar energy development.

Shared Water

- Improving cooperation on shared water resources management between Arab states is a priority for water security in the region.
- The importance of fostering cooperation, integration, fund mobilization and data sharing in transboundary waters. Water needs to be considered as a collector not a sector.
- Importance of capacity development for Arab negotiators on management of shared water resources issues.
- Regional entities such as AWC, CEDARE and ESCWA can play a vital role in developing dispute and conflict resolution mechanisms among riparian countries on a shared basin.

Climate Change

- Adaptation measures to climate change are urgently needed. Developing and adopting highly adaptive water investment, infrastructure and resource management approaches presents genuine development opportunities.
- It is recommended to study the hydro-climatic changes under different scenarios to estimate future stream flow projections specifically for the Nile basin and the management of the Ethiopian DAM.

Non-Conventional Water Resources

- Promoting the use of non-conventional water resources (NCWR) should receive concerted effort by all stakeholders at national, regional and international levels to help the region meeting one of the most important goals of the Arab Water Security Strategy.
- Developing an “Arab Portal Network in the different fields of NCWR” would be of great interest and benefit to the Arab region promoting information dissemination and exchange of best practices and experiences and technology development among institutions and countries..
- Desalination is the most promising sector to supply high quality water resource. Building up local and regional capacity and knowledge hubs in desalination technology development is highly recommended.
- The Arab governments should encourage the Arab investors to participate in the desalination industry. The governments should also focus on localization of the desalination technology.

Science and Technology

- Strengthen the cooperation between the AWC and the academic and research institutes to create a knowledge portal to facilitate the knowledge transfer between the different stakeholders.
- The Land Information System (LIS) system should be operationalized in Egypt and elsewhere as it has proven different advantages in water resources monitoring and irrigation activities.
- Use of remote sensing in supporting solutions to reduce agricultural water productivity gaps.

