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**Economic and Social Commission for Western Asia (ESCWA)
Department of Economic and Social Affairs (UN DESA)**

Report

Expert Group Meeting on “Enhancing capacity building addressing water and energy interlinkages for sustainable development in the Arab region”

UN House, Beirut, Lebanon 25-26 June 2019

Summary

The United Nations Economic and Social Commission for Western Asia (ESCWA) and United Nations Department of Economic and Social Affairs (UN DESA) jointly organized an Expert Group Meeting in Beirut, Lebanon on 25 and 26 June 2019 titled “Enhancing capacity building addressing water and energy interlinkages for sustainable development in the Arab region” with support from the 2030 Agenda for Sustainable Development Sub-Fund between the meetings of ESCWA’s Committees on Energy and Water Resources. The main objective of the meeting was to strengthen the capacity of ESCWA member countries and other relevant stakeholders in terms of enhancing their ability to achieve an integrated and sustainable management of water and energy resources through South-South cooperation, thereby contributing to the 2030 Agenda for Sustainable Development.

The meeting illustrated the benefits of a nexus approach while the discussions covered policy, implementation and positive experiences stemming from the use of such an approach, the role that a nexus paradigm can play in furthering progress toward the Sustainable Development Goals including clean energy and water and sanitation services, gender equality, the reduction of poverty and hunger, economic growth, and good health.

The meeting concluded with two sets of recommendations, one for member countries and one for ESCWA, that address institutional mechanisms to facilitate integrated approaches focused on water and energy interlinkages, national and regional collaboration on data collection and sharing, capacity-building for advancing an integrated paradigm, and the transfer of technologies and know-how.

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I. Introduction

1. The United Nations Economic and Social Commission for Western Asia (ESCWA) and United Nations Department of Economic and Social Affairs (UN DESA) jointly organized an Expert Group Meeting (EGM) in Beirut, Lebanon on 25 and 26 June 2019 titled “Enhancing capacity building addressing water and energy interlinkages for sustainable development in the Arab region” with support from the 2030 Agenda for Sustainable Development Sub-Fund in between the intergovernmental meetings of ESCWA’s Committees on Energy and Water Resources.
2. The main objective of the meeting was to strengthen the capacity of ESCWA member countries and other relevant stakeholders in terms of enhancing their ability to achieve an integrated and sustainable management of water and energy resources through South-South cooperation, thereby contributing to the 2030 Agenda for Sustainable Development.
3. The meeting was attended by 45 participants representing 14 ESCWA Member Countries participating in the ESCWA Energy and Water Resources Committees along with international organisations, international and regional energy and water experts, private sector, financial and technology/research institutions and other stakeholders.
4. The meeting spanned over two days and consisted of six sessions. Section II of this report summarizes the meeting’s recommendations while Section III provides a summary of the presentations and the main topics of discussions held during each session. Section IV reviews the organization of work, including information regarding the meeting agenda, participants and a summary of the participants’ evaluation outcome. The full documentation of the meeting is accessible through the following link:

<https://www.unescwa.org/events/enhancing-capacity-building-water-energy-interlinkages>

II. RECOMMENDATIONS

5. This Expert Group Meeting concluded with the following findings and recommendations:
 - A. Recommendations addressed to the member Countries (MCs):
 - a) Developing integrated policies to promote water and energy linkages in all related sectors.
 - b) Levelling the ground and adopting innovative financing instruments.
 - c) Emphasizing the importance of institutions and institutional mechanisms to facilitate integrated approaches focused on water and energy interlinkages.
 - d) Increasing collaboration on data collection and sharing between the various governmental institutions along with the need to establish unified national databases that support the formulation of regulations and policies to further encourage greater interlinkages between the water and energy sectors.
 - e) Use of innovative financing instruments focused on promoting water and energy interlinkages are prerequisites for the effective transfer of technologies and know-how.
 - f) Developing university curricula emphasizing the nexus approach.
 - B. Recommendations addressed to ESCWA:
 - a) Organization of study tours between member countries at the regional level, as a useful instrument to enhance the exchange of experiences, case studies, and lessons learned on water-energy interlinkages and at the international level as well.
 - b) Implementing regular continuous training programmes in water and energy educational institutions.
 - c) Developing capacity-building activities targeting the senior and decision-making levels at the ministries in charge of water and energy for advancing the integrated paradigm.

III. MAIN TOPICS OF DISCUSSIONS

6. Presentations and discussions are summarized in the following sections which are organized according to the substantive sessions of the meeting.

A. INTEGRATED APPROACHES TO WATER, ENERGY AND OTHER SUSTAINABLE DEVELOPMENT GOALS IN THE CONTEXT OF THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

7. The session opened with a presentation by ESCWA on the water and energy interlinkages within the framework of the 2030 Agenda for Sustainable Development with a focus on ESCWA water-energy-food interlinkages and conceptual framework and activities. It highlighted that the Arab region includes some of the most water scarce countries in the world while also emphasizing that energy vulnerability in the Arab region results from the inability to safeguard universal access to affordable, reliable and modern energy services for current and future generations. The presentation then listed the regional strategies and initiatives and institutional and policy framework for operationalizing the integrated approach in the Arab region. The ESCWA-completed UN Development Account Project on “Developing the Capacities of ESCWA Member Countries to Address the Water and Energy Nexus for Achieving Sustainable Development Goals” was also covered along with ESCWA’s contributions that were listed including the Water Development Report 6: The Water-Energy-Food Security Nexus in the Arab region and the Regional Policy Toolkit with its seven modules as well the three operational toolkits (resource efficiency, renewable energy, technology transfer). Finally, the presentation summarized the keys to an integrated and successful approach for the water and energy sectors.

8. The representative of UN DESA then presented the Sustainable Water and Energy Solutions Network which saw the light after UN DESA and Itaipu Binational joined efforts in a partnership to launch it following the recognition of the need to create a space to address the interlinkages between water and energy and their contributions to the advancement of other Sustainable Development Goals (SDGs). The network’s objectives are to share best practices, experiences and quality data; strengthen capacity building; mobilize and scale up multi-stakeholder action; and enhance advocacy, communications, and outreach. To achieve these objectives, the network will compile a series of case studies on integrated approaches to water and energy; develop a worldwide database; undertake capacity building activities; conduct global outreach and advocacy; and report annually on its work. The network is currently working on the collection of best practices in different regions.

9. Discussions highlighted the importance of addressing water and energy interlinkages especially in desalination and waste water treatment where sharing experiences and case studies regarding this topic between Arab countries was strongly requested. The lack of data, the difficulty in collecting it, and as a result, the inability to calculate key indicators were also brought forward as the main challenges for the water-energy-food nexus. The discussed solutions focused on increased collaboration on data collection and sharing between the various governmental institutions and using this collaboration to generate recommendations to support regulations and policies that encourage achieving the interlinkages between the water and energy sectors. The role of having ESCWA as a focal point for the collaboration between ESCWA member countries in sharing their data, experiences, challenges, and the lessons learned was also emphasized.

B. NATIONAL AND INTERNATIONAL BEST PRACTICES IN INTEGRATED APPROACHES TO WATER AND ENERGY FOR SUSTAINABLE DEVELOPMENT

10. The session started with a case study presentation on quantifying and benchmarking electricity consumption in the municipal water sector of Bahrain. The study’s objectives consisted of identifying electricity use in the municipal water cycle in Bahrain; calculating relevant energy performance indicators; and benchmarking energy performance indicators with existing international best practices. It was found that Bahrain’s reverse osmosis (RO) of seawater is in the middle of existing water supply-related processes. Finally, the study made numerous recommendations including the imperativeness to consider the lifecycle energy assessment in informing technology selection and choices in water desalination and wastewater treatment, the requirement to have energy management be part of the water management process, and the importance of

conveying the message to the decision and policy makers and the public at large that “saving water saves energy”.

11. A presentation by the MENARA Project in Morocco detailed an assessment of wastewater treatment technologies and promotion of smart irrigation systems in the MENA region using an eco-friendly gum. The project set out to (1) assess the chemical/microbiological contamination and productivity in the agricultural production chain under irrigation with different kinds of reclaimed wastewater; (2) prepare hydroretents polymer (HRP) materials suitable for water storage and micro pollutants adsorption during irrigation; and (3) support a techno-economic optimization of wastewater treatment lines and their management in order to produce treated wastewater compatible with agriculture irrigation practices. At the end, the project proved that locally-produced eco-gum can improve the quality of reclaimed water and increase agricultural productivity while reducing pollution loads to the receiving environment and public health and hence these research results can be integrated by policy makers into national reuse guidelines.

12. A presentation by the American University of Beirut (AUB) showcased the university’s Water-Energy-Food-Health Nexus Renewable Resources Initiative (WEFRAH) which focuses its research on smart farming, renewable energy, the fate of antibiotics, the sheep of the future, improving water and energy use, food system-based prototyping, reduce-recover-recycle, and integrating the WEFRAH nexus. Thanks to the support of ESCWA, AUB was able to build and inaugurate the Clean Technologies Innovation Unit in the Bekaa, Lebanon which houses various livestock and agriculture initiatives supported by numerous renewable energy technologies. WERAH’s ultimate goal is to build AUB’s capacity in multidisciplinary system-of-systems research that addresses the grand challenge of human security in relation to water, energy, food, and health.

13. The discussions started by highlighting the energy efficiency benefits of using reverse osmosis (RO) desalination technology especially in Gulf countries. One of the solutions advanced during the session consisted of having “soft” structures, like a water committee, which encompasses all stakeholders and facilitates their coordination as opposed to the difficulties faced under a “hard” structure. In addition, it was recommended that policies need to be mainstreamed into the existing structures rather than having portfolios move from one ministry to the other thereby hindering the mainstreaming.

14. Participants then discussed the absolute importance of quantified information in identifying gaps, challenges, and opportunities and that this information should not only be on the national level, but also on the municipal level because of the wide variations throughout countries. Institutionally, the participants were not able to conclude if there is a merit for having an integrated water-energy plan under the same ministry since many of the countries facing water-energy issues already have both portfolios under the same ministry. Finally, the participants agreed that in face of the challenges at hand, a variety of solutions exists and many of them are being used in the Arab region. Therefore, the facilitation of knowledge and solutions sharing was strongly underlined to tackle these challenges in an informed and collaborative manner.

C. RESOURCE EFFICIENCY FOR ADVANCING WATER-ENERGY INTERLINKAGES FOR SUSTAINABLE DEVELOPMENT

15. The session started with a presentation on ESCWA’s Resource Efficiency Operational Toolkit which set the context of the Arab region in terms of the need to improve resource efficiency and then detailed technologies to improve water efficiency, technologies to improve energy efficiency, key performance indicators for the water-energy nexus, and efficiency-improving technologies from a financial perspective.

16. A presentation by the Masdar Institute and its Research Centre for Renewable Energy Mapping and Assessment on Water Treatment, Desalination Efficiency and Renewable Energy Integration highlighted the opportunities for renewable energy in the water-energy nexus where it can boost water security. Masdar’s renewable energy water desalination program aims to develop and demonstrate advanced and innovative seawater desalination technologies. With five pilot plants in Abu Dhabi operational for over 18 months, the program was able to demonstrate that producing drinking water with RO plants powered by renewable energy sources is cost-effective hence reducing the dependence on natural gas.

17. A presentation by the Jordanian Ministry of Water and Irrigation on Jordan's strategic plan to improve efficiency in the energy and water fields elaborated the common challenges, the shared opportunities, and the mutual benefits. The presentation then delved into the potential for pumped storage at Jordan's dams using renewable energy where the problem lies in the gap between energy demand and renewable energy availability. The studied solutions, presented with their advantages and disadvantages, included interconnection with neighbouring countries' grid, usage of large-scale batteries, and utilization of pumped storage hydropower along with an economic assessment. The pumped storage option was found to be the most suitable for Jordan with an initial 200-megawatt project.

18. Throughout the ensuing discussion on addressing energy efficiency in the water-energy nexus and the effect of water and energy subsidies, it was agreed that regulating subsidy and tariffs affect consumer behaviour with the need to ensure that the less privileged still have the required access at an affordable cost. On the other hand, regarding the Water-Energy Nexus Operational Toolkits: Resource Efficiency Modules, it was clarified that although reliability is not addressed as an indicator in itself as this tool is technical, the assessments of resource efficiency do address reliability in the Regional Policy Toolkit.

D. RENEWABLE ENERGY FOR ADVANCING WATER-ENERGY INTERLINKAGES FOR SUSTAINABLE DEVELOPMENT

19. A presentation by the Lebanese Center for Energy Conservation (LCEC) covered existing hydropower plants potential; the hydropower potential and the national target of 2030; solar pumping for domestic water supply using photovoltaic technology in the Bekaa; and solar pumping for irrigation using photovoltaic technologies through the National Renewable Energy Action Plan (NEEREA) financing mechanism by the Central Bank of Lebanon and the Italian Institute for University Cooperation.

20. A presentation by the Tunisian National Company for Water Supply (SONEDE) showcased the pilot initiative completed as part of ESCWA's UNDA project for building capacities on the water-energy nexus for achieving sustainable development. The initiative studied the technical and economic feasibility of a micro-hydropower project in Montfleury for generating electricity using pumps as turbine (PAT) from the existing drinking water network of the Tunisian capital, Tunis. The project was able to demonstrate that investments in micro-hydropower projects for drinking water systems are profitable with a relatively low cost for the energy produced. As a result, SONEDE will launch tenders for the installation of several micro-hydropower plants.

21. A presentation by Frinas Shuman from Egypt showcased an economic and technical feasibility study where solar energy is utilized for groundwater pumping which eliminates the dependence not only on the water grid, but on the electricity grid and diesel generation as well. The study took into consideration the fact that most diesel systems are run inefficiently whereas on the other hand, the return of a solar photovoltaic system highly depends on how it is utilized in terms of seasonality. It was found that the incorporation of water storage for use when solar energy is available, yet pumping is not required, is the most optimal solution.

22. Discussions clarified the "soft" terms of Lebanon's NEEREA financing mechanism used to finance renewable energy and energy efficiency projects, including solar pumping projects, with a 2.5% interest rate and a 14-year loan period. The issue of groundwater over-abstraction control was also deliberated at length where in the case of Lebanon, level sensors were installed on all wells along with remote control of the pumping to ensure sustainability especially during summer when both water demand and solar energy are at their highest levels. Similarly, in the case of Egypt, control was achieved through strict abstraction limits to farmers that are set as part of licensing for groundwater wells and closely monitored thereafter. The need to regulate solar pumping to ensure the sustainability of water resources was confirmed and emphasized at the end.

E. TECHNOLOGY TRANSFER FOR ADVANCING WATER-ENERGY INTERLINKAGES FOR SUSTAINABLE DEVELOPMENT

23. A case study on a regional technology transfer case study was then presented by the Middle East Desalination Research Center (MEDRC) in Oman. The presentation highlighted the importance of considering the flow of experience and know-how from the early stages of project design, planning and development. Six

case studies of technical transfer were presented from Morocco, Tunisia, Jordan, Saudi Arabia, and UAE. The role of Private Public Partnership (PPP) in technology transfer was emphasized through a case study of As-Samra wastewater treatment plant in Jordan where renewable energy sources were used to achieve 78-90 per cent energy self-sufficiency. It was recognized that engaging staff in charge through proper training and education enhanced the adequate transfer of technical know-how which contributed to the success of the project.

24. A detailed presentation by ESCWA on the Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) focused on the climate change effects on the water-energy interlinkages. RICCAR's work plan, results and current status were presented in detail. Key elements and findings from the Arab Climate Change Assessment Report and from the recently held Regional Consultation on Climate Change; which will inform the 2019 Arab Forum for Sustainable Development (AFSD) and the UN High-level Political Forum (HLPF 2019) were shared. In addition, the presentation emphasized the evidence that temperatures in the region are increasing and are expected to continue to increase until the end of the century, as well as the moderate-to-high vulnerability of the Arab region to climate change impacts.

25. Participants deliberated on the reasons behind the shortage in technological advancements in the Arab region despite their importance to address regional challenges on water and energy security. Issues of elevated costs, together with limited data availability, insufficient capacities and the need to localize technologies were highlighted. In that respect, enhancing collaboration across sectors and relevant parties and building on successful case studies, such as those introduced in this session, were recognized for their important role in facilitating successful technology transfer in the region. The organization of study tours between countries was suggested as a potentially useful instrument to enhance the exchange of experiences and lessons learned.

26. Participants agreed on the important results that RICCAR had achieved at the regional level and discussed possible ways to move forward and capitalize on this initiative such as the need for enhanced capacity-building efforts at the national level, which could be led by countries building on activities already undertaken by RICCAR. Issues related to the geographical scope of RICCAR, including a potentially greater focus on a country level were also discussed. It was emphasized that collaboration among countries on climate change will continue to be key, since climate change impacts go beyond national borders.

F. PROMOTING INTEGRATED APPROACHES TO WATER AND ENERGY INTERLINKAGES IN THE ARAB REGION: THE WAY FORWARD

27. ESCWA invited participants to discuss and deliberate on means for advancing the nexus paradigm in the Arab region. Discussions were organized along three main axes focusing on: 1) Institutional and policy strengthening; 2) Data sharing and monitoring for enhancing the integrated approach to water-energy interlinkages and governance in the Arab Region; and 3) Finance, technology transfer and capacity building as means of implementation for advancing the integrated paradigm. Discussions were organized through the formation of three working groups each addressing one of the identified themes. Based on the discussions, each group proposed a set of recommendations for advancing integrated approaches to water and energy sectors in each area.

28. Group 1: Institutional and policy strengthening

The group members emphasized the importance of appropriate institutions and institutional mechanisms to facilitate integrated approaches focused on water and energy interlinkages. The existing institutional arrangements for water and energy management in various Arab countries were presented and analysed. It was agreed that there is a need for enhanced governance to support understanding and dialogue on inter-sectoral linkages, which can be strengthened through participatory approaches and exchange of experiences among countries. Greater efforts to promote specific data for water-energy interlinkages and relevant KPIs for monitoring were recommended in order to have effective policies and plans. The role of capacity-building programs was emphasized and focused on indicators, as well as awareness raising with regards to water-energy interlinkages. Creating inter-sectoral councils focused on the interlinkages was suggested as an effective means

to enhance collaboration on water and energy interlinkages across ministries. Group members highlighted the need to tailor nexus approaches and institutional mechanisms to local circumstances, and to link them to all stages of implementation and planning. The group recommended the development of a national policy, including nexus-specific programmes, policies and regulations, but underscored the importance of ensuring enforcement.

29. Group 2: Data sharing and monitoring for enhancing the integrated approach to water-energy interlinkages and governance in the Arab Region

The group discussed information and monitoring tools for supporting water and energy interlinkages. There was consensus on the limited data availability and accessibility in most countries of the Arab region, and national security concerns with relation to data sharing were also raised. The absence of specific indicators, together with financial constraints and lack of political will, were highlighted as some of the main challenges in this area.

Suggestions to improve information and assessment tools for enhancing nexus governance included putting in place institutional frameworks for cooperation across sectors, as well as unified national databases for sharing data and information. The development and financing of public-private partnerships and capacity-building activities were also highlighted as key to enhance monitoring and data sharing processes.

30. Group 3: Finance, technology transfer and capacity building as means of implementation for advancing the integrated paradigm

In terms of finance, the group emphasized the need to create specific financial instruments focused on promoting water and energy interlinkages, such as soft loans and microfinance for Small and Medium Enterprises (SMEs) to develop small-scale projects. Collected taxes from industrial polluters were suggested as means to create specific funds and financial instruments for nexus initiatives. The joint development of contracts involving all stakeholders through public-private partnerships, such as local authorities, water agencies and end users, were also brought forward as well as Corporate Social Responsibility (CSR) actions focused on the nexus.

Among the main challenges hindering technology transfer in the region, the group highlighted (1) the existing silos-approach of water and energy governmental divisions, (2) the existing gaps between industrial and research sectors, (3) the absence of adequate environment for start-ups, and (4) the lack of platforms to protect intellectual property until commercialization. To address these challenges, recommendations of the working group focused on (1) creating and sharing databases across all government entities working on energy and water interlinkages; (2) creating joint platforms bringing together industry and research actors; (3) promoting incentives for the creation of incubators and start-ups, and (4) building or strengthening national innovation systems.

To enhance capacity building as a means of implementation, the working group recognized the need to organize more events and workshops focused on best practices and experience sharing, implement continuous training programmes in water and energy institutions, develop university curricula emphasizing the nexus approach, and develop capacity-building activities targeting the senior and decision-making levels at the ministries in charge of water and energy. Raising early awareness on the interlinkages, especially among end users, was also emphasized.

G. CLOSING SESSION

31. The workshop sessions were closed by Ms. Radia Sedaoui, Chief of the Energy Section, Sustainable Development Policies Division (SDPD) at UN-ESCWA; Mr. Minoru Takada, Sustainable Energy Team Leader at the Division for Sustainable Development Goals at UN DESA; and Mr. Ziad Khayat, First Economic Affairs Officer, Water Resources Section, SDPD at UN-ESCWA. The closing statements emphasized the fruitful discussions during the workshop and the intention to continue and scale up efforts to promote integrated approaches to water and energy. Follow-up activities will focus on putting into practice the water-energy nexus

concepts developed through working on the provided recommendations and through the exchange of experiences, lessons learned and enhanced knowledge of the water and energy interlinkages.

IV. ORGANIZATION OF WORK

A. DATE AND VENUE

32. The meeting was held at the UN-House, Beirut, Lebanon on 25-26 June 2019.

B. OPENING

33. The meeting was formally opened by Ms. Roula Majdalani, Director, Sustainable Development Policies Division (SDPD, ESCWA and Mr. Minoru Takada, Team Leader, Sustainable Energy, Division for Sustainable Development Goals, UNDESA.

C. PARTICIPANTS

34. The workshop was attended by 45 participants including members of the ESCWA Committees on Energy and Water Resources or their delegated representatives. Furthermore, associated stakeholders representing international organisations, international and regional energy and water experts, private sector, financial and technology/research institutions and other stakeholders. The list of participants is shown in Annex II.

D. AGENDA

35. Presentations and discussions were made over six sessions. The agenda of the meeting is summarized below:

- a) Opening Session and Introduction
- b) Integrated approaches to water, energy and other Sustainable Development Goals in the context of the 2030 Agenda for Sustainable Development
- c) National and international best practices in integrated approaches to water and energy for sustainable development through south-south cooperation
- d) Resource Efficiency for advancing water-energy interlinkages for sustainable development
- e) Renewable Energy for advancing water-energy interlinkages for sustainable development
- f) Technology Transfer for advancing water-energy interlinkages for sustainable development
- g) Promoting integrated approaches to water and energy interlinkages in the Arab region: The Way Forward
- h) Closing Statements

E. EVALUATION

An evaluation questionnaire was distributed to participants to assess the relevance, effectiveness, and impact of the meeting. The feedback received from 33 respondents was positive with 97% of the respondents confirming that the overall quality of the seminar met their expectations while 91% of the respondents found that the meeting achieved its objectives. The quality of the presentations provided and the facilitation of the discussions were rated as good or excellent by 98% of the respondents. 82% of the respondents thought that the time allocated for the seminar and each session was appropriate. A number of participants left feedback requesting that the presentations and materials be made available ahead of the meeting. Finally, 88% expressed their interest in supporting the promotion of integrated approaches to water and energy interlinkages in their country.

ANNEX I: AGENDA

UNITED NATIONS

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28 June 2019
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**Economic and Social Commission for Western Asia (ESCWA)
Department of Economic and Social Affairs (UNDESA)**

Expert Group Meeting on “Enhancing capacity building addressing Water and Energy interlinkages for Sustainable Development in the Arab Region”
Beirut, 25-26 June 2019

Agenda

Tuesday, 25 June 2019

12:30 – 13:00 **Registration**

The meeting will be held at United Nations House in the MZ conference room.

Sponsored participants are kindly asked to bring their passport, visa stamp and airline ticket stub to the meeting.

Opening Session and Introduction

Moderator: Ms. Radia Sedaoui, Chief, Energy Section, Sustainable Development Policies Division (SDPD), ESCWA

13:00 – 13:15 **Opening Statements**

- Ms. Roula Majdalani, Director, Sustainable Development Policies Division (SDPD), ESCWA
- Mr. Minoru Takada, Team Leader, Sustainable Energy, Division for Sustainable Development Goals, UNDESA

13:15 – 13:25 Tour de Table

13:25 – 13:30 Review of the Agenda

Session I Integrated approaches to water, energy and other Sustainable Development Goals in the context of the 2030 Agenda for Sustainable Development

Moderator: Ms. Roula Majdalani, Director, SDPD, ESCWA

Rapporteur: Ms. Sophie Chlela, Research Assistant, Energy Section, SDPD, ESCWA

13:30 – 13:50 Water and energy interlinkages within the framework of the 2030 Agenda for Sustainable Development: ESCWA Conceptual Framework and Activities

- Ms. Radia Sedaoui, ESCWA

13:50 – 14:10 Global Sustainable Water and Energy Solutions Network

- Ms. Isabel Raya, Energy Policy and Partnerships consultant, Division for Sustainable Development Goals, UNDESA

14:10 – 14:45 **Discussion**

14:45 – 15:00 Coffee Break

Session II National and international best practices in integrated approaches to water and energy for sustainable development

Moderator: Mr. Minoru Takada, UNDESA

Rapporteur: Ms. Nadine Salame, Programme Management Assistant, Sustainable Energy, Division for Sustainable Development Goals UNDESA

15:00 – 15:15 Quantifying and benchmarking electricity consumption in the municipal water sector in the Kingdom of Bahrain.

- *Mr. Waleed Zubari, Professor, Water Resources Management Program, Arabian Gulf University (AGU), Bahrain*

15:15 – 15:30 Assessment of wastewater treatment technologies and promotion of smart irrigation systems in the MENA Region using an eco-friendly gum (MENARA)

- *Mr. Faissal Aziz, Professor, Department of Biology, Faculty Poly-disciplinary of Safi, University Cadi Ayyad, Morocco*

15:30 – 15:45 Water-Energy-Food-Health Nexus Renewable Resources Initiative (WEFRAH)

- *Ms. Darine Salam, Assistant Professor Department of Civil and Environmental Engineering, American University of Beirut (AUB), Lebanon*

15:45 – 16:45 **Discussion**

16:45 – 17:00 End of day 1

Wednesday, 26 June 2019

Session III Resource efficiency for advancing water-energy interlinkages for sustainable development

Moderator: Ms. Bothayna Rashed, Economic Affairs Officer, Energy Section, SDPD, ESCWA

Rapporteur: Ms. Maya Antoine Mansour, Research Assistant, Energy Section, SDPD, ESCWA

9:00 – 9:15 Resource Efficiency within the Water-Energy interlinkages: ESCWA Operational Toolkit

- *Mr. Ziad Khayat, First Economic Affairs Officer, Water Resources Section, SDPD, ESCWA*

9:15 – 9:30 Water Treatment, Desalination Efficiency and Renewable Energy Integration

- *Mr. Hosni Ghedira, Director, Research Center for Renewable Energy Mapping and Assessment, Masdar Institute, United Arab Emirates*

9:30 – 9:45 Jordan Strategic Plan to Improve Efficiency in Energy and Water Fields

- *Mr. Wael Elayyan, Director, Director of Energy and Non-Revenue Water Unit, Ministry of Water and Irrigation, Jordan*

9:45 – 10:15 **Discussion**

Session IV Renewable Energy for advancing water-energy interlinkages for sustainable development	
Moderator:	Ms. Jamila Matar, Director, Energy Department, League of Arab States
Rapporteur:	Mr. Jil Amine, Sustainable Development Officer, Energy Section, SDPD, ESCWA
10:15 – 10:30	Renewable Energy for advancing water-energy interlinkages for sustainable development: Lebanon Case Study <ul style="list-style-type: none"> • <i>Mr. Rani Al Achkar, Director, Engineering and Planning, Lebanese Center for Energy Conservation (LCEC), Lebanon</i>
10:30 – 10:45	Micro-hydropower pilot project in Tunisia <ul style="list-style-type: none"> • <i>Mr. Mohamed Khaled Bin Mohamed Zaabar, Director of Energy Management, National Water Distribution Utility (SONEDE), Tunisia</i>
10:45 – 11:00	Economic and technical feasibility study for water pumping in Egypt <ul style="list-style-type: none"> • <i>Mr. Tarek Ismail Naeem, Project Manager, Firas Shuman, Egypt</i>
11:00 – 11:30	Discussion
11:30 – 12:00	Coffee Break
Session V Technology Transfer for advancing water-energy interlinkages for sustainable development	
Moderator:	Ms. Hazir Farouk Abdelraheem Elhaj, Assistant Professor, University of Science and Technology, Sudan
Rapporteur:	Ms. Nadine Salame, UNDESA
12:00 – 12:15	Technology Transfer in the Arab region – Challenges and Opportunities <ul style="list-style-type: none"> • <i>Mr. Jauad El Kharraz, Head of Research, MEDRC Water Research, Oman</i>
12:15 – 12:30	Overview of RICCAR for Informing the water-energy interlinkages <ul style="list-style-type: none"> • <i>Ms. Carol Chouchani Cherfane, ESCWA</i>
12:30 – 13:00	Discussion
13:00 – 14:00	Group photo and Lunch Break
Session VI Promoting integrated approaches to water and energy interlinkages in the Arab Region: The Way Forward	
Moderator:	Ms. Radia Sedaoui, ESCWA
Rapporteur:	Ms. Isabel Raya, UNDESA
14:00 – 15:30	Working Groups on means for advancing integrated implementation of water and energy interlinkages in the Arab Region <ul style="list-style-type: none"> • Institutional and policy strengthening • Data sharing and monitoring • Finance, technology transfer and capacity building
15:30 – 16:00	Coffee break

16:00 – 16:30 Reporting by Working Groups

16:30 – 17:00 Discussion on the way forward

17:00 **Closing**

- UNDESA
- ESCWA

ANNEX II: LIST OF PARTICIPANTS

ARAB STATES

Bahrain

Mr. Qahtan Hassan Abdulfaris Mohammed
Chief, Engineering Services
Electricity & Water Authority
Manama, Bahrain

Egypt

Mr. Ahmed Mohamed Mohina
Undersecretary for Authorities Follow up,
Ministry of Electricity
Cairo, Egypt

Mr. Ragab Ali Abdelazim Mohamed
First Undersecretary
Ministry of Water Resources and Irrigation
Cairo, Egypt

Iraq

Mr. Majid Mohammad Abbas Al-Ghanimi
Manager of Regulation
Department/Planning & Studies Office
Ministry of Electricity
Baghdad, Iraq

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