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Economic and Social Commission for Western Asia (ESCWA)

Report

Expert Group and Focal Point Meeting on Green Technology Investments and Access to Sustainable Financing in the Arab Region
UN House, Beirut, Lebanon 4-6 March 2019

Summary

ESCWA Technology Centre (ETC) and Climate Technology Centre and Network (CTCN) in cooperation with the National Council for Scientific Research (CNRS) in Lebanon organized a meeting in Beirut, Lebanon during 4-6 March 2019 titled "Green Technology Investments and Access to Sustainable Financing in the Arab Region". The objective of the meeting is to discuss green and climate technology deployment and access to finance as key means of implementation (MOI) to accelerate SDGs achievement and NDCs implementation.

The Meeting gathered 51 participants from 15 ESCWA member countries representing academia, research institutions, ministries, industry, and NGOs, along with international and regional organizations, and other UN system organizations.

The meeting resulted in key messages and recommendations that ESCWA will take into consideration to formulate a set of options on how best to scale up green and climate technology deployment and access to finance solutions to best address the MOI in the SDGs dialogues. The main message considered investment in appropriate green technology as a major demand for the prosperity and progress of the Arab region. Green/climate technology is crucial to address the national, regional and global climate and environmental challenges, ensure sustainable and integrated management of natural resources, and support achieving economic and social sustainability and well-being for current and future generations. Technology encompasses capacities, institutional set-up, enabling environment, the availability of data for informed-decision, ability to finance as well as the hardware.

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Introduction

1. ESCWA Technology Centre (ETC) and Climate Technology Centre and Network (CTCN) in cooperation with the National Council for Scientific Research (CNRS) in Lebanon organized an expert group meeting titled "Green Technology Investments and Access to Sustainable Financing in the Arab Region" in Beirut, Lebanon during the period 4 - 6 March 2019.

2. The meeting was attended by 51 participants representing academia, research institutions, ministries, industrial sector, and civil society, in addition to other international and regional institutions including the UN system organizations. The participants gathered from 15 ESCWA Member countries and deliberated on issues related to green technology and access to finance, in addition to addressing the role of ETC & CTCN.

3. The meeting derived key messages indicating that investing in appropriate green technology is a major demand for the prosperity and progress of the Arab region. Green/climate technology is crucial to address the national, regional and global climate and environmental challenges, ensure sustainable and integrated management of natural resources, and support achieving economic and social sustainability and well-being for current and the future generations. Technology encompasses capacities, institutional set-up, enabling environment, the availability of data for informed-decision, ability to finance as well as the hardware.

I. CONCLUSIONS AND WAY FORWARD

4. The meeting concluded a set of recommendations and key messages which will assist countries to address how best to scale up green and climate technology deployment and access to finance solutions to address the MOI in the SDGs dialogues. Key messages and recommendations can be categorized as follows:

Green/Climate Technologies

(a) Technology transfer and deployment is challenged by a large number of barriers, including institutional, regulatory, financial and technical barriers. Some of these key barriers are the patenting process and commercialization

(b) The Arab region is still lagging in terms of science, technology, and innovation although there is a huge potential for technology deployment. The region could play a leading a role to tackle its challenges through transfer, development and deployment of technology, joining forces to create synergies for appropriate green technology collaboration including supporting innovation and research of endogenous technologies, for which the region has a great potential.

(c) Significant efforts are needed for research and innovation in the Arab region, in order to further identify and adapt technologies to the current challenges faced by the region.

(d) Green technologies are instrumental to achieve national and global climate change targets, and to achieve economic growth and prosperity for the Arab region.

(e) Transfer of green technology and upscaling of its deployment should be enhanced in the fields of environmental protection, resource efficiency and conservation and

other socio-economic areas for sustainable development. Water and agricultural technologies are among the top priorities for the Arab region as well as conflict waste management.

Investments and access to finance for Green/Climate Technologies

(f) Finance is a key tool to address technology development and deployment. The main challenge remains on capacity gaps on access to sustainable finance, development of project proposals, and assessment of projects' feasibility.

(g) Private sector engagement is needed, including the major industry players, the SMEs that present tremendous opportunities for increasing the creation, use and scaling up of green technologies taking into account gender and youth perspectives as well as creation of job opportunities.

(h) Public green/climate technology policies are needed to provide direction and motivation for private sector in conservation of natural resources and the environment. Policies are needed to create stable conditions to mitigate private sector risks.

(i) Coordination between technology and financing mechanisms under the climate convention is a must to help the Arab countries in the implementation of their green technology strategies and plans.

Capacity Development and Regional Cooperation:

(j) Member countries are encouraged to cooperate in addressing technology requirements, developing integrated action plans to implement such technologies, and follow up on implementation progress.

(k) Member countries will greatly benefit from capacity development in the following areas:

- Understanding and utilization of the various mechanisms available to countries to access technical assistance (CTCN, ESCWA Technology Centre, etc.) and green finance from global resources (GCF, AF, GEF, International Development Banks, etc.),
- Identification, assessment and prioritization of the national/regional available and appropriate green technologies.
- Formulation and submission of technical and funding proposals, and
- Areas to enhance the sustainability of the built capacity within the engaged national institution

(l) Raising awareness of the civil society about green technology benefits and climate change impacts on sustainable development.

(m) Regional expert and coordination meetings to discuss technology and finance issues are instrumental for member states to share experiences, follow up on progress, enhance networks, and enhance regional cooperation and coordination. In addition, there is a need for further networking of STI centres of excellence as well as NGOs in the region to complement and share of experiences.

(n) The CTCN presents an opportunity, still insufficiently utilized by ESCWA member countries, to identify, pilot and support scale-up of green technologies including through and de-risking investments in climate technologies facilitating access to finance. The CTCN was created parties to the UNFCCC and is at their disposal for providing tailored expertise and assistance, to help countries reach their technology and climate targets.

(o) ESCWA Technology Centre provides an impartial platform for deliberating on green technologies and can further coordinate regional efforts to deploy Green Technologies with special attention to conflict and post conflict countries.

II. SUMMARY OF DISCUSSIONS

A. OPENING SESSION

5. *Ms. Roula Majdalani,* Director, Sustainable Development Polices Division (SDPD), ESCWA Lebanon, started her opening speech by welcoming the participants and thanked ETC for convening the meeting. Ms. Majdalani, highlighted the importance of investment in green technology and focused on the challenges that are facing the Arab region in the field of green technology transfer and localization, pointing out to the fact that Arab region remains so far one of the least developed regions in the world of science, technology and innovation. She indicated that Arab patents is only 0.2% of international patents, while witnessing humble performance from most Arab countries in the field of innovation, according to 2018 Global Innovation Index. Ms Majdalani emphasized the need to invest in technology since it is evident to have a positive multiplier effect on sustainable development. She also indicated ESCWA's commitment to serve member countries in technology and innovation areas as evident in the "Beirut Consensus" that emerged from the 30th Ministerial Conference to ensure better future for Arab citizens.

6. *Mr. Rajiv Garg*, Regional Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya, gave a brief on CTCN which is the implementation arm of UNFCCC. Mr. Garg explained that the CTCN is mandated by countries Parties to the UNFCCC to assist developing countries in the transfer and deployment of technologies that contribute to climate change adaptation and mitigation, improve the economies of these countries, and support achievements of Sustainable Development Goals (SDGs). He pointed out the importance of cooperation for climate technologies, exchange experience, share best practices and replicate successes in the region. He also indicated the key role of the private sector in technology transfer and hence the need to create an enabling environment, conducive to market consolidation and increase of investments, as well as reinforcing national systems of innovation.

7. *Mr. Mouin Hamze*, Secretary General, National Council for Scientific Research – Lebanon (CNRS-L), valued the strong relationship between the CNRS-L and ESCWA through continuously integrating the dynamics of a changing research landscape and actively responding to new challenges in Lebanon and the Arab region. Mr. Hamze highlighted the challenges that are heavily affecting the ecosystem such as freshwater scarcity, population growth, urbanization, climate change, conflict and migration as well as lacking clear vision and efficient mechanisms for environmental governance in the Arab region. He stressed on the importance of scientific research, technology and innovation to mitigate and ensure sustainable development, which is requiring long-term investment and implementation time-frames.

8. *Ms. Reem Nejdawi,* Executive Director, ESCWA Technology Centre, presented an overview on green technology as one of the means of implementation in selected global processes: 2030 Agenda, Sendai Frame Work, Addis Ababa Action Agenda (AAAA), Paris Agreement and Habitat III and the associated mechanisms that relate to Technology including Technology Facilitation Mechanism (TFM), Interagency Technology Group, and Technology Bank for LDCs. She mentioned also that in the Arab region, there is a need for further investments in green technologies and science, as a vector of industrial revolution and preserve essential natural resources.

B. SESSION 1: OVERVIEW OF GREEN TECHNOLOGY TRANSFER AND OPPORTUNITIES IN THE ARAB REGION

9. *Ms. Roula Majdalani*, chaired the session and introduced the speakers. Then, she facilitated the discussions and questions from participants.

10. *Mr. Rajiv Garg*, presented the role of CTCN in supporting climate technologies and their deployment under the Climate Change Convention. He indicated that technologies are not only hard technologies such as equipment but also the soft ones such as practices, information, research and training. He explained that technology transfer includes the broad set of processes covering the flows of know-how, experience and equipment amongst different stakeholders. He emphasized that the CTCN is mandated by the COP and Paris agreement to support countries in removing these technology barriers by working equally on mitigation and adaptation through various services of technical assistance, capacity building, knowledge sharing and networking. Technical assistance is implemented by members of the CTCN Network, specialized in climate technologies, and selected through a competitive bidding process. Every country has appointed a focal point organization to work with the CTCN, called National designated Entities (NDEs), to coordinate with relevant stakeholder and to ensure the efforts are in line with country priorities and targets. Mr Garg added that the CTCN acts as an enabler for technology priorities and projects in the countries, in particular through three types of technical assistance:
    - Fast Technical Assistance through an international expert advice
    - Technical Assistance for a period of 6 -12 months, worth of maximum $250,000 USD.
    - Technical Assistance through Green Climate Fund (GCF) Readiness Programme: provide support to the country to access GCF readiness programme (Max of $1M USD/country/year.)

    Mr Garg highlighted that barriers hampering the deployment and transfer of climate technologies in developing countries include technological, institutional and financial barriers. The barrier related to finance is mainly related to access to finance. Funds are available but there is still lack of capacity to transforming project concepts into solid and bankable proposals. This is where the CTCN offers support to countries, in relate to project ideas, enabling environment, identify technology needs and priorities bringing necessary technical inputs, demonstrate project feasibility and potential and de-risking investments.

11. *Mr. Tarek Sadek*, First Economic Affairs Officer (Water Resources and Climate Change) SDPD, ESCWA, Lebanon, presented the main climate change related activities undertaken by ESCWA to support the Arab Region. He pointed out that there are growing contributions from researchers and scientists from Arab countries to Intergovernmental Panel on Climate Change (IPCC) work in the past five years. In addition, he pointed out that there is growing knowledge on climate change impacts in the region, to facilitate identification of policies and actions. One of these important activities, he added, is the "Regional Initiative on the Assessment of Climate Change Impacts on Water Resources and Socio-economic Vulnerability in the Arab Region (RICCAR). The RICCAR aims to

form a knowledge hub for the region and provide climate forecasts of temperature, precipitation and extreme events till the end of this century for the Arab Region with high resolution of 50x50 km. Mr. Sadek indicated that the RICCAR could be further developed and link it to disaster risk management, early warning system through seasonal (3-month) forecasting, and conducting vulnerability assessment for different sectors. Additionally, the access to climate change data will be enhanced in the near future through linking the RICCAR website to a data portal. Mr. Sadek explained that in addition to RICCAR many other activities are conducted by ESCWA including holding regional training workshops on capacity development for climate change negotiations for the Arab countries, holding COP side events.

12. *Ms. Sara Najem*, Researcher, National Council for Scientific Research – Lebanon (CNRS-L), presented a study titled "National Scale Solar Potential in Public Lands in Lebanon". She explained how the study was conducted and how the study team applied different filters to identify the suitable lands for renewable energy generation. Ms. Najem indicated that the government plans attribute the obstacles facing the adoption of renewable energy to two major reasons; land unavailability and the grid status; she added that the first issue was addressed in the current study and showed available land and great potential for solar deployment. Ms Najem explained that the study in Beirut showed that the solar generation potential is estimated to cover around 30% of the city needs. Furthermore, Ms Najem indicated that the study concluded that assuming, conservatively, that 30% of the potential area is available, the generation capacity is 4000MWp and that the area of Tfail on the eastern area of Syria is of special interest as it is a public land, close to high voltage lines and ideal for possible electricity trading with Syria in the future. She pointed out that national plans on this are not ambitious enough, and too short-term based to support competitiveness, compared to other countries in the region.

13. *Mr. Osama Rayis*, Director General, Africa City of Technology, Sudan, presented a brief on Green Africa City of Technology (G-ACT) and its main ongoing initiatives and future plans. He indicated that G-ACT (5 Million sq.m in Khartoum) is a special economic investment technology zone and works as a platform for the technology development in Sudan and the region. Mr Rayis indicated that the City aims to turn ideas to value and innovation to development. The ACT work collaboratively with small, medium & large enterprises, and cover low and high-end technology solutions. He also added that with the support of ESCWA, ACT established the Technology Transfer office. Mr. Rayis explained that the key focus at ACT is on the future core economic sectors, including; food technology and natural bio-resources, agriculture-based industries, hydrology and water resource management, development of alternative and efficient energy resources, biotechnology, environmental resources management, sustainable industrial development, media and information & communication technologies, education technology & capacity building techniques. Mr. Rayis then introduced several initiatives and projects that are being carried out by the ACT including sustainable livelihood in Sahara, Sudan national computing grid (HAKIM), remote sensing, smart climate agriculture, biodiesel project, family solar farms, etc.

14. During the general discussion participants raised the following issues:
    - CTCN support in assessing the feasibility of using specific climate technologies. The CTCN is underutilized by the Arab Region, thus there is a need to further raise awareness on the technical assistance provided by CTCN and to share successes stories and lessons learned
    - There is no formal restriction to the number of requests countries that can be submitted to the CTCN. Prioritisation of requests is based on the potential for transformational impact of each of the requests.
    - Intellectual property status of climate technologies can be a barrier, but also an opportunity, as many technologies are not patented in developing countries, so it can be used freely. The CTCN is working with the World Intellectual Property Organization (WIPO) to support countries and provide advice on these issues.

- For Arab countries to increase their weight in the negotiations, it is important to share their knowledge and scientific information.
- Country representatives expressed strong interest in RICCAR and on the needs for accurate data to enable informed decision-making on climate change. Arab countries are encouraged to utilize the results of RICCAR in their climate change studies (climate forecasting and vulnerability and adaptation) and in preparation of their climate change national communications to the UNFCCC. The RICCAR provides an appropriate alternative to the global circulation models (GCMs) for the Arab region's accurate climate forecasts.
- Capacity building through workshops and hands on training is still needed on the RICCAR and its use for different climate change studies.
- There is a need for stronger integration of research centres and universities within policy processes, as they constitute the hubs for innovation to ensure sound decisions and sustain efforts.
- The importance of engaging SMEs in the deployment of green technologies was pointed out. Technology projects that are imbedded in market systems have the biggest chances to be a success (i.e. not only based on subsidies)
- Land unavailability is not an obstacle to adoption of renewable energy. For example, in Palestine, the roof tops of animal farms and buildings were utilized.
- The issue of competition between various technologies, for example bio-fuels and food. The CTCN can be considered as an appropriate channel to support feasibility and potential of such technologies.

C. SESSION 2: GREEN TECHNOLOGY PRIORITIES ……. ANCHORED AT THE NATIONAL LEVEL AND FEEDING INTO THE REGIONAL LEVEL

15. *Mr. Rafat Assi*, Vice President for Research and Development, Royal Scientific Society, Jordan, chaired the session, introduced the speakers and facilitated the discussions.

16. *Ms. Agathe Laure,* Climate Change Adaptation Specialist, East and Southern Africa & West and Central Asia, Climate Technology Centre & Network (CTCN), presented a brief about the regional priorities and opportunities for national development of climate technology. She highlighted the major sectors/subsectors that are prioritized with technology from both mitigation and adaptation perspectives according to nationally determined contributions (NDCs). Ms. Laure gave an introduction about CTCN assistance and opportunities in the region and highlighted its fast and regular technical assistance process, as well as the Green Climate Fund (GCF) readiness programme.

17. *Mr. Lotfi Ben Said,* Director General, Department of Sustainable Development, Ministry of Local Affairs and the Environment, Tunis, presented a brief about the national green technology selection and deployment. Mr. Ben Said highlighted the major challenges for sustainable development in Tunisia as well as the national strategic framework which includes three major parts; the national strategy of sustainable development, the national strategy of climate change, and the national strategy on green technology. He also elaborated on the Tunisian technology needs assessment (TNA) and on the capacity building to gain expertise in efficient lighting systems.

18. *Mr. Adnan Yousef,* Director of the Environmental Radiation Department, Environment Quality Authority – Palestine, introduced a brief on the state of Palestine in relation to UNFCCC projects and the technology road map for Palestine's implementation of climate action plans and targets achieved. He mentioned that the technology road map project has 3 outputs: 1) the identification, prioritization

and approval of climate mitigation & adaptation technologies; 2) gender responsive technologies; 3) capacity building.

19. The following issues were raised during the first part of session 2 discussions
    - The need to review the submitted NDCs and to adequately identify mitigation and adaptation technology needs and investments.
    - The need for awareness on how to utilize CTCN technical assistance through GCF Readiness programme.
    - The importance of ETC role in coordinating capacity building workshops to different stakeholders to fully understand GCF funding process.

20. In the group discussion, the participants were divided into three groups to discuss green technology priorities. The groups discussed the following questions:
    - How do you coordinate and prioritize at country level to seek financial and technical assistance and to agree on pipeline of climate projects?
    - What has prevented your countries form seeking support from the CTCN to reach your climate targets?
    - What are the priority needs related to climate technologies that you would need support on?

21. The outcomes of the groups discussions were:
    - Regarding the 1st question, the groups agreed that national committee should be formed representing the concerned institutions and stakeholders to identify country priorities, and agree on pipeline of climate related projects, identify obstacles and barriers, then the committee shall reach out the funding agencies.
    - The groups agreed on the 2nd question, that the main reasons preventing countries from seeking support from CTCN are either the lack of knowledge of its services, or if they are aware of it, the length and complexity of the application procedure, also political reasons for countries such as Palestine. They also mentioned that one of the reasons is the selection criteria of projects, which is conducted by the donor countries (not by CTCN).
    - Regarding priority needs related to climate technologies in 3rd Question that need support, the groups agreed on the need for environmental awareness, as well as support on water and agriculture issues.

D. SESSION 3: GREEN TECHNOLOGY TRANSFER INVESTMENT IN THE ARAB REGION, ASPIRATIONS FOR BETTER FUTURE

22. *Ms. Reem Nejdawi*, chaired the session, introduced the speakers and facilitated the discussions.

23. *Mr. Najib Saab*, Secretary General, Arab Forum for Environment and Development (AFED), gave an overview on regional financing for development. He pointed out that climate change challenges cannot be separated from SDGs as climate change affects all aspects of people lives, and emphasized the strong linkages between water, energy and food. During his presentation, Mr. Saab highlighted the role of AFED and the reports published, especially the latest report titled "Financing Sustainable Development in the Arab Countries" prepared in cooperation with ESCWA and other international organizations. The report includes detailed analysis and statistics, indicating the amounts that must be secured to achieve the SDGs in the Arab region, which is around $100 billion USD, which is about the same amount of funds lost due to corruption in the Arab world, not to mention the amount of money spent on wars and conflicts since 2011 ($900 billion USD). He also stated that securing such amount cannot be reached without a strong engagement of the private sector, including the financial sector.

24. *Mr. Johannes Heeb*, Co-Director, CEWAS, Switzer land and Ms. Hannah Wuzel, Project Manager, CEWAS Middle East, Lebanon, presented a brief about CEWAS, a competency centre launched in 2016 for water and resource management with a global network of start-up initiatives, innovators and incubators. CEWAS is currently focusing on innovative financing approaches to develop and establish an enabling financial ecosystem to support water and sanitation entrepreneurs in the Middle East in the start-up, acceleration and scaling phase. Mr. Heeb stressed out the role of the private sector in financing the sustainable development and introduced the sustainable financing as a re-insurance approach to protect global wealth. Global wealth has actually increased, the main issue regarding financing is the development of sound project pipelines. There is also a need to reframe the argumentation around climate change investments. Global wealth is indeed at risk due to climate change and depletion of natural resources, and long-term impact investments need to be made to mitigate these risks. In this context, CEWAS is working at creating stronger links between funding and investment needs.

25. *Ms. Syham Bentouati*, Managing Director, NAFAS International LLC, Oman, outlined green technology transfer and investments in agriculture and conflict solid waste sectors as well as their impact on other major sectors such as water, energy and society (gender / youth). Technology maturity in the region varies and each country has its specificities but the potential for green technologies in the region is already there. Ms. Bentouati stressed on the need to raise awareness and build capacity on green technology transfer and green finance opportunities. She mentioned that support to green technology transfer should be provided, as well as collaboration and cooperation, and it is important to make it a win-win situation to ensure success in the long-term. She indicated the importance to ensure that IP rights are complied, in order to encourage the technology development and innovation. WIPO GREEN provides a database of all patents related to green technologies and resources are available.

26. *Mr. Charbel Rizk*, Team Leader – Civic Engagement, Lebanon Water Project-USAID Funded Project, Lebanon, gave a brief presentation about The Lebanon Water Project (LWP) and the financing of water efficiency technologies. He explained that partnerships between Lebanese Center for Energy Conservation (LCEC) and the private sectors made a positive impact on green financing. Mr Rizk highlighted the approach to LWP as well as related loan file requirements. He also offered to share experience and best practices to benefit the region, in particular in involving the banking sector in development

27. The following issues were raised by participants during session 3
    - More capacity building is needed to support preparation, transfer and scale up of transferred technologies, including strengthening governance and institutional set-up.
    - Increase the participation of the Arab Development Funds in supporting sustainable development projects in Arab countries
    - Countries in the region are still lacking clear programmes and vision for the wide-scale use of green technologies
    - Corruption is a major issue in Arab countries, as it wastes resources which should go to the country development. The lack of transparency also makes it difficult to assess financial losses and gaps accurately.
    - During conflicts and war, the focus of countries and international support is mainly on humanitarian activities not on the development and clean technologies even though they can be instrumental in supporting the cases, especially for food, water and energy supply.
    - For implementing Technology projects, political and financial support by local and national governments is prerequisite, as well as the engagement of the private sector, to ensure an integrated vision, sustainable results, and reduce dependency to international funding. (The

Yemeni participant raised the example of increased used of solar panels after the electricity collapsed in some cities in 2015).

- There is interest in CEWAS experience from countries in the region (i.e., CEWAS expansion in Arab countries such as Iraq and Syria).
- The private sector engagement in the Arab countries to support development is still limited & insufficient. The private sector needs mainly stable legislation and conditions to ensure fairness of competition among all
- Maintain soft transition to the green economy (Soft-landing) where the financial sector must be prepared for risk and opportunities
- Investment to serve sustainable development through the development of green investment instruments, case study was addressed by Mr. Rizk regarding the participation of the banking sector in green technology transfer.
- Addressing challenges for green financing access

E. SESSION 4: TECHNOLOGY TRANSFER CHALLENGES FOR COUNTRIES IN SPECIAL SITUATIONS: IN CONFLICT, UNDER OCCUPATION OR OUT OF CONFLICT

28. *Mr. Hassan Charif,* Advisor on Science Policies, National Council for Scientific Research, Beirut, Lebanon, chaired the panel discussion on: technology transfer challenges for countries in special situations: in conflict, under occupation or out of conflict, where speakers from Palestine, Syria, Iraq, and Yemen, presented their country challenges.

29. *Mr. Imadeddin Albaba,* Director of Scientific Research and Development Department, General Directorate for Policy & Planning, Environment Quality Authority (EQA), Palestine, highlighted technological needs and development challenges in the occupied Palestinian territory driven by the stalled peace process. The situation has impacts on almost every aspect of daily life for the Palestinians such as borders and crossings, the division of land into three categories A, B, C as well as the obstacles on establishment of development projects and the additional taxes imposed.

30. *Ms. Yara Hazzory*, National Focal Point (NFP) to UNFCCC, Climate Change Department, Atmospheric Safety Directorate, Ministry of Local Administration and Environment, Syria, provided a brief about current situation in Syria as the war affected all environmental components. She also indicated that social pressures have affected the use of natural resources, including the lack of fuel, where many of the green areas were lost as a result of war. Ms Hazzory mentioned that most of the assistance has been directed to humanitarian matters rather than sustainable development and she added that technical and financial support to sustainable development is needed.

31. *Mr. Yousef Yousef,* Manager, International Relations Environmental Department, Ministry of Health and the Environment, Iraq, provided a brief about pilot projects in the war-torn cities in Iraq especially Mosel regarding the use of recycled debris in the reconstruction efforts, with the support from UN Environment and UN Development Programme (UNDP). Furthermore, Mr. Yousef mentioned that the removal of 11 million tons of waste is significantly complicated due to high levels of contamination with unexploded ordnance and mines. He also indicated that projects should help in minimizing the suffering of people, and technical & financial support must be ensured. Mr. Yousef also highlighted the oil issue, and the destruction of the refineries and current efforts being made to address these challenges.

32. *Mr. Anwar Noman,* Advisor of Climate Affairs, EPA Chairman Office, Environment Protection Authority (EPA), Yemen, provided a brief about the current situation in Yemen stressing on significant decline in services provided particularly in the institutional aspects. Mr. Noman mentioned that climate change and green technology transfer is not a priority in Yemen, as the main focus under the current circumstances is the humanitarian issues such as food, water, medicine, and shelter. He also highlighted the challenges facing Yemen including the security situation, lack of research institutions, financial and economic challenges as well as the absence of private sector involvement in adaptation and mitigation technology. Mr. Noman ended his intervention by giving shining story from the darkness of war where household solar PV Systems are heavily used. He mentioned that the shift to household solar PV systems was raised from 0.3% in 2014 to 86% in 2017 in urban areas, and from 0.1% to almost 95% in rural areas (according to Rapid Solar Survey conducted in Sana'a governorate in 2017, and this led to emission reduction totaled to 75,000 tons CO2eq in 2017.

33. The following issues were raised by participants during session 4
    - The countries need for capacity building and training in water treatment plants
    - ESCWA support is needed in the knowledge transfer and exchange between countries and for those countries with special conditions, focusing on generating financial request for project proposals as per the submitted NDCs
    - The impact of brain drain from conflict and post conflict countries
    - The necessity to build controls for green technologies usage to maintain nexus between land, water and energy
    - The importance of spreading environmental awareness amongst the Arab citizens.

F. SESSION 5: GREEN TECHNOLOGY FROM RESEARCH TO IMPLEMENTATION

34. *Ms. Rahma Ibrahim Said Al Mahruqi,* Deputy Vice-Chancellor for Post-Graduate Studies and Research, Sultan Qaboos University (SQU), Oman, chaired the session, introduced the speakers and facilitated the discussions.

35. *Mr. Moh'd Rasool Qtaishat,* Chief Technology Officer, Saudi Membrane Distillation Desalination Co. Ltd, KAUST, Saudi Arabia . Mr. Qtaishat presented a new technology used in desalinisation process during his presentation "Green technology for desalination: Novel membranes and solar energy for distillation". He presented the technical challenges of the two main types of technologies used for desalinisation purposes: reverse osmosis and multi-stage flash desalination processes. Both are costly and energy intensive and not adapted in all salinity levels (reverse osmosis). He mentioned that the technology presented is not new but has received less attention in the last decades. He demonstrated that this technology has a lot of advantages over conventional distillation such as it has lower operating temperatures, lower operating pressures, reduced vapor spaces but was not commercialised because of some drawbacks, such as the rate of water production – too small to be competitive in the market. In his research, they improved the performance of this technology and conducted testing and prototyping. Mr. Qtaishat explained that this is the first membrane distillation type doesn't use as much energy as others, and it can also run from an on-site solar energy generator.

36. *Ms. Ramia Albakain*, Associate Professor of Analytical, Environmental and Bioanalytical Chemistry, Department of Chemistry/Faculty of Science, University of Jordan, presented "Green technique for tracing and treating pharmaceutical residues exist in water and wastewater". Ms. Albakain presented technologies used to analyze and treat water from pharmaceutical residues. Water shortage is indeed affecting individuals as well as the industry in Jordan, especially with regards of population growth and migration. This type of technology is a complex process because all pharmaceutical residues are from different biological families. She mentioned that her research aimed at making the link between detecting traces using green chemistry and treating these traces using a technology without organic solvent (or very little), and available in a closed system, so CO2 cannot escape. Full scanning of waste water identified the residues of drugs. After testing, it was found that the nanofiltration can treat 80.1% of the wastewater. The treated water was then used in a tested field to irrigate plant that absorbs a lot of water, and no traces of pharmaceutical residues were found in the plant. She ended up by saying that the next step is to bring this technology to the market, but further investigation and research is still needed.

37. *Ms. Ghonwa Khaddour*, Expert, Water Engineering Department Administration of Natural Resources Research (ANRR), Ministry of Agriculture and Agrarian Reform, General Commission for Scientific Agricultural Research (GCSAR), Syria, presented her research on wastewater treatment from Olive mills: "Olive Mills wastewater treatment for biogas production and re-use in agricultural irrigation". The objective of her research is to find an effective technique, simple and not expensive and environmental friendly. She mentioned that the current practice is discharge the olive mill wastewater into the soil, or treatment using chemical and biological materials, such techniques can affect the environment in general and expensive to adopt. She applied anaerobic digestion treatment to the wastewater to produce biogas, and to reuse the treated water for irrigation, in particular quinoa. Results showed that treatment technique was successful in producing energy and for growing quinoa crops. The research is not done yet; the work will continue to test this process on other crops. Ms. Khaddour said that it is important to consider adapting and revising regulations to reflect scientific results and enable such technologies to be used at larger scale (i.e. rules on discharge of materials, on reuse wastewater for irrigation of crops, etc.)

38. The following issues were raised by participants during this session:
    - There are technology researches and innovations in the region and technology deployment is not only importing technologies from outside. There is a need for research collaboration nationally and regionally.
    - These technologies and innovations need to be supported, protected and deployed, so research and innovation can further be enhanced.
    - It is important to expend the research projects presented in other countries and to continue testing of these technologies. Further collaboration between decision makers and research institutions is needed
    - These innovations have a great potential for application in other countries in the region and globally.
    - Awareness need to be raised as well as the regulations need to be established to cope with bad and irresponsible habits and practices regarding discharging materials into land, water and sewer systems.
    - Water management is a key challenge for the region, especially for irrigation which consumes the major amount of water. Therefore, using wastewater for irrigation is an opportunity but it needs to be properly treated before reused.
    - Only 0.2% of global patent application from the Arab region and only few filed patents commercialized. The private sector should invest more in R&D and green technologies, and incentivize them to do so.

39. *Mr. Nael Al-Mulki*, National Officer, ESCWA Technology Centre, divided the participant into three groups to discuss the implementation of green technology researches. He guided the groups' discussions through the following questions:
    - Do you think that the current available support for national researchers (i.e., policies &regulations, financial support& incentives, technical …) is sufficient to move the GT forward?
    - What are the obstacles/challenges facing production and deployment of GT?
    - What is needed to further promote and advance GT in Arab countries from the perspective of researchers &academic institutions, and private sector (industry, agriculture, trade,…)?

40. The key outcomes of the groups' discussions related to green technology researches implementation is as follow:

    - In general, the groups agreed that the support for national researchers is not sufficient, although there is a huge gap among Arab countries; some have a lot of expertise and research capacities/activities, while others are lagging behind, due to lack of capacities, policies, regulations, and finance. Financial and technical support received also varies depending on countries. Institutional strengthening is needed in some countries. It is worth noting that countries with limited resources have shown more interest in grass root initiatives (such as Jordan, Sudan, and Palestine).

    - A number of obstacles/challenges were identified for production and deployment of green technologies in the region:

        - Limited number of laws and regulations to encourage research and enable technology innovation and scale-up.
        - Lack of financial resources and incentives to support all the needs of research institutions to achieve these advancements
        - Skilled experts and researchers are leaving their countries to work in Europe or USA,
        - More cooperation is needed, as there are complicated procedures for researchers,
        - Intellectual property aspects should be better integrated in legislation
        - There are obstacles in knowledge transfer, threatening sustainability of projects
        - Need for additional collaboration and complementarity among different countries to reinforce exchanges and synergies.
        - Conflict affects negatively the expansion of technology and innovation programs.

    - A number of ideas to further promote and advance green technologies in Arab countries were mentioned as follow:
        - Raising awareness and curricula development
        - Awareness of grass root level and communities
        - Development and implementation of policies and regulations
        - Building human and institutional capacities to design better solutions
        - Networking and building external partnership, with the private sector
        - Building models and demonstrating successes, so people can see effective changes
        - Stronger link/interface between academia, industry and government
        - Enabling creation start-ups and supporting them
        - Promotion of endogenous green technologies through collaboration within the Arab region.

G. SESSION 6: COORDINATION FOR MOBILIZATION OF NATIONAL, REGIONAL, AND INTERNATIONAL FINANCIAL AND NON-FINANCIAL RESOURCES TO ACHIEVE CLIMATE TARGETS

41. *Mr. Haidar Fraihat,* Director, Technology for Development Division, ESCWA, Lebanon, presented a brief about Beirut Consensus which is the outcome document of the 30th Ministerial Session of ESCWA. He highlighted its role in advancing green technology in the Arab region reflecting the balance between economic, social and environmental pillars, and identifying the tools and means available for development. He also emphasized the major points of the declaration that are directly indicating the importance of technology-focused policies, strategies, and actions to address challenges.

42. *Ms. Souraya Zein and Mr. Daniel Griswold,* Sustainable Development Policies Division, ESCWA, Lebanon, provided input regarding the access to international climate finance in the Arab region, showing that mitigation accounted for the majority of the climate finance flows in the region in 2016, although adaptation is more of focus in some countries, over 90% of mitigation finance in the region is for energy and transport. The presenters also gave an introduction to different blended finance instruments which are used to leveraging public finance to catalyse private investment. They also stressed on the challenges that are faced by the Arab region in accessing climate-dedicated funds that are offered by different mechanism especially by the green climate fund (GCF).

43. *Mr. Ibrahim Saif Saud Al Kindi,* Senior Application Specialist, Strategic Planning and Development Department, Dubai, UAE, demonstrated the Arab Authority for Agricultural Investment and Development (AAAID) vision, mission and goals focusing on the sustainable development of agricultural resources in member states. He also highlighted its work in food security projects and the challenges faced, as AAAID can only cover about 1.5% of the required amount of $40 billion USD for food security gap in the Arab region. A video on AAAID was shown including the background info on the organization and its achievements.

44. *Mr. Rajiv Garg,* highlighted the ways for enhancing linkages between technology mechanism, the financial mechanism of the UNFCCC at the national level, and other climate initiatives by focusing on Green Climate Fund (GCF) readiness program which is offering:

    - **Up to $1 million USD per country per year.** Of this amount, NDAs or Focal Points may request up to $300,000 USD per year to help establish or strengthen a NDA or Focal Point to deliver on the GCF's requirements.
    - **Up to $3 million USD per country** for the formulation of National Adaptation Plans (NAPs) and/ or other adaptation planning processes**.**

    Mr. Garg gave a brief about Simplified Application Process (SAP) and CTCN technical assistance to help countries with their readiness programs, stressing that this process will require more effort on training to accessing funding program,

45. *Ms. Agathe Laure,* focused in her presentation on CTCN Vision and the Concept Programme, she explained the support for project proposal development by introducing three phase capacity building modules
    Phase 1: Capacity needs identification
    Phase 2: Training course
    Phase 3: Mentoring

46. *Conclusion and way forward*

- Ms. Reem Nejdawi, Executive Director, ESCWA Technology Centre, Jordan
- *Mr. Rajiv Garg*, Regional Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya
- *Mr. Mouin Hamze*, Secretary General, National Council for Scientific Research – Lebanon (CNRS-L)

The organizers thanked all participants for their input and discussions. Then, key messages of the meeting were presented as outputs that need to be taken forward by the three entities. It was decided that the key messages will be circulated to the participants for their review before they are considered final. The organizers promised to follow up on these messages and outputs. (please see section I for the final key messages).

III. ORGANIZATION

A. DATE AND VENUE

The meeting was held in UN-House, Lebanon, Beirut, 4 - 6 March 2019.

B. AGENDA

The meeting agenda included 6 main sessions in addition to the opening and closing sessions. The detailed agenda is shown in Annex I.

C. PARTICIPANTS

The meeting was attended by 51 representatives from fifteen countries in the Arab region, including experts from governments, non-government organizations and academia. In addition, the meeting was attended by international and regional organizations including the UN system organizations. The list of participants is shown in Annex-II.

D. EVALUATION OF THE MEETING

An evaluation questionnaire was distributed to assess the substantive and logistical aspects of the meeting, and 27 participants submitted their evaluations. All of the respondents agreed or strongly agreed that the overall quality of the meeting met their expectations. Most respondents (96%) indicated that the meeting has achieved its purpose, while 4% were neutral. Written comments mentioned include “very interesting and important meeting” and suggested to “place more time on group discussions”. Most of the participants found the quality of the six sessions were good to excellent. In addition, 96% of the participants agree or strongly agreed that there was a balance among thematic topics of the sessions as well as the clarity of conclusions reached/next steps of actions. In addition, a number of participants indicated the importance of involving the private and industrial sectors, including SMEs and the youth. . Finally, participants suggested to follow-up on the outcome of this meeting through subsequent events focusing on research, development and technology.

E. DOCUMENTS

Meeting background paper, information note, agenda and presentations delivered during the meeting may be accessed through the following meeting webpage: https://www.unescwa.org/events/green-technology-investments-sustainable-financing-arab

ANNEX I: AGENDA

UNITED NATIONS **E**

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01 March 2019
ORIGINAL: ENGLISH

Economic and Social Commission for Western Asia (ESCWA),
Climate Technology Centre and Network (CTCN), and
National Council for Scientific Research – Lebanon (CNRS-L)

Expert Group and Focal Point Meeting on
Green Technology Investments and Access to Sustainable Financing in the Arab Region
UN House, Beirut, Lebanon 4 – 6 March 2019

AGENDA

DAY 1: MONDAY 4 MARCH 2019

09:00 – 09:30	• Registration and Networking
9:30 – 11:00	• Opening Remarks - *Ms. Roula Majdalani, Director, Sustainable Development Policies Division (SDPD), ESCWA, Lebanon* - *Mr. Rajiv Garg,* Regional *Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya* - *Mr. Mouin Hamze, Secretary General, National Council for Scientific Research –Lebanon(CNRS-L)* **Tour de table** **Presentation of Agenda** • Green technology as one of the means of implementation in selected global context *Ms. Reem Nejdawi, Executive Director, ESCWA Technology Centre, Jordan*
11:00 – 11:30	**Coffee Break**
Session I	**Overview of green technology transfer and opportunities in the Arab region**
Chair	*Ms. Roula Majdalani, Director, Sustainable Development Polices Division (SDPD), ESCWA Lebanon*
11:30 – 13:30	• Addressing climate technology from global to regional perspective *Mr. Rajiv Garg, Regional Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya* • The role of Beirut Declaration in advancing green technology in the Arab region *Mr. Haidar Fraihat, Director, Technology for Development Division, ESCWA, Lebanon* • Supporting climate change policies in the Arab Region – regional and global agendas *Mr. Tarek Sadek, First Economic Affairs Officer, Climate Change Officer, Water Resources Section, Sustainable Development Policies Division (SDPD), ESCWA*

1

	• Institutional arrangement for implementing technology transfer in the region - National Scale Solar Potential in Public Lands: Expediting the Adoption of Renewable Energy Solutions *Ms. Sara Najem, Researcher, National Council for Scientific Research – Lebanon (CNRS-L)*
	Q&A
13:30 – 14:30	**Lunch Break**
Session II	**Green technology priorities ……. anchored at the national level and feeding into the regional level**
Chair	*Mr. Rafat Assi, Vice President for Research and Development, Royal Scientific Society, Jordan*
14:30 – 15:45	• Regional priorities and opportunities for national development of climate technology *Ms. Agathe Laure, Climate Change Adaptation Specialist, East and Southern Africa & West and Central Asia, Climate Technology Centre & Network (CTCN), France*
	• National green technology selection and deployment at national level Development of a standard for the utilization of digestate in agriculture and capacity building on efficient lighting systems in Tunisia *Mr. Lotfi Ben Said,* Director *General, Department of Sustainable Development, Ministry of Local Affairs and the Environment, Tunis*
	• Technology road map for Palestine's implementation of climate action plans *Mr. Adnan Yousef, Director of the Environmental Radiation Department, General Directorate of Policies and Planning Environmental Radiation Department, Environment Quality Authority – Palestine*
	Q & A
15:45 – 16:00	**Coffee Break**
16:00 – 17:00	• Group discussions

DAY 2: TUESDAY 5 MARCH 2019	
Session III	**Green technology transfer investment in the Arab region, aspirations for better future**
Chair	*Ms. Reem Nejdawi, Executive Director, ESCWA Technology Centre, Jordan*
9:00 – 11:30	• Overview on regional financing for development *Mr. Najib Saab, Secretary General, Arab Forum for Environment and Development (AFED)* • Innovative Financing Approaches for Green Innovations *Mr. Johannes Heeb, Co-Director, CEWAS, Switzer land and Ms. Hannah Wuzel, Project Manager, CEWAS Middle East, Lebanon CEWAS* • Green technology transfers and investment in selected sectors *Ms. Syham Bentouati, Managing Director, NAFAS International LLC, Oman* • Financing of water efficiency technologies *Mr. Charbel Rizk, Team Leader – Civic Engagement, Lebanon Water Project-USAID Funded Project, Lebanon* **Q&A**
11:30 – 12:00	**Coffee Break**
Session IV	**Technology transfer challenges for countries in special situations: in conflict, under occupation or out of conflict**
Chair	*Mr. Hassan Charif, Advisor on Science Policies, National Council for Scientific Research, Lebanon*
12:00 – 13:15	• Panel discussion: technology transfer challenges for countries in special situations: in conflict, under occupation or out of conflict - *Mr. Imadeddin Albaba, Director of Scientific Research and Development Department, General Directorate for Policy & Planning, Environment Quality Authority (EQA), Palestine* - *Ms. Yara Hazzory, National Focal Point (NFP) to UNFCCC, Climate Change Department, Atmospheric Safety Directorate, Ministry of Local Administration and Environment,* Syria - *Mr. Yousef Yousef, Manager, International Relations Environmental Department, Ministry of Health and the Environment, Iraq* - *Mr. Anwar Noman, Advisor of Climate Affairs, EPA Chairman Office, Environment Protection Authority (EPA), Yemen* **Q&A**

Session V	**Green technology from research to implementation**
Chair	*Ms. Rahma Al-Mahruqi, Deputy Vice Chancellor for Postgraduate Studies and Research, Sultan Qaboos University, Oman*
13:15 – 14:15	• Green technology for desalination: Novel membranes and solar energy for distillation *Mr. (Moh'd Rasool) Qtaishat, Chief Technology officer, Saudi Membrane Distillation Desalination Co. Ltd, Saudi Arabia* • Green technique for tracing and treating pharmaceutical residues exist in water and wastewater *Ms. Ramia Albakain, Associate Professor of Analytical, Environmental and Bioanalytical Chemistry, Department of Chemistry/Faculty of Science, University of Jordan, Jordan* • Olive mills wastewater treatment for biogas production and re-use in agricultural irrigation *Ms. Ghonwa Khaddour, Expert, Water Engineering Department Administration of Natural Resources Research (ANRR), Ministry of Agriculture and Agrarian Reform, General Commission for Scientific Agricultural Research (GCSAR), Syria*
14:15-15:00	**Lunch Break**
15:00 – 16:00	• Group work
16:00 – 16:15	**Coffee Break**
16:15 – 17:00	• Continue group work
	DAY 3: WEDNESDAY 6 MARCH 2019
Session VI	**Coordination for mobilization of national, regional, and international financial and non-financial resources to achieve climate targets**
Chair	*Ms. Reem Nejdawi, Executive Director, ESCWA Technology Centre, Jordan*
09:00 – 11:00	• The role of Beirut Declaration in advancing green technology in the Arab region *Mr. Haidar Fraihat, Director, Technology for Development Division, ESCWA, Lebanon* • Access to international climate finance in the Arab region *Ms. Souraya Zein and Mr. Daniel Griswold, Sustainable Development Policies Division, ESCWA, Lebanon* • The Arab Authority for Agricultural Investment and Development (AAAID) work in food security projects and the challenges faced *Mr. Ibrahim Saif Saud Al Kindi, Senior Application Specialist, Strategic planning and development Department, Dubai, UAE* • Enhancing linkages between technology mechanism, the financial mechanism of the convention at the national level, and other climate initiative & Opportunities for financing through Green Climate Fund *Mr. Rajiv Garg, Regional Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya*
11:00 – 11:30	**Coffee Break**

11:30 – 12:30	• Support for project proposal development: The CTCN Vision to Concept Programme, *Ms. Agathe Laure, Climate Change Adaptation Specialist, East and Southern Africa & West and Central Asia, Climate Technology Centre & Network (CTCN), France*
12:30 – 13:30	• Conclusion and way forward - *Ms. Reem Nejdawi, Executive Director, ESCWA Technology Centre, Jordan* - *Mr. Rajiv Garg, Regional Manager, East & Southern Africa and West & Central Asia, Climate Technology Center and Network (CTCN), Kenya* - *Mr. Mouin Hamze, Secretary General, National Council for Scientific Research, Lebanon (CNRS-L)*

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