

**Economic and Social Commission for Western Asia (ESCWA)**

6th ESCWA Technology Center's Technical Committee Meeting
Amman, Jordan 2-3 October 2018

Proposed Key Priorities for ETC Work Program for 2019**I- Framework**

The **ESCWA Technology Center (ETC)** is a specialized regional center and a subsidiary body of the UN-ESCWA established in 2010 by ESCWA in implementation of ECOSOC Resolution 2010/5 on 20 July 2010. ETC is hosted by the Government of Jordan at the Royal Scientific Society in Amman. The center aims at developing the technological and scientific knowledge of various stakeholders in major economic sectors in member states. It is governed by a Board of Governors, an Executive Director and Staff, and a Technical Committee. The Board consists of a standing representative designated by the Government of Jordan and additional representatives nominated by member states. It reviews the administrative and financial status of the center and the implementation of its programme of work. The Technical Committee consists of experts from ESCWA and other intergovernmental, non-governmental organizations and private sector and advises the Executive Director on the formulation of programme of work and other relevant technical matters concerning the center's operations.

Beirut Consensus of Technology for Sustainable Development in the Arab Region adopted by ESCWA's member states in June 2018 at the thirtieth ministerial session of the commission, details technology opportunities for the regional development. Member States discussed the way forward based on recommendations of the report "Technology for Sustainable Development: Creating Decent Jobs and Empowering Youth in Arab Countries"¹ that ESCWA developed. The Beirut Consensus reaffirms the commitment of member states to place technology and innovation at the heart of the inclusive and sustainable development process in the Arab region. It recognizes the need to place technology and innovation as pillars of transformation in national development plans, to maximize benefits and minimize threats from technological disruption, in full consideration of local resources, capacities, and constraints. Member states reiterated their belief that technology

¹ https://www.unescwa.org/sites/www.unescwa.org/files/events/files/technology_for_sustainable_development.pdf

Note: This document has been reproduced in the form in which it was received, without formal editing.

and innovation are key enablers to achieve the 2030 Agenda and can provide creative solutions to achieve people-centered, sustainable and inclusive development.

The Consensus, being a comprehensive political vision, was grouped under several themes, while acknowledging the cross-cutting nature of technology, to help clustering the ultimate objectives. Themes included 1- enabling technological ecosystems, 2- dynamic educational systems for decent employment opportunities, 3- technology-driven social inclusion, 4- supportive governance, 5- environmental sustainability, 6- conflict mitigation and disaster risk reduction, and 7- financing technology for sustainable development.

The Beirut Consensus recognizes the importance of **multi-stakeholders/multi-dimensional approaches** in achieving progress in technology and innovation transfer, adaptation, and scale-up. An approach that ETC has been promoting. The emphasis is on the principles of coordination and cooperation to mitigate challenges and increase benefits. Encouraging the private sector, research institutions, civil society organizations and other key actors to play their role is a pre-requisite to achieve measurable impacts.

Within this framework, ETC is holding the 6th Technical Committee Meeting in Amman to discuss and share experience and context-based knowledge on innovative green technologies that are an imperative approach to promote sustainable development and structural transformation in the national economies of the Arab region. The aim of the meeting is to guide ETC in prioritizing its focus areas for 2019 based on the outcomes and recommendations of the report “Technology for Sustainable Development: Creating Decent Jobs and Empowering Youth in Arab Countries”², Beirut Consensus, and technological best practices and policies that are appropriate to the region. The outputs of the meeting which guided by the outcomes of the 30th ministerial session of ESCWA will be used to develop ETC 2019’s work plan that will be presented during the 8th meeting of ETC Board of Governance in November 2018.

Local, regional and international technical experts in various developed and emerging technologies, representing stakeholders from the academic and research institutions, industrial, public sector, and related UN organizations are participating in the meeting. Annex I include the list of participants, their occupation and contact information.

A. Beirut Consensus

In June 2018, ESCWA held its thirtieth ministerial session in Beirut. The session concluded with the adoption of the Beirut Consensus on Technology for Sustainable Development in the Arab Region³. The following points summarize the main resolutions that were adopted to promote technology integration and development in the Arab region and are generally considered in harmony with ETC mandate:

- Seek to put in place national and regional policies to support the development of technological ecosystems that are adapted to the socioeconomic, environmental and political

² https://www.unescwa.org/sites/www.unescwa.org/files/events/files/technology_for_sustainable_development.pdf

³ ESCWA 2018. Report of the Thirtieth Session 25-28 June 2018. Supplement No. 21. E/2018/41

- context of Arab countries and able to attract private sector investment and foster innovation, particularly encouraging the development of local content and entrepreneurship
- Develop legislative and fiscal policy proposals to promote investment in technology and innovation, and encourage entrepreneurs and investors to explore new technologies via targeted incentives
 - Closely examine social protection and taxation systems, adopt agile policies to embrace and direct new technologies, and help employees and employers to adapt to new demands while ensuring that gains are broadly shared
 - Develop regional strategies that stimulate technology transfer, and leverage synergies between the industry and research institutions to address gaps in industrial productivity and enhance competitiveness while reducing technological dependencies
 - Maximize the availability, accessibility and affordability of quality education in science, technology, engineering and mathematics
 - Seek to bridge the persistent gender gap in science, technology, engineering and mathematics education throughout the region, increasing women's participation in the digital economy, and applying a gender lens when developing and implementing policies that harness technology and innovation
 - Promote assistive technology to guarantee full inclusion of persons with disabilities, in line with agreed international standards and ensure that the benefits of technology and innovation reach vulnerable groups, remote communities and those living in cities destroyed by conflict, thus fostering social justice
 - Build strong partnerships with civil society in pioneering and promoting technology towards participatory policymaking and promote the use of technology to improve the participation of youth in public policymaking, fostering bottom-up innovation for greater inclusiveness
 - Leverage technology to adopt smart government practices, enhance public transparency and accountability, improve access to information and provide open data
 - Increase the accessibility of technological tools and networks to facilitate interaction between stakeholders and stimulate the conversation around the SDGs, support implementation, monitor progress and improve accountability
 - Identify, anchor and assist technological advancement in emerging sectors where research and commercialization are making important strides, and ensure the sustainability, affordability and suitability of technological solutions that address natural resources limitations
 - Facilitate the use and transfer of technology associated with natural resources management where a potential exists for efficiency improvement, in particular water and energy efficiency leading to food security and environmental sustainability, adopting a nexus approach
 - Aim to increase public investment in research and development while incentivizing the private sector to finance technology and innovation, particularly in areas with strong social, environmental and economic development impact

Members states tasked ESCWA to provide high quality advice on technology and innovation for sustainable development, with focus on the following activities:

- Foster coherent regional responses to rapidly evolving technological advancements, supporting norms and standard-setting and fostering an enabling ecosystem, anchored in the 2030 Agenda, with a focus on the most vulnerable segments of society
- Provide evidence-based policy advice to promote structural transformation through technology to enhance productivity and sustainability, thereby addressing the root causes of multidimensional poverty, promoting economic and social integration, creating decent employment, and research the impact of technology and innovation on sectoral employment generation
- Raise awareness on technologies for the inclusion of youth, older persons and persons with disabilities in areas including education, employment and access to public services, and develop informative material on the role of technology in achieving gender equality and the empowerment of all women and girls in the Arab region;
- Share experiences and best practices in technology transfer and adaptation through North-South and South-South cooperation, building member States' capacity to access financial resources;
- Coordinate national and regional policymaking on Internet governance, promote the Arab regional perspective in the international arena and provide support in researching and defining negotiation positions on contentious Internet governance issues;
- Support in filling the legislative and regulation vacuum around unregulated frontier technology issues through policy-oriented research;
- Reinforce multi-stakeholder partnerships on technology and innovation, including convening the Arab High-level Forum on the World Summit on the Information Society and the Arab Internet Governance Forum;
- Support member States in adopting emerging green technologies to address the main regional socioeconomic and environmental challenges;
- Support networking and create a participatory platform for cooperation among Arab States on frontier technology issues.

The above tasks are guiding future ETC work and their application requires multidisciplinary, multi-sectoral, inclusive, and context-based practices, strategies, and policies that are a pre-requisite to promote technology and innovation adoption in the Arab region and eventually lead to a more peaceful, prosperous, and just future for Arabs.

B. ETC Mandate

ETC's mission is to assist ESCWA's member states and public and private organizations to acquire the tools and capabilities necessary to accelerate socio-economic development in order to attain technological parity with other nations and regions of the world, and to contribute to the conversion of the economies of member countries into economies based on scientific and technological knowledge.

ETC's aim to assist ESCWA's member states by strengthening their capabilities to develop and manage national systems; develop, transfer, adapt and apply technology; determine the suitable

technology for the region and facilitate its development and improve the legal and commercial framework for the transfer of technology. The Centre also aims at enhancing the technological and scientific knowledge content of major economic sectors in member countries.

To achieve its objectives, ETC offers the following functions:

- Conduct research and analysis of trends, conditions and opportunities
- Provide advisory services to member countries
- Disseminate information and promote good practices
- Develop partnerships and other networks with regional and international organizations and key stakeholders to maximize the use of resources and expand the service coverage
- enhance capacity of national experts, entrepreneurs, SME owners, technology parks and policy analysts working on technology transfer and adaptation,
- Assess the scientific and technological level and content of production and service sectors and measuring performance indicators of those sectors in the localization of scientific and technological knowledge

C. Link to SDGs

Science, technology, and innovation are key tools adopted by the UNs to implement and achieve the Sustainable Development Goals. Efficient and context-based technologies help States, and various stakeholders adapt to and mitigate development challenges while ensuring high resilience of communities and sustainable economic growth. Science, technology, and innovation are a cross-cutting theme to all SDGs going from local to regional and global dimensions. ETC has selected to prioritize its focus on specific SDGs under which technology and innovation could highly contribute to sustainable development in the Arab region. ETC focuses on goals 2, 6, 7, 9, 12, 13, 14, 15, and 17 as shown in the box below.

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 12. Ensure sustainable consumption and production patterns

Goal 13. Take urgent action to combat climate change and its impacts

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

D. Main Regional Challenges

The Arab region faces a web of interconnected socio-economic and governance obstacles that hinder the ability of individual countries to achieve the SDGs. It is challenged by high unemployment rate, dominance of informal economies and illegal trade, food insecurity, presence of conflict and weak state institutions, unsustainable industrial development, marginalization of women and youth, extensive natural resource degradation in particular water, climate change effects, etc. The following points highlight and give overview figures on the main regional challenges that help guiding ETC's focus within the coming two years:

- Labour market dynamics in the Arab region remain challenging. The female labour force participation rate in 2017 was estimated at 21% compared with a world average of 48.6%, and with the region's male participation rate of 74%. Unemployment in the region, especially among young people, poses an obstacle for inclusive growth. The region has the highest unemployment rate: 30.6% in 2016, according to the International Labour organization, compared with a global average of 13.1 per cent⁴
- High population growth and rapid urbanization: between 1950 and 2010, the population of the region increased by nearly five times compare to less than 3 times for the world population during the same period. Average annual population growth rate of the Arab region is 2.2% for 2010-2015 period compared to 1.2% for the world average⁵
- The Arab region imports more half of the food it consumes. In cereals, it imported 65% of its consumption in 2014-2016, up from just 50% ten years earlier³
- Rural areas account for the bulk of the poor, especially in the most populous countries of the region³
- Undernourishment persists in most LDCs countries in the region. The levels of undernourishment are staggering for some, as high as 70% for the Comoros, 39% for the Sudan and 26% for Yemen³
- The proportion of the Arab region population with access to clean drinking water has improved over time, but remains below the global average of 91% as of 2015³
- The region is the most water-scare in the world, with most countries falling below the generally accepted water scarcity line of 1000 m³ per capita per annum of renewable water resources³
- All Arab countries use most of their water for agriculture. In Yemen, agriculture consumes 95% of water and the percentage goes down to 65% in Algeria. Seven of the world's top twenty groundwater-irrigating countries are in the region. Groundwater overuse has resulted in the depletion, deterioration and destruction of aquifers. Several countries in the region withdraw more than 100% of their renewable water resources. Low water efficiency and productivity dominates the agriculture sector³
- Of the total land area of Arab countries (around 1.3 billion hectares), about 500 million hectares are arable. However, only 100 million hectares have medium or highly productive soils
- Much of the region's soil suffers from severe, ongoing degradation. In some of the Arab countries, the reduction in soil productivity has been estimated to be in the range of 30 to 35% of potential productivity³

⁴ ESCWA 2018. Survey of the economic and social development in the Arab region 2017-2018. Summary

⁵ ESCWA 2017. Arab Horizon 2030: Prospects for enhancing food security in the Arab region

- Over the last century, the Arab region has experienced an increase in mean temperatures of up to 0.5°C. In some countries, such as Sudan and parts of North Africa, precipitation has decreased by up to 10% in recent decades. Most of the region is expected to become hotter and drier in the future due to climate change³
- Armed conflict in several countries in the region since 2010 has created a surge in refugees and IPDs, who typically lost their economic and physical access to food and basic needs³
- Lack of integration between the economic sectors, and weakness of the Arab countries to build an integrated production structure, (Arab region's share of industry as a percentage of GDP is only 35%)⁶
- Low competitive position of the Arab industrial sector compared to other regions,
- High tariff and non-tariff burdens, due to lack of national protection policies in many countries
- Inability of the Arab industry in most cases to cope with rapid technological development
- Lack of skilled employee

II- Sectoral Focus

ETC technical committee members will discuss the selection of a sectoral focus for 2019 work plan. Main challenges encountered in the Arab region, ETC mandate, outcomes of Beirut Consensus, and the potential of improving resiliency under current and future threats are the main proposed criteria to help technical committee members frame their selection.

For instance, the agriculture sector is a multidimensional sector in which the nexus of food, water, and energy is a limiting factor for socio-economic growth in the Arab region. The majority of the poor and food insecure people are residing in rural areas in the region and agriculture, equipped with appropriate and affordable technologies, would present a strategic solution to promote rural livelihoods and food security and eventually reduce multidimensional vulnerability/poverty. Agriculture increases resiliency under conflict, presents an opportunity for youth when combined with new technologies, and is considered the core sector in the Arab region to improve water efficiency. Through green agriculture technologies, ETC would be able to increase agriculture efficiency and improve producers' resilience to various shocks (climate, market, etc.). Promoting context based green agriculture technologies is a pre-requisite to facilitate the adoption of climate smart agriculture in the Arab region.

Industry is one of the most dynamic drivers of prosperity. Therefore, industrial development is a global objective that touches upon the economic, social and environmental sectors. Goal 9 of Sustainable development goals (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) acknowledges that industrialization is one of the main drivers of sustained economic growth and sustainable development. This is based on the recognition that modern livelihoods have generally been built on and further developed by the industrialization process. ETC will assist member countries in developing their technological capabilities in industrial sector by facilitating access to information, knowledge and experience, as well as best practices and lessons learned, on science, technology and innovation facilitation initiatives and policies including the Science and Technology Parks and national technology transfer offices.

III- Key Priorities for 2019

⁶ The World Bank, world development Indicators, 2017.

ETC technical committee members will analyze the current context of the region under the selected sectors and will prioritize for 2019 various themes. The latter needs to take into consideration the interlinkages between ETC mandate, Beirut Consensus, and ongoing successful technological initiatives. Examples of priorities under the water and energy saving technologies in the agriculture sectors include:

- Pilot water and energy saving technologies to provide an evidence-based approach that helps member states to decide on roll out and scaling with the private sector. Proposed technologies included:
 - Biogas production to recycle waste and produce energy, water, and organic materials for soil amendment
 - Soilless production under greenhouses to increase water and nutrient efficiency. The recommendation is to pilot affordable and context based soilless production that could be adopted by vulnerable producers
 - Other technologies based on the discussions of the Technical Committee
- Produce informative materials on piloted water and energy saving technologies to increase learning and knowledge (sharing best practices)
- Facilitate multi-stakeholder's partnerships to create an enabling environment for the adoption of water and energy saving technologies
- Engage women and youth in the adoption of proposed water and energy saving technologies
- Study the application of proposed water and energy saving technologies in countries under conflict- propose solutions for access and affordability
- Target forcibly displaced population to increase their knowledge and skills in the proposed water and energy saving technologies

As for priorities for achieving inclusive and sustainable industrial development:

- Advance economic competitiveness, industrial growth, increased trade and technological progress, through assisting in development of modern industrial policies and strategies,
- Bridging gap between academia and technology centers with the industry through technology transfer offices, science and technology parks, incubators and intellectual property rights.
- Strengthening national, regional and international collaboration for knowledge transfer, networking and industrial cooperation in order to achieve SDGs.
- Implement effective and targeted capacity-building as well as exchange of experiences on cleaner industrial technologies and production methods.
- Other technologies based on the discussions of the Technical Committee

These examples fall within the framework of Beirut Consensus and are in harmony with ETC mandate. The private sector, research institutions, and other key stakeholders are engaged in the region in feasible initiatives that need more attention/efforts to transfer, adapt, and scale up and eventually to reach vulnerable communities.