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**Implementation of activities under the ESCWA programme of work
and of recommendations made by the Committee on Technology
for Development at its first session**

Summary

Since the first session of the Committee on Technology for Development, which was held in Dubai, the United Arab Emirates, on 11 and 12 February 2017, the Economic and Social Commission for Western Asia (ESCWA) has implemented various activities under subprogramme 4 on technology for development and regional integration of its programme of work for the bienniums 2016-2017 and 2018-2019, and pursuant to recommendations made by the Committee. The present document reviews those activities, which include issuing publications and technical reports, organizing meetings and implementing projects.

The Committee on Technology for Development is invited to take note of the contents of the present document and provide comments thereon.

CONTENTS

	<i>Paragraphs</i>	<i>Page</i>
Introduction	1-3	3
<i>Chapter</i>		
I. IMPLEMENTATION OF ACTIVITIES UNDER THE ESCWA PROGRAMME OF WORK.....	4-47	3
A. Information society: bridging the digital divide	4-11	3
B. Internet governance	12-19	4
C. Digital economy: an unharvested opportunity in the Arab region.....	20-23	6
D. Smart, digital and open government.....	24-31	7
E. Innovation for development.....	32-42	9
F. Frontier technologies for Arab countries.....	43-47	12
II. IMPLEMENTATION OF RECOMMENDATIONS MADE BY THE COMMITTEE ON TECHNOLOGY FOR DEVELOPMENT AT ITS FIRST SESSION	48	13

Introduction

1. Since the first session of the Committee on Technology for Development, which was held in Dubai, the United Arab Emirates, on 11 and 12 February 2017, the Economic and Social Commission for Western Asia (ESCWA) has implemented various activities under subprogramme 4 on technology for development and regional integration of its programme of work for the bienniums 2016-2017 and 2018-2019, and pursuant to recommendations made by the Committee.
2. A number of those activities involve several United Nations global processes, including the 2030 Agenda for Sustainable Development, the World Summit on the Information Society (WSIS), the Internet Governance Forum (IGF), the science and technology for development processes, and the United Nations Inter-agency Task Team on Science, Technology and Innovation for the Sustainable Development Goals.
3. The present document reviews those activities, which include conducting studies and producing publications, convening expert group meetings and capacity-building workshops, and preparing parliamentary reports. They are summarized under the work themes of the ESCWA secretariat in the field of technology, namely information society; Internet governance; digital economy; smart, digital and open government; innovation for development; and frontier technologies for Arab countries.

I. IMPLEMENTATION OF ACTIVITIES UNDER THE ESCWA PROGRAMME OF WORK

A. INFORMATION SOCIETY: BRIDGING THE DIGITAL DIVIDE

4. The WSIS process addresses the issue of bridging the digital divide by ensuring equitable access to technology for socioeconomic development. Since the inception of WSIS in 2003, ESCWA has taken part in the process and played a key role at the regional level in implementing WSIS outcomes and linking them to the Sustainable Development Goals (SDGs). In this context, ESCWA organizes related events and participates in producing the report of the Commission on Science and Technology for Development, which monitors progress in implementing WSIS outcomes. The ESCWA secretariat also conducted the following activities under subprogramme 4.

1. *First and second sessions of the Arab High-level Forum on WSIS and the 2030 Agenda for Sustainable Development*

5. ESCWA organized the [first session](#) of the Arab High-level Forum on WSIS and the 2030 Agenda for Sustainable Development (Beirut, 8-12 May 2017), which focused on aligning the WSIS action lines with the SDGs. The Forum brought together stakeholders in the information society, the digital economy and Internet governance in the Arab region to review, present and discuss the digital footprint in the 2030 Agenda. The Forum resulted in the [Beirut Consensus on Transformation and Digital Economy in the Arab Region – Towards the Achievement of the 2030 Agenda for Sustainable Development](#), and the way forward on the linkages between the WSIS and the 2030 Agenda processes in the Arab region.

6. The second session of the Arab High-level Forum (Beirut, 18-22 March 2019) will focus on reviewing Arab efforts to align the WSIS action lines with the SDGs. ESCWA will review the WSIS process at the regional level, in cooperation with Regional Office for Arab States of the International Telecommunication Union (ITU).

2. *Arab Horizon 2030: Digital Technologies for Development* ([E/ESCWA/TDD/2017/3](#))

7. In the context of the 2030 Agenda, ESCWA produced a publication entitled *Arab Horizon 2030: Digital Technologies for Development* that focuses on digital technologies and their role in socioeconomic

development in the Arab region. It sets out proposals and recommendations for harnessing those technologies to achieve social, economic and human development. The study identifies seven thematic policy areas of relevance to digital technologies and their impact on the SDGs, including digital strategies; the information and communication technology (ICT) sector; ICT infrastructure; cybersecurity; the digital divide; e-applications; and e-government. It also addresses the intersection between WSIS and the 2030 Agenda.

3. *Arab Ministerial Round Table on Technology for Development Horizon 2030*

8. As part of the World Government Summit in Dubai, ESCWA convened the Arab Ministerial Round Table on Technology for Development Horizon 2030: Leapfrogging the Gaps (Dubai, United Arab Emirates, 10-11 February 2018). The event comprised the following two segments: an Arab multi-stakeholder high-level segment, which addressed regional and national perspectives on digital technologies for sustainable development and the envisaged national inputs to regional integration; and a ministerial round table on technology for the SDGs, which covered priority topics in *Arab Horizon 2030: Digital Technologies for Development*. The Ministerial Round Table was attended by four ministers and deputy ministers, and high-level officials from Egypt, Iraq, Jordan, Morocco and the United Arab Emirates.

4. *Arab interregional consultation meeting on digital technologies for sustainable development and related regional processes*

9. At the WSIS Forum held in Geneva from 19-23 March 2018, ESCWA convened a consultation meeting on *Arab Horizon 2030: Digital Technologies for Development*, which was attended by participants from several Arab countries and international organisations, such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Conference on Trade and Development (UNCTAD) and ITU. Participants commended ESCWA on its proposed vision and approved the launch of a periodical regional review process until 2025.

5. *Arab digital agenda for sustainable development* (Forthcoming, 2019)

10. The report entitled “Arab digital agenda for sustainable development” presents a proposal for a set of targets and objectives in ICT. It is intended as a regional policy framework for promoting digital development and reducing the digital divide. It gives an overview of similar digital agendas worldwide and their main focus areas, and proposes an agenda tailored to the needs and priorities of the Arab region. The report sets out actions grouped around four ICT-related pillars, namely infrastructure, governance, economy, and society. It provides a brief analysis on the relevance of each of the thematic pillars and an evaluation of the indicators related to each theme, and proposes actions for their implementation.

6. *Expert group meeting on national digital development reports*

11. As part of preparations for the 2019 Arab Digital Development Report, an expert group meeting on national digital development reports was held in Dubai, the United Arab Emirates, on 6 and 7 February 2019, in collaboration with member States contributing to the Arab digital development report. National reports were prepared by national focal points nominated by participating countries, and covered national policies, initiatives, plans and measurement methods in the areas of digital development. The meeting’s outcomes have informed preparations for the 2019 Arab High-level Forum on WSIS and 2030 Agenda for Sustainable Development.

B. INTERNET GOVERNANCE

1. *Arab Internet Governance Forum*

12. The efforts of the Technical Cooperation Working Group in implementing the AIGF2020 Initiative have resulted in a new charter for the Arab IGF process. It sets out the technical cooperation framework for the

second phase of the Arab IGF, which is expected to last until 2020 or 2025 and aims to stream Arab countries' Internet policies to drive development in line with the SDGs.

13. ESCWA and the League of Arab States have prepared an initial draft of a new road map on Internet governance for the Arab region, which was discussed at the [Arab High-level Forum on WSIS and the 2030 Agenda for Sustainable Development](#) (Beirut, 8-12 May 2017).

2. Expert group meeting on the Second Arab Road Map for Internet Governance - the next decade

14. ESCWA and the League of Arab States organized an expert group meeting on the Second Arab Road Map for Internet Governance - the next decade (Beirut, 11-12 December 2017). Participants included various stakeholders concerned with the implementation of AIGF2020 Initiative. They focused on implementation mechanisms, and the role and impact of technology on the SDGs. The meeting resulted in a revised draft of a second Arab Internet governance road map and a concluding statement in Arabic entitled "Towards inclusive Arab cooperation on Internet governance for sustainable development", which seeks to strengthen the implementation of the Arab IGF process.

3. Arab Road Map for Internet Governance – Second edition

15. The study entitled "Arab Road Map for Internet Governance – Second edition", published in January 2018, identifies the following priority topics for Internet governance in the Arab region: meaningful access for inclusion; security and trust; institutional empowerment; Internet innovations and emerging ecosystems; human development; critical Internet resources and network infrastructure; and cultural and linguistic diversity. A set of principles was proposed for the new road map, aimed at achieving multistakeholderism, transparency and inclusive Internet governance processes in the Arab region.

4. Open consultations and an Arab multi-stakeholder advisory group meeting in preparation for the fifth Arab IGF

16. The meetings were held in Beirut from 16 to 19 July 2018, in preparation for the fifth Arab IGF, in collaboration with the League of Arab States. The meetings resulted in the following five themes for the Forum's programme: meaningful access for inclusion and diversity; cybersecurity, privacy, trust and peace; digital transformation and Internet economy; institutional empowerment and engagement in Internet public policymaking at the global and regional levels; and social and human impact. In addition, the following cross-cutting topics were identified, to be covered by all five themes: gender equality and women's empowerment; human development and capacity-building; and legislative frameworks. Working groups were formed to enable collaborative efforts on the plenary sessions and other preparatory activities.

5. Arab regional dialogue and experts meeting on the Internet governance and cybersecurity nexus - promoting trust in cyberspace

17. As part of its efforts to support the implementation of the second edition of the Arab Road Map on Internet Governance, ESCWA convened an Arab regional dialogue and experts meeting on the theme "Internet governance and cybersecurity nexus - promoting trust in cyberspace" (Beirut, 4-7 December 2018). The event sought to address the theme of cybersecurity and trust in line with Internet governance priority areas for the Arab region, as stipulated in the second edition of the Arab Road Map on Internet Governance. The Arab Multi-stakeholder Advisory Group held its second meeting on the event's sidelines to prepare for the fifth Arab IGF. The meeting explored opportunities for partnerships with all stakeholders to strengthen collaboration on the Arab IGF process.

6. *Third preparatory meeting for the fifth Arab Internet Governance Forum*

18. In preparation for the fifth Arab IGF, a third preparatory meeting will be held at the 2019 Arab High-level Forum on WSIS and 2030 Agenda for Sustainable Development. The preparatory committee will finalize the programme of the fifth Arab IGF, adopt its main theme “Internet governance for inclusiveness and empowerment”, and address the five themes related to access, cybersecurity, Internet economy, institutional empowerment and social impact, together with their cross-cutting topics related to gender equality and women’s empowerment, human development and capacity-building, and legislative frameworks.

7. *Establishment of the Lebanon IGF*

19. The ESCWA Arab IGF supported the Lebanese Ministry of Telecommunications in establishing the Lebanon IGF, which was launched at the high-level round table part of the 2017 Arab High-level Forum on WSIS and 2030 Agenda for Sustainable Development. ESCWA provided substantive support to and took part in the Multi-stakeholder Advisory Group, which was tasked with designing and implementing the programme for the first Lebanon IGF. The first Lebanon IGF was held at the American University of Beirut on 28 and 29 November 2018 on the theme “Towards an inclusive digital tomorrow”. It comprised four plenary sessions and seven workshops, and brought together over 300 participants from the local Internet community to discuss priority topics such as access, emerging technologies, technology and innovation for development, e-transaction law, regulations and cybersecurity, and Internet governance and human rights.

C. DIGITAL ECONOMY: AN UNHARVESTED OPPORTUNITY IN THE ARAB REGION

1. *WSIS-SDGs linkages on employment, industry and economic growth*

20. This study, published in May 2017, links SDGs 8 and 9 to the WSIS action lines. It explores the role of digital technology as a driver of development and creator of job opportunities, leading to full and productive employment and decent work for all in a knowledge-based digital economy. The study shows that the Arab region has the highest unemployment rate compared with other economies globally, and has insignificant industrial added value to contribute to its GDP, especially when oil and gas production is excluded. The Arab region has less than modest achievements in research, development and innovation, and linkages between universities and industry are weak. The study concludes with a set of qualitative recommendations, including raising the share of digital contribution to GDP, better utilization of digital potential, increasing the share of companies that deal with digital technologies, and promoting venture capital funding for digital projects. It covers recommendations on reskilling and retaining talent and ensuring gender parity, and provides a simple model for planners and decision-makers to follow when developing their vision 2030 strategy to include digital technologies and their future impact on economic growth, industry and employment.

2. *Next generation digital infrastructure: challenges and opportunities for development in the Arab region* (E/ESCWA/TDD/2017/Technical Paper.3)

21. Published in May 2017, the paper addressed the priorities and challenges related to next generation digital infrastructure in the Arab region, and explores the linkages between WSIS action line 2 on ICT infrastructure and SDG 9 on building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation. ICTs have become critical enablers of social and economic change, and are constantly offering new ways to address development challenges through creativity and innovation. With around 3.7 billion people connected to the Internet, the digital economy is growing and the next generation of digital infrastructure is an integral part of it. This economy is driven by evolving user needs and trends, increased broadband speeds, and a growing mobile and wireless industry. Consequently, the deployment of next generation networks is essential for an inclusive information society that integrates ICT in all aspects of life. The paper looks at the global landscape of next generation digital infrastructure and focuses on the Arab region in terms of rollout of next generation digital infrastructure and deployment models. It covers

regulatory and operational challenges and opportunities for addressing them, gives an overview of the changing ICT landscape, and explores the rise of the app economy and the required shift in regulations and national policies. It also provides recommendations and policy advice to Arab stakeholders.

3. *Perspectives of digital economy in the Arab region* (E/ESCWA/TDD/2017/2)

22. This study was launched at the thirtieth ESCWA session, held in Beirut from 25 to 28 June 2018. It aims to raise awareness on the digital economy in the Arab region and its contribution to sustainable development, to assist policymakers and other stakeholders in identifying priority areas in the digital economy and developing national digital agendas to enhance their transformation towards the digital economy. A well developed and inclusive digital economy agenda for the region would be a major tool to guide Arab countries towards inclusive and sustainable economic growth.

4. *Arab Digital Economy Conference*

23. Following an invitation from the Council of Arab Economic Unity, ESCWA participated in the Arab Digital Economy Conference held in Abu Dhabi on 16 and 17 December 2018. The Conference showcased a common Arab vision of digital economy, with the support of Emirati leaders. ESCWA gave an overview of its study entitled “Perspectives of digital economy in the Arab region” and explored further cooperation at the regional level.

D. SMART, DIGITAL AND OPEN GOVERNMENT

1. *Smart digital transformation in government*

24. In 2017, a study entitled “Smart digital transformation in government” was prepared to assist in formulating smart government policies that meet people’s needs, achieve economic growth, increase employment, and support a transition to the digital economy. The study gives an overview of developments in government systems and of technological breakthroughs that affect the development of government services, and sheds light on the transformation of computer applications towards open and transparent Internet-based government services. The multidimensional framework of smart government encompasses policy, strategy, business practices, funding, technology, services supported by clear communication efforts, human capital management, and impact analysis. The study highlights strategic technologies essential for smart government, enablers for transparent government activities, and smart actions that serve sustainable development. The study relied on case studies from the Arab region. It addresses challenges and proposes three scenarios for smart transformation.

2. *Project on fostering institutional development for participatory approaches towards the achievement of the Sustainable Development Goals in Western Asia*

25. In the biennium 2018-2019, ESCWA will implement a project on fostering institutional development for participatory approaches towards the achievement of the SDGs in Western Asia, funded from the United Nations Development Account. The project aims to build the capacity of ESCWA member States in utilizing emerging technologies to increase transparency and accountability, and to adopt more effective and efficient participatory approaches to governance. ‘Open government’ refers to a government that is effective and efficient in performing its duties, transparent in and accountable for its actions, accessible to all through its services, responsive to the needs of its citizenry, and values the participation, knowledge and expertise of citizens in decision-making.

3. *Expert group meeting on open government: emerging technologies for greater government transparency and accountability*

26. The expert group meeting was held in Beirut on 26 and 27 April 2017. Participants discussed the role of open government in enhancing government transparency, government accountability and the improvement of citizen participation based on a draft study developed by ESCWA entitled “Fostering open government in the Arab region”. Government officials from e-government and/or public administration authorities and experts from civil society discussed the concepts of open government, including governance, openness and open data, participation and engagement, technological aspects facilitating open government, and legal and regulatory aspects. Selected international, regional and national initiatives were presented to stimulate the sharing of knowledge and lessons-learned.

4. *Fostering open government in the Arab region*
(E/ESCWA/TDD/2018/Technical Paper.1)

27. ESCWA launched the study entitled “Fostering open government in the Arab region” on the sidelines of the thirtieth ESCWA session. The study provides a comprehensive framework on open government for Arab decision-makers. It comprises three main parts. The first explores the concept of open government, technology and international models in the context of good governance through case studies from Indonesia, Jordan, Morocco, Sweden, Tunisia and the United States of America. The second part reviews the status of open government in the Arab region based on international indicators, and member States’ responses to the ESCWA questionnaire on open government. The third part sets out the four-phased ESCWA open government framework, which allows for the incremental implementation of open government initiatives either vertically or horizontally in Arab countries.

5. *Capacity-development material on participation, collaboration and engagement*
(Forthcoming, 2019)

28. Currently under preparation, the training material will provide details for the implementation of the four-phased ESCWA framework on open government. It focuses on developing the capacity of decision-makers in the Arab region to implement successful open government strategies through policies and initiatives for openness, participation, collaboration and engagement. Although based on global good practices, the training material is customized to the Arab countries and structured as a generic medium- to long-term strategy for open government. The framework comprises the following four phases: openness for transparency; participation; collaboration; and engagement. It sets out relevant technology enablers and provides checklists, illustrative case studies and guidance based on good practices worldwide and from the Arab region. Most importantly, it shows how those elements can be applied to each phase.

6. *Capacity-building workshop on open government in the Arab region*

29. A capacity-building workshop on open government in the Arab region was held in Beirut from 25 to 27 September 2018. It aimed to build the capacity of participants on open government, specifically the four-phased ESCWA framework for open government, and to provide them with knowledge on options, tools and actions to develop and implement open government initiatives in the Arab region. The workshop was attended by 39 participants from 12 Arab countries. It included training sessions on open data and on participation, collaboration and engagement. Special sessions were dedicated to presenting the experience of Arab countries in applying open data and moving towards open government. Other sessions focused on the impact of open government and its role in achieving the SDGs and to the legal aspects of open government, especially access to information law.

7. *National workshop on open government and open data in the Sudan*

30. A national workshop on open government and open data in the Sudan was held in Khartoum on 29 November 2018. It was attended 93 men and 82 women, many from local government bodies. The workshop focused on building knowledge on open government and open data, and raising awareness about the technical aspects of open data that Governments should consider, especially in countries currently implementing and updating open data structures and initiatives.

8. *Government Electronic and Mobile Services (GEMS) Maturity Index*

31. In 2014, ESCWA, in collaboration with the Office of the Prime Minister of the United Arab Emirates, launched an initiative to develop a maturity index of government electronic and mobile services (GEMS) that can be applied globally, while taking into consideration regional specificities. The GEMS maturity index is an assessment tool that can be used by policymakers to measure the level of digitization and sophistication in the delivery of e-government and m-government services to the public. The index combines key performance indicators that measure service availability and sophistication, service usage, and public outreach. In 2016 and 2017, ESCWA carried out pilot implementations of GEMS in 11 Arab countries, namely Bahrain, Iraq, Jordan, Lebanon, Mauritania, Morocco, Oman, the State of Palestine, the Sudan, Tunisia and the United Arab Emirates. The deployment of the GEMS maturity index in those countries has encouraged policymakers to increase the supply of sophisticated and mature digital services, which, in turn, will improve the delivery of e-government services. In 2018, a full assessment of GEMS was carried out. The results are expected to be announced in the first quarter of 2019.

E. INNOVATION FOR DEVELOPMENT

32. ESCWA is focusing on innovation to support its member States in achieving the 2030 Agenda, especially SDG 9 on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation. However, the cross-cutting nature of innovation makes it an essential component to consider when working towards all SDGs, including SDGs 5, 8 and 16.

1. *Innovation Policy for Inclusive Sustainable Development in the Arab Region* (E/ESCWA/TDD/2017/1)

33. In 2017, ESCWA produced a study entitled *Innovation Policy for Inclusive Development in the Arab Region* to provide decision-makers in Arab countries with a comprehensive framework for formulating innovation policies that enhance economic growth towards the 2030 Agenda. The proposed guidelines for formulating innovation policies are based on best practices drawn from the experience of advanced, developed and emerging countries, which have managed to implement successful catch-up strategies and reach high levels of technological and social development. The framework is customized to the needs and priorities of the Arab region, while paying attention to inclusive sustainable development. The framework stresses the importance of formulating a vision and specifying objectives for innovation policies at the national level, building a strong national innovation system, and paying special attention to monitoring and evaluation. The study also describes innovation policies in five Arab countries, namely Egypt, Jordan, Morocco, Saudi Arabia and the United Arab Emirates. It explores how innovation policies can address key challenges of the Arab region, such as youth unemployment and climate change. In addition, it highlights innovation challenges and the need for a guide on developing national innovation policies that accommodate the concept of inclusive sustainable development in the region.

2. *Innovation landscape in Arab countries: a critical analysis* (E/ESCWA/TDD/2017/Technical Paper.1)

34. This 2017 report proposes a methodology for analysing the innovation landscape in Arab countries, based on the innovation policy framework described in the study entitled *Innovation policy for inclusive*

sustainable development in Arab countries. It also builds on other innovation frameworks designed by international agencies, such as UNCTAD. The analysis of the innovation landscape draws on the Global Innovation Index (GII), where Arab countries are assessed based on a function of their wealth (GDP PPP per capita), and are compared with other countries. The analysis shows that considering GDP considerably changes Arab countries' GII ranking. In addition to the GII analysis, the innovation landscape, vision, strategies and outcomes are discussed based on available literature for six Arab countries, namely Egypt, Jordan, Lebanon, Morocco, Saudi Arabia and the United Arab Emirates. The report assesses those countries' approaches to innovation and the challenges they face. It also covers public and private investment in research and development, and the social and economic impact of innovation. The conclusions and recommendations set out in the report were formulated based on the results of the analysis.

3. *Technology and innovation with a focus on the 2030 Development Agenda: community-based innovation for improved social well-being*

35. This report explores the issues of social wellbeing in the context of communities, and the way innovation and technology can be instrumental in tackling such issues in the Arab region. It highlights the importance of innovation and technology in fostering social development by engaging stakeholders at the community level, to provide communities and civil society with suggestions on innovative tools and practices that can improve social wellbeing. The report considers the various models of innovation such as grass-root innovation, social innovation and crowd-sourcing innovation, and describes the factors influencing community-based innovation. The report provides recommendations for the implementation of community-based innovation in the Arab region via technology.

4. *Guidelines on fostering innovation in the public sector of the Arab region*
(E/ESCWA/TDD/2017/Technical Paper.6)

36. This study focuses on public sector innovation, and highlights challenges faced by Governments in fostering such innovations. It also identifies tools that can help overcome barriers to effective and efficient public-sector innovation in the Arab region. It focuses on innovation in specific public-sector domains beyond administrative services, such as innovation in education, health, energy and transport. In addition, it presents case studies on public innovation types, tools and methods from the international and regional arenas, and proposes recommendations based on best practices in developed and developing countries. Those recommendations can be adapted and adopted to further public-sector innovation in the Arab region. The report presents a variety of models related to different aspects of public sector innovation, which can be used by Governments and other entities in the Arab region.

5. *Fostering innovation in small and medium enterprises in the Arab region*
(E/ESCWA/TDD/2018/TP.2)

37. This report focuses on micro, small and medium enterprises (MSMEs), which represent the largest share of economic sectors in the Arab region in terms of employment and contribution to economic added-value. The report shows how the SDGs focus on small and medium enterprises (SMEs) and innovation, especially SDGs 8 and 9, and describe the status of SMEs in the Arab region based on international reports. Given that innovation and technology have become key to finding solutions to the most pressing social, economic and environmental challenges, the report describes the role of innovation policies and technology in strengthening SMEs in Arab countries, and defines various approaches to fostering innovation in SMEs while distinguishing between rural and urban areas. The report concludes with recommendations on promoting innovation within MSMEs.

6. *Innovation and entrepreneurship for job creation for women and youth*
(Forthcoming, 2019)

38. The report discusses the challenges and opportunities of innovation and entrepreneurship in Arab countries, with a focus on young people and women. It assesses Arab countries' economic competitiveness,

with emphasis on the status of entrepreneurship, innovation systems, digital technologies, skills, and business environments. It also examines the status of Arab women and young people with regard to labour force participation and employment. Furthermore, it reviews the SDGs and their links to entrepreneurship globally and in the Arab region. It also considers the role of frontier technologies in creating new opportunities for entrepreneurs, while taking into consideration SDG challenges. In conclusion, the report proposes recommendations at the policy level, and suggests initiatives targeting women and young people to develop and support their entrepreneurship endeavours in the Arab region.

7. *Arab Horizon 2030: Innovation and Technological Perspectives for the Arab Region*
(Forthcoming, 2019)

39. This study examines the future role of innovation and technology in achieving the 2030 Agenda in the Arab region, and shows how science, technology and innovation (STI) can contribute to the integrated approach required for achieving the SDGs. The study presents various innovation models, including the linear model, grassroot innovation, mission-oriented innovation and open-innovation; and discusses how those models can be used to adopt and adapt emerging technologies to address development challenges in the Arab region. It examines the innovative applications of emerging technologies in social, economic and environmental areas, and classifies emerging technologies based on their importance and affordability for Arab countries. It includes case studies from developed and developing countries and provides many best practices. Based on Arab countries' STI levels and their technology use and absorption, the study proposes scenarios for promoting STI in development plans. It also presents policies and strategies to achieve the SDGs in the Arab region based on STI.

8. *Workshop on fostering innovation in the public sectors of Arab countries*

40. ESCWA organized a workshop on fostering innovation in the public sectors of Arab countries, which was held in Cairo on 30 and 31 October 2017. The workshop aimed to raise awareness of decision-makers and build a better understanding of innovation in the public sector in the Arab region. It comprised seven sessions that tackled different topics, including concepts, types, benefits and challenges of innovation in the public sector, the link between open government and public-sector innovation, and public-sector innovation and the SDGs. The workshop also presented case studies from the Arab region and lessons learned from Europe. ESCWA presented its new policy framework for open government in the Arab region, designed to enhance transparency, accountability and citizen participation in decision-making.

9. *Expert group meeting on innovation and technology to achieve the 2030 Agenda*

41. The expert group meeting was held in Beirut from 5 to 7 December 2017. The meeting brought together 55 specialists involved in innovation, including experts from government institutions, academia, research centres and the private sector, in addition to regional and international organizations and entrepreneurs. Discussions focused on innovation and technological perspectives in the Arab region for 2030, based on the first draft of the upcoming 2019 study entitled *Arab Horizon 2030: Innovation and Technology Perspectives for the Arab Region*. The meeting also covered specific areas of innovation and technology related to economic and social development. In the economic sphere, participants focused on the role of innovation and technology in strengthening SMEs, fostering entrepreneurship, innovation and technologies for local community development, digital government transformation, and the fourth industrial revolution. Special attention was given to the new perspectives of innovation and technology and to their role in economic growth, enhancing productivity, creating decent jobs and addressing societal challenges. A report entitled "Enabling digital opportunities in the Middle East", prepared by ESCWA, the Internet Society (ISOC) and Wamda, was launched at the meeting.

10. *Capacity-building workshop on innovation policies for the SDGs in the Arab region*

42. Within the framework of Work Stream 6 of the United Nations Inter-agency Task Team on Science, Technology and Innovation for the Sustainable Development Goals, ESCWA, in collaboration with the Higher Council for Science and Technology in Amman, and in partnership with the United Nations Department of Economic and Social Affairs (UNDESA), the United Nations Industrial Development Organization (UNIDO), UNESCO, UNCTAD, the World Intellectual Property Organization (WIPO) and the United Nations University, organized a capacity-building workshop on innovation policies for the SDGs in the Arab region, which was held in Amman from 15 to 19 April 2018. The workshop aimed to raise awareness on the various aspects of innovation policies, including private enterprise, public firms, SMEs, farmers, inventors and entrepreneurs. Its sessions clustered around the following three main themes: a conceptual framework; designing and implementing innovation policies; and monitoring and evaluation of innovation policies. It was delivered by high-level United Nations experts in an integrated manner to build the capacity of 31 mid- to high-level government representatives and experts involved in STI from regional organizations, academia and research institutions in the Arab region.

F. FRONTIER TECHNOLOGIES FOR ARAB COUNTRIES

1. *Meeting on the implications of frontier technologies for employment and youth empowerment*

43. ESCWA held a meeting on the implications of frontier technologies for employment and youth empowerment in the Arab region in Beirut on 21 and 22 June 2018. A total of 42 experts participated in the meeting, representing 12 Arab countries. The meeting aimed to engage stakeholders in exploring how to accelerate the benefits of frontier technologies and innovation in local and regional development processes, while limiting the negative impact of those technologies, notably on security and employment.

44. Participants proposed a number of key messages, including enabling ecosystems for frontier technologies, with a focus on human development and education; formulating legislation that facilitate market access and processes; supporting innovative start-up projects in science and innovation; finding solutions to local needs in support of sustainable development efforts; developing national programmes that enable people through technology; benefiting from new job opportunities enabled by frontier technologies; supporting young people and entrepreneurship; building capacity and skills at the primary education level and facilitating linkages between graduates and employment markets; focusing on digital cities and urban sustainable development; promoting youth participation in public policymaking and planning for the future; and using frontier technologies to face development challenges in the region, such as unemployment and environmental sustainability. The outputs of the meeting informed the thirtieth ESCWA session on the theme “Technology for sustainable development in the Arab region”.

2. *Servicing the thirtieth ESCWA ministerial session*

45. A background paper entitled “[Technology for Sustainable Development: Creating Decent Jobs and Empowering Youth in Arab Countries](#)” was prepared for the thirtieth ESCWA whose theme was “Technology for sustainable development in the Arab region”.

3. *Seminar on frontier technologies and youth education*

46. ESCWA conducted a seminar on frontier technologies and youth education (Beirut, 30 November 2018), in collaboration with the Rafic Hariri Foundation. The objective was to raise awareness on the impact of frontier technologies on sustainable development, particularly on enhancing education systems and processes, and youth empowerment. Given that technology and education are becoming more closely linked, the seminar encouraged all stakeholders, including policymakers, educators, technologists and investors, to discuss

alternative ways to efficiently incorporate frontier technologies into the education sector and optimise benefits. Topics discussed included the fourth industrial revolution and local development, education systems and their role in creating employment, and frontier technologies for inclusive education.

4. Contributions to regional conferences

47. ESCWA contributed to the Arab Industrial Development and Mining Organization (AIDMO) regional conference on research, development and innovation and frontier technologies for sustainable development, which was held in Cairo in October 2018. In addition, ESCWA contributed to a regional conference organized by AIDMO and the Islamic Educational, Scientific and Cultural Organization (ISESCO), held in Rabat in November 2018, on the role of big data and artificial intelligence in industrial informatics modernization and development. ESCWA also participated in a conference on linking academia with industry, held by AIDMO and the Arab League Educational, Cultural and Scientific Organization (ALECSO) in Rabat in December 2018. ESCWA conducted a workshop with AIDMO on governing science and technology parks, which was held in the Sudan in October 2018. Furthermore, ESCWA participated as a member in the second meeting of the Arab Council on Nanotechnology, held in the Sudan in October 2018.

II. IMPLEMENTATION OF RECOMMENDATIONS MADE BY THE COMMITTEE ON TECHNOLOGY FOR DEVELOPMENT AT ITS FIRST SESSION

48. At its first session, held in Dubai, the United Arab Emirates, on 11 and 12 February 2017, the Committee on Technology for Development made seven recommendations to the ESCWA secretariat, pursuant to which the secretariat implemented some of the activities described in the first chapter of the present document. The table below sets out each recommendation and the respective material published or meetings held in implementation. Paragraph numbers refer to the present document and are provided as a reference for more information on each activity.

Recommendations	Related activities
(a) Prepare studies on the development of innovation, entrepreneurship and technological creativity profiles in the Arab region	<p>Publication entitled <i>Arab Horizon 2030: Digital Technologies for Development</i> (para. 7).</p> <p>Study entitled “Fostering open government in the Arab region” (para. 27).</p> <p>Study entitled <i>Innovation Policy for Inclusive Sustainable Development in the Arab Region</i> (para. 33).</p> <p>Report entitled “Technology and innovation with a focus on the 2030 Development Agenda: community-based innovation for improved social well-being” (para. 35).</p> <p>Study entitled “Guidelines on fostering innovation in the public sector of the Arab region” (para. 36).</p> <p>Report entitled “Fostering innovation in small and medium enterprises in the Arab region” (para. 37).</p> <p>Report on innovation and entrepreneurship for job creation for women and youth (para. 38).</p> <p>Publication entitled <i>Arab horizon 2030: innovation and technological perspectives for the Arab region</i> (para. 39).</p>

Recommendations	Related activities
<p>(b) Prepare studies on the legal and organizational frameworks that support innovation in the Arab region, particularly the mechanisms used to implement intellectual property rights in Arab countries in a way that utilizes the 2030 Agenda</p>	<p>Study entitled <i>Innovation Policy for Inclusive Sustainable Development in the Arab Region</i> (para. 33).</p> <p>Study entitled “Innovation landscape in Arab countries: a critical analysis” (para. 34).</p> <p>Report entitled “Fostering innovation in small and medium enterprises in the Arab region” (para. 37).</p>
<p>(c) Support countries in adopting and implementing integrated sets of benchmarks and indicators to guide the management of technology, knowledge and innovation and of online Arabic digital content, and support member States in evaluating e-government, open government and digital economy services</p>	<p>First and second sessions of the Arab High-level Forum on WSIS and the 2030 Agenda for Sustainable Development (paras. 5-6).</p> <p>Study entitled <i>Arab Horizon 2030: Digital Technologies for Development</i> (para. 7).</p> <p>Arab Ministerial Roundtable on Technology for Development Horizon 2030 (para. 8).</p> <p>Arab interregional consultation meeting on digital technologies for sustainable development and related regional processes (para. 9).</p> <p>Arab digital agenda for sustainable development (para. 10).</p> <p>Expert group meeting on national digital development reports (para. 11).</p> <p>Study entitled “WSIS-SDGs linkages on employment, industry and economic growth” (para. 20).</p> <p>Paper entitled “Next generation digital infrastructure: challenges and opportunities for development in the Arab region” (para. 21).</p> <p>Study entitled “Perspectives of digital economy in the Arab region” (para. 22).</p> <p>Study entitled “Smart digital transformation in government” (para. 24).</p> <p>Project on fostering institutional development for participatory approaches towards the achievement of the Sustainable Development Goals in Western Asia (para. 25).</p> <p>Expert group meeting on open government: emerging technologies for greater government transparency and accountability (para. 26).</p> <p>Study entitled “Fostering open government in the Arab region” (para. 27).</p> <p>Capacity-development material on participation, collaboration and engagement (para. 28).</p> <p>Capacity-building workshop on open government in the Arab region (para. 29).</p> <p>National workshop on open government and open data in the Sudan (para. 30).</p> <p>Government Electronic and Mobile Services (GEMS) Maturity Index (para. 31).</p>

Recommendations	Related activities
	<p>Study entitled “Innovation landscape in Arab countries: a critical analysis” (para. 34).</p> <p>Workshop on fostering innovation in the public sectors of Arab countries (para. 40).</p> <p>Expert group meeting on innovation and technology to achieve the 2030 Agenda, 2017 (para. 41).</p> <p>Capacity-building workshop on innovation policies for the SDGs in the Arab region (para. 42).</p>
<p>(d) Support member States in the area of smart government and open government and their tools and concepts, so as to stimulate the economy and better serve society</p>	<p>Expert group meeting on national digital development reports (para. 11).</p> <p>Study entitled “Smart digital transformation in government” (para. 24).</p> <p>Capacity building workshop on open government in the Arab region (para. 29).</p> <p>National workshop on open government and open data in the Sudan (para. 30).</p> <p>Government Electronic and Mobile Services (GEMS) Maturity Index (para. 31).</p> <p>Study entitled “Innovation landscape in Arab countries: a critical analysis” (para. 34).</p> <p>Workshop on fostering innovation in the public sectors of Arab countries (para. 40).</p>
<p>(e) Conceptualize a common Arab work programme to expedite digital transformation in Arab countries</p>	<p>Report entitled “Arab digital agenda for sustainable development” (para. 10).</p> <p>Arab Internet Governance Forum (paras. 12, 13, 16, 18).</p> <p>Expert group meeting on the Second Arab Road Map for Internet Governance - the next decade (para. 14).</p> <p>Arab Road Map for Internet Governance – Second edition (para. 15).</p> <p>Open consultations and an Arab multi-stakeholder advisory group meeting in preparation for the fifth Arab IGF (para. 16).</p> <p>Arab regional dialogue and experts meeting on the Internet governance and cybersecurity nexus - promoting trust in cyberspace (para. 17).</p> <p>Third preparatory meeting for the fifth Arab Internet Governance Forum (para. 18).</p> <p>Arab Digital Economy Conference (para. 23).</p> <p>Study entitled “Fostering open government in the Arab region” (para. 27).</p> <p>Study entitled “Guidelines on fostering innovation in the public sector of the Arab region” (para. 36).</p> <p>Contributions to regional conferences (para. 47).</p>

Recommendations	Related activities
(f) Study the role of ICT in strengthening STI systems, and cooperate with relevant countries in this area	<p>Study entitled “Innovation landscape in Arab countries: a critical analysis” (para. 34).</p> <p>Report entitled “Fostering innovation in small and medium enterprises in the Arab region” (para. 37).</p> <p>Seminar on frontier technologies and youth education (para. 46).</p>
(g) Assist member States in ensuring that their STI initiatives that contribute to the achievement of the SDGs reach global platforms	<p>Arab Internet Governance Forum (paras. 12, 13, 16, 18).</p> <p>Establishment of the Lebanon IGF (para. 19).</p> <p>Capacity-building workshop on open government in the Arab region (para. 29).</p> <p>Study entitled <i>Innovation Policy for Inclusive Sustainable Development in the Arab Region</i> (para. 33).</p> <p>Study entitled “Guidelines on fostering innovation in the public sector of the Arab region” (para. 36).</p> <p>Report on innovation and entrepreneurship for job creation for women and youth (para. 38).</p> <p>Study entitled <i>Arab Horizon 2030: Innovation and Technological Perspectives for the Arab Region</i> (para. 39).</p> <p>Capacity-building workshop on innovation policies for the SDGs in the Arab region (para. 42).</p> <p>Meeting on the implications of frontier technologies for employment and youth empowerment (paras. 43, 44).</p> <p>Servicing the thirtieth ESCWA ministerial session (para. 45).</p>
