



Report

Expert Group Meeting on Innovation and Technology for Advancing the Knowledge-based Economy in the Arab Region Amman, 3-4 June 2015

Summary

The Expert Group Meeting on Innovation and Technology for Advancing the Knowledge-based Economy in the Arab Region was held in Amman on 3 and 4 June 2015. It was organized by the Innovation Section of the Technology for Development Division, in collaboration with the Technology Centre of the Economic and Social Council for Western Asia (ESCWA) and in partnership with the United Nations Conference on Trade and Development (UNCTAD).

Participants in the meeting explored the role of innovation and technology in building knowledge-based economies in the Arab region. Topics of discussion ranged from sustaining innovation in the region to specific national initiatives.

Recommendations were made on priority areas and future work, and on possibilities for knowledge sharing and transfer between countries. They were classified into the following categories: the role of Governments in promoting innovation policies; regional and international cooperation; measuring innovation; human capital and education; research and development; the role of the private sector in fostering innovation; and the role of information and communication technology in advancing innovation and the knowledge society.

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Introduction

1. Knowledge has emerged as the driving force behind productivity and economic growth in what have come to be known as knowledge-based economies, in which applied knowledge adds value to the end product, enhances growth and drives competitiveness. Transformation to knowledge-based economies starts with changes in the roles of policymakers, Governments, business managers, entrepreneurs and academics engaged in economic activities. More and more countries are embracing knowledge-related policies to spur growth and sustainable development. Countries transitioning to knowledge-based economies have experienced growth and a positive knock-on effect on society and the environment.
2. Technology and innovation are at the core of such transformation. Information and communications technologies (ICTs) have been integrated into almost all productive, service and social development sectors, placing information and knowledge in the hands of future innovators.
3. Moving towards a knowledge-based economy would help answer pressing needs in the Arab region, such as high unemployment and low productivity. However, development of such economies in Arab countries lags behind that of other regions. The Knowledge Economy Index showed that, in 2012, the United Arab Emirates was first among Arab countries with its world ranking of 42, followed by Bahrain at 43 and Oman at 47. Obstacles in the area include illiteracy, outdated education systems, a paucity of researchers, limited research and development activity, knowledge gaps and low university enrolment rates. The region has faced tremendous geopolitical challenges since the Arab uprisings of 2011, coupled with dwindling development prospects, especially in least developed countries (LDCs). Arab countries rank between 36th and 143rd on the Global Innovation Index.

I. RECOMMENDATIONS

4. The following is a list of recommendations that emerged from the meeting, ordered by themes.

A. THE ROLE OF GOVERNMENTS IN PROMOTING INNOVATION POLICIES

- Make a thorough assessment of national innovation systems, focusing on how effectively they facilitate innovation in the public and private sectors, and on practical measures to improve their operations. Governments could benefit from support by ESCWA and science, technology and innovation (STI) policy reviews provided by UNCTAD and other international organizations;
- Develop supply- and demand-side innovation policies, which should be periodically reviewed, as should their implementation in specific innovation projects;
- Establish policy research centres to formulate innovation policies and coordinate their implementation, and mechanisms for tracking developments at the international and national levels;
- Adopt balanced plans for transformation to a knowledge-based economy that also take into account economic diversification, productivity growth, competitiveness and employment generation;
- Modernize production and service sectors.

B. REGIONAL AND INTERNATIONAL COLLABORATION

- Develop a specific STI policy toolkit for Arab countries. ESCWA and other stakeholders in the region could play a leading role in this endeavour;
- Undertake a mapping exercise of Arab national and regional institutions involved in STI with a view to facilitating cooperation;

- Create a regional network of innovation policy institutions to share knowledge, experiences and success stories. The network, which could become a regional innovation advisory board, could promote policy-oriented research and analysis in innovation, enabling regional collaboration among STI practitioners and engaging in global innovation policy forums.

C. MEASURING INNOVATION

- Update national statistical systems to allow periodic collection, analysis and dissemination of STI indicators according to agreed methodologies. Such indicators should be aligned with international standards, particularly the Oslo Manual developed by the Organisation for Economic Co-operation and Development (OECD), and best practices, and be designed to facilitate comparability and evidenced-based policymaking;
- Report on all actions, initiatives and policies related to innovation. ESCWA could build and update a database of national STI strategy documents of its member States;
- Support the Innovation Scoreboard for the MENA Region developed by the ESCWA Technology Centre as a model for collaboration between Arab countries through a mechanism composed of focal points and national coordinators. The scoreboard could become a biennial innovation and entrepreneurship index.

D. HUMAN CAPITAL AND EDUCATION

- Update and transform Arab education systems to produce more innovators by undertaking the following:
 - Promoting education and curriculum reform to incorporate creative thinking and entrepreneurship;
 - Increasing enrolment in scientific and engineering disciplines;
 - Strengthening the interaction between schools, universities, vocational training institutes, civil society and private-sector firms to better prepare and equip youth for the knowledge-based economy;
 - Promote the Arabic language in STI;
- Work to reverse the brain drain in the Arab region to establish a rich intellectual infrastructure, and sustain it by increasing investment, including foreign direct investment (FDI);
- Create training programmes in innovation and entrepreneurship;
- Build and enhance the soft skills of graduates and small and medium-sized enterprises (SMEs) through courses in management and marketing, and encourage multi-disciplinary education to broaden and improve the skills and qualifications of graduates;
- Establish think-tanks able to spark policy reform and fuel innovation;
- Harness the entrepreneurial spirit of young people and develop innovative solutions to improve public services and alleviate social problems such as unemployment.

E. RESEARCH AND DEVELOPMENT

- Shift the emphasis of research and development to socioeconomic priorities, including youth matters, and environmental and sustainability challenges;

- Increase the focus on innovation and development; Governments should encourage bottom-up innovation, especially by adopting a needs-based approach and stimulating private-sector demand;
- Attract more medium- and high-tech FDI to fuel research and development and establish regional innovation hubs, which are crucial for fostering local cluster-based innovation and building focused investment bases for international funds, and other key intermediate institutions, such as incubators;
- Take advantage of other emerging technologies, such as biotechnology, nanotechnology, cognitive science, robotics and 3D printing.

F. ROLE OF THE PRIVATE SECTOR IN FOSTERING INNOVATION

- Encourage the private sector and civil society to fund start-ups, tap into venture capital and development funds available in the region, and provide a legal and administrative framework to minimize and mitigate risks;
- Establish clusters of SMEs in similar or related fields, such as software design and development, through awareness-raising, tax incentives and public funding; such clusters should be able to attract medium-to-large projects involving major research questions and pave the way for meaningful cooperation with universities and similar institutions;
- Develop, with the private sector, a culture that values knowledge through a strong work ethic, scientific education, internships and role models.

G. ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN ADVANCING INNOVATION, KNOWLEDGE-BASED ECONOMIES AND THE KNOWLEDGE SOCIETY

- Promote the creation of high-quality digital content, especially in Arabic;
- Invest in the digital transformation of public services to increase transparency;
- Formulate a national mobile-government strategy, based on existing toolkits or models customized for the Arab region;
- Adopt open data and technology frameworks;
- Encourage the creation of an Arabic ICT industry to exploit the comparative advantage offered by the Arabic language.

II. TOPICS OF DISCUSSION

5. Presentations were divided into seven main sessions, in addition to the opening and closing sessions.

A. ROAD TO THE KNOWLEDGE SOCIETY

6. The first session was chaired by Mr. Haidar Fraihat, Director of the ESCWA Technology for Development Division.

7. Mr. Mohammad Mrayati, Senior Advisor on Science and Technology for Sustainable Development at the Ministry of Economy and Planning of Saudi Arabia, made a keynote presentation on progress towards the knowledge society in the Arab region and innovation-technology priorities. He said that competitive knowledge would not be given to the Arab region; it had to be produced and acquired internally. Modern education systems fostered innovative skills and entrepreneurial capabilities. Mega-projects could unleash a virtuous cycle of innovation, development, improved education and scientific research, and help to shift

investment in the region away from oil, gas and construction towards knowledge, large-scale capacity-building and entrepreneurial support.

8. Mr. Ángel González-Sanz, Chief of the Policy Review Section at UNCTAD, said that the body's innovation policy framework rested on the following four main pillars: governance; macro-economy, business environment and infrastructure; diversification; human capital, education and scientific research and development capabilities. The framework also set out the need for greater coordination between business, the academic world and Governments, regional cooperation for technology transfer, and bridging the disconnect between academic research programmes and industrial innovation needs.

B. EMBRACING THE KNOWLEDGE-BASED ECONOMY: THE ROLE OF INNOVATION AND TECHNOLOGY

9. The second session was chaired by Mr. Nashaat Mansour, Dean of the School of Arts And Sciences at the Lebanese American University.

10. Mr. Souheil Marine, ICT 4 Development and Telecoms consultant, said that innovation improved total factor productivity. Specific problems in developing countries included the existence of a large informal sector of small firms with no research and development spending, the confining of research and development to universities and laboratories that were cut off from local needs, and considerable shortfalls in education, soft skills and vocational training. In the Arab region, there was a need for education reform and a shift in research and development priorities to societal problems and market needs.

11. Mr. Ufuk Batum, Vice-President of Odtü Teknokent, proposed directives to enhance private-sector engagement in research and development to increase good job opportunities, use resources more effectively, fund new ideas and increase the presence of the educated workforce in relevant fields. In Turkey, FDI had amounted to around \$16 billion in the 80 years before the financial crisis. Since 2002, that figure had risen to \$16 billion a year. The Arab countries needed to build an innovation culture, provide policy support for entrepreneurs, reverse the brain drain and build cluster-based innovation.

C. SUSTAINING THE INNOVATION PROCESS IN THE ARAB REGION

12. The third session was chaired by Mr. González-Sanz.

13. Mr. Michael Lim, Economic Affairs Officer at the Policy Review Section in UNCTAD, reviewed the work of UNCTAD on measuring countries' innovation capabilities and gaps between regions. Building strong STI capabilities was important for economic growth, social welfare, environmental considerations and sustainable development, and required an institutional framework, a national policy, good governance and adequate financing of innovation.

14. Mr. Fouad Mrad, Executive Director of the ESCWA Technology Centre, presented the Centre's work on developing an innovation scoreboard for the MENA region. He said that the scoreboard helped to identify systemic shortcomings, assess strengths and weaknesses of the innovation system, support evidence-based policymaking and improve investment policies. The scoreboard was a joint effort by ESCWA, the European Investment Bank, the Islamic Educational, Scientific and Cultural Organization (ISESCO), the United Nations Educational, Scientific and Cultural Organization and the Arab League Educational, Cultural and Scientific Organization. Focal points had been appointed in nine Arab countries to provide input and data collection to the different components of the scoreboard.

15. Mr. Adnan Yahya, Professor at Birzeit University, said that the University's research and development commercialization policy had been developed by a technical committee with a view to bridging gaps between industry, the academic world and the limited extant research and development initiatives.

It identified stakeholders among staff and students as having shares/revenues from commercialized products. The policy procedures defined the revenue distribution between the university and companies.

D. NATIONAL INITIATIVES FOR PROMOTING INNOVATION IN THE ARAB REGION

16. The fourth session was chaired by Mr. Rakan Razouk, Chairperson of the Board of the Syrian Computer Society.

17. Mr. Mohammed Khasawneh, Professor at the Jordan University of Science and Technology, on behalf of Mr. Abdallah al-Zoubi, General Director of the Scientific Research Support Fund (SRSF), said that industry in Jordan was light, mostly service-oriented and dependent on importing knowledge. It was fragmented, lacked vision and did little research and development. Links between the academic world and the market were limited. College graduates in Jordan had limited soft skills, leadership qualities or knowledge matching market needs. Since 2007, SRSF had sponsored activities, including technology incubation and post-doctoral studies, and continued to fund research in a number of disciplines. A national commission for orienting scientific research and technology transfer should be established in Jordan.

18. Mr. Nicolas Rouhana, Executive Director of Berytech, discussed private-sector stimulus for the knowledge-based economy in Lebanon. Existing finance mechanisms included loan options such as *kafalat* and equity options such as the Berytech Fund and Middle East Venture Partners. In 2013, the Central Bank of Lebanon had issued a circular allowing banks to provide direct loans to start-ups and guaranteeing 75 per cent of their investment. Since then, \$200 million had been pledged and several boot camps and technology hub events had taken place. Other initiatives included the Insure and Match Capital of the United States Agency for International Development, managed by Berytech, and the World Bank Mobile Internet Ecosystem Project.

E. KEY ENABLERS FOR BUILDING THE KNOWLEDGE-BASED ECONOMY

19. The fifth session was chaired by Mr. Slaheddine Maaref, Deputy Director of the Arab Regional Office of the International Telecommunication Union (ITU-ARO).

20. Ms. Samia Melhem, Lead ICT Policy Specialist at the World Bank, said that mobile technology and Internet access had been essential for improved service delivery across various sectors and in numerous countries. Governments needed proper regulations and skills and the right institutions to benefit from the transformative effects of the Internet on development and to move towards the digital economy.

21. Ms. Elsa Estevez, Senior Academic Programme Officer at the United Nations University (UNU), said that the main aim of the University's mobile governance (MGOV) toolkit was to transform the work of government organizations and their interaction with citizens and businesses by using mobile technologies. The toolkit could be tailored to the needs of Arab countries. The MGOV strategy was composed of several components, including delivery of agent-driven MGOV, public-private strategies, skill development for the mobile industry, and empowering young people to carry out MGOV-focused community capacity-building.

22. Ms. Jennifer Colville, Innovation Team Leader for the United Nations Development Programme (UNDP) in the Arab States, discussed several methodologies for social innovation, such as design thinking, which met the needs of users and encouraged solution-seeking among multiple actors. 'Games for development' offered an alternative way of problem-solving, and 'innovation labs' brought people together to collaborate, experiment and find solutions.

F. TRANSFORMATION TOWARDS A KNOWLEDGE-BASED ECONOMY IN THE ARAB REGION

23. The sixth session was chaired by Mr. Ashraf Shaalan, President of the National Research Centre in Egypt.

24. Mr. Marwan Awartani, President of the Palestine Technical University (PTU), said that strong national leadership, a vision, education reform and stakeholder partnerships were needed to create a lean innovation ecosystem. PTU had rolled out courses on entrepreneurship, partnerships with the private sector and research projects.

25. Mr. Asef Diab, Consultant to the General Director for Knowledge Management, Scientific Studies and Research Centre, presented a seven-step implementation process for integrating and aligning knowledge management with business and addressing common knowledge management challenges. To implement an effective knowledge management system, a scientific institution must align its leadership, training, culture and reward systems, technology tools and measurement systems.

26. Mr. Mohamed Ben Amor, Special Advisor to the Tunisian Minister of Communication Technologies and the Digital Economy, said that under the Digital Tunisia 2018 plan, all Tunisian families would be connected to broadband Internet, access to tablets would increase, effective e-government would be rolled out and the development of digital content would be fostered. The plan was expected to produce 80,000 new jobs and increase the sector's added value from TND 4.5 billion to TND 13.5 billion.

27. Ms. Maha Merezak, Programme Specialist at the Islamic Educational, Scientific and Cultural Organization (ISESCO), said that the Organization's guiding paper, entitled "Towards building knowledge economies in ISESCO member States", analysed the interaction between research and development, spending on education and training, and technological and organizational innovation in the move towards knowledge-based economies. Current economic models needed to be reviewed and more had to be done to foster sectoral and spatial diversification and balanced governance.

G. CASE STUDIES FROM SELECTED ARAB COUNTRIES

28. The seventh session was chaired by Mr. Mohammad Saidam, Chief Science Officer at the Royal Scientific Society in Jordan.

29. Mr. Adnan Samara, President of the Higher Council for Innovation and Excellence (HCIE) in Palestine, said that young people, a strong civil society and a growing number of university graduates gave Palestine a solid foundation for making progress on innovation. HCIE was one of more than 30 public and private sector, civil society and academic entities involved in innovation. Its main aim was to encourage progress towards a knowledge-based economy.

30. Ms. Sharifa Alharthy, Senior Planning and Study Specialist at the Research Council in Oman, said that the Innovation Precinct had been established to improve Omani private sector competitiveness and job opportunities, and to diversify the economy. It focused on energy, health, food, biotechnology, water and the environment. The I-HUB, which was still in an experimental stage, aimed to stimulate entrepreneurship and attract talent. The Omani National Innovation Strategy was being developed by a specialized committee.

31. Mr. Hashim Fadlallah, head of the National Centre for Research in the Sudan, said that the oil and agriculture sectors required capacity-building for technology transfer. The Centre's work included projects on environment-friendly fertilizers, biopesticides and herbal medicines.

III. ORGANIZATION OF WORK

A. VENUE AND DATE

32. The meeting was held by the ESCWA Technology for Development Division, in collaboration with UNCTAD, in Amman on 3 and 4 June 2015.

B. OPENING

33. The meeting was opened by Ms. Nibal Idlebi, Chief of the Innovation Section at ESCWA. She said that economic difficulties facing the Arab region, the decline in tourism and trade, and rising unemployment, which had reached 25 per cent, underlined the need to develop knowledge-based economies. The Knowledge Economy Index showed an average of 4.62 in the Arab region, compared with the world average of 5.12. The importance of innovation had been emphasized in the sustainable development goals.

34. Mr. Fouad Mrad, Executive Director of the ESCWA Technology Centre, said that the knowledge-based economy had been the subject of discussion for more than 20 years, but more was needed to achieve such economies in the region. The focus of knowledge-based economies had shifted from ICT to knowledge-based development, which comprised quality education, research and development, entrepreneurship networks, ICT infrastructure and seed capital.

C. PARTICIPANTS

35. The expert group meeting was attended by 52 participants, of whom 17 per cent were women, from 13 ESCWA member States (Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Palestine, Saudi Arabia, the Sudan, the Syrian Arab Republic, Tunisia and the United Arab Emirates), in addition to one expert from Turkey. Representatives of UNCTAD, ITU-ARO, the World Bank, UNU, UNDP, ISESCO, ministries, science and technology authorities, national research centres, universities and the private sector also participated. They are listed in the annex to the present report.

D. AGENDA

36. Presentations and discussions took place in the following seven sessions:

- (a) Road to the knowledge society;
- (b) Embracing the knowledge-based economy: the role of innovation and technology;
- (c) Sustaining the innovation process in the Arab region;
- (d) National initiatives for promoting innovation in the Arab region;
- (e) Key enablers for building the knowledge-based economy;
- (f) Transformation towards a knowledge-based economy in the Arab region;
- (g) Case studies from selected Arab countries.

E. DOCUMENTS

37. The documents submitted to the workshop are available from www.escwa.un.org/information/meetingdetails.asp?referenceNum=3587E.

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