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Digital future of the Arab region

Summary

The present document considers the digital economy and its role in digital transformation. It sets out the features of the digital economy in developed countries and their plans in this field. It also reviews the status of technology across the world, the status of information and communication technology (ICT) in the Arab region, and the potential of Arab countries to shift to a digital economy.

The document presents proposals to policymakers and decision-makers in Arab countries to assist them in developing policies to harness technology for development, and promote a shift towards the digital economy and smart societies. It also gives an overview of the ISDEHAR programme prepared by the Economic and Social Commission of Western Asia (ESCWA) to support the Arab region in shifting towards the digital economy.

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Introduction

1. The world is currently witnessing an unprecedented technological revolution, causing fundamental changes in people's daily lives and in their communication methods. Over the past 30 years, information and communications technology (ICT) has undergone significant developments and extensive growth in terms of access and speed, and plays a key role in many fields, such as applied sciences, engineering and humanities, thus affecting various sectors including banking, energy, transport, education, publishing, the media, health care, retail and trade. This has resulted in a move away from traditional work systems, the creation of new markets, and an overhaul of government processes in many regions. These fundamental transformations, in terms of their size, scope and complexity, are known as the Fourth Industrial Revolution. During the First Industrial Revolution, water and steam energy were employed to mechanize production. In the Second Revolution, electricity was used to increase production. In the Third Revolution, electronics and information technology automated production. Today, the digital revolution is the Fourth Industrial Revolution, providing a mix of digital technologies that blur the lines between the physical, digital and biological worlds.[1] This Revolution has coined new concepts such as the information society, the knowledge economy, the digital economy and smart societies.

2. The present document considers the digital economy and its role in the transformation towards smart societies. It sets out the features of the digital economy in developed countries and their plans in this field. It also reviews the status of technology across the world, the status of ICT in the Arab region, and the potential of Arab countries to shift to a digital economy and establish smart societies. The document focuses on the importance of promoting the digital economy and smart societies in the Arab region, so as to keep pace with the rest of the world, and proposes policies for ESCWA member States in this field. Moreover, the document reviews the ISDEHAR programme, prepared by the ESCWA Technology for Development Division to support the Arab region in shifting towards an information society and digital economy.

I. FEATURES OF THE DIGITAL ECONOMY IN DEVELOPED COUNTRIES

3. A digital economy is an economy based on digital technology. It has several components, including technological infrastructure, hardware, software, networks and digital mechanisms used for commercial and economic activities, such as e-commerce and e-transactions that are carried out in full online. Given the importance of the Internet in the global economy, some have labelled the digital economy as the Internet economy, the New Economy, or the Web Economy.[2]

4. However, some economists stress that the digital economy is more advanced and comprehensive than the Internet economy, which only includes the economic value derived from the Internet.[3] Concerning e-transactions, for example, the digital economy is not limited to changing transactions from manual to electronic; it is a complete and fundamental transformation of the components surrounding these transactions and interactions, especially with regard to administrative and trade systems, thus promoting economic innovation in this field.

5. The term "digital economy" differs from other terms used in the past to describe the economic changes of the twentieth century as a result of ICT use, such as "the information economy" and "the information society" that are terms reflecting the increased use of computers, greater computing capacity in companies, or improved Internet access. Digital economy revolves around the production of advanced digital technologies, especially wireless networks, mobile devices and applications, and other technologies such as global positioning and sensors, fixed-mobile convergence and live broadcasting, and the Internet of things. These

[1] Klaus Schwab, The Fourth Industrial Revolution, World Economic Forum, 2016.

[2] See http://searchcio.techtarget.com/definition/digital-economy.

[3] Ibid.

technologies are changing everyday social, economic, commercial, cultural, health, political, scientific and technological activities. In short, the digital economy has penetrated many economic sectors, and has resulted in fundamental social change by altering social interaction and the coordination of personal relationships. Today, it is driving economic growth and social transformations.

6. To understand the features of the digital economy and assess country readiness for digital transformation, it is necessary to monitor expenditure on research, development and innovation, revenue from the digital economy sector, its services and related international trade, and its contribution to economic growth, added value and employment. Developments in the ICT sector should also be monitored, especially Internet networks in terms of coverage, speed, price competitiveness, investments and Internet Protocol version 6 (IPv6) use.

A. ICT AND ITS INDUSTRIES AS A DRIVER OF DIGITAL ECONOMY IN DEVELOPED COUNTRIES

7. The Internet, broadband networks, mobile applications and other ICT services and devices are the cornerstone of the digital economy. Digital transformation can occur only through the development of such industries and services. Today, broadband networks have become part of the basic infrastructure in a highly Internet-dependent world. They carry the same importance as road and transport networks and water channels, and are a key pillar of the digital economy and smart societies. In this context, increasing the number of networks is insufficient; it is vital to also increase their performance, power and coverage, and decrease the cost of related services. Many developed countries have significantly reduced the prices of broadband services for smart phones by 13-52 per cent.[4]

8. The wired and wireless communication industries in developing countries constituted 21 per cent of total value added and 17 per cent of employment in 2013. Employment opportunities increased for ICT specialists in all economic sectors, constituting at least 3 per cent of total employment in the economic sector in most countries of the Organization for Economic Cooperation and Development (OECD), and surpassing 5 per cent in Finland, Luxembourg and Sweden in 2014.[5]

9. IPv6 use has significantly increased over the past two years. Following the depletion of IPv4 addresses in all regional Internet registries, excluding Africa and North America, IPv6 users reached 30 per cent in Belgium and over 10 per cent in Germany, Luxembourg, Norway, Switzerland and the United States of America. This is a considerable increase compared with data for 2012 when France was considered the most advanced country, with a 5 per cent share of Internet Protocol users.

10. The application sector is expected to grow rapidly, notably financial service applications, payment tools, online banking and e-wallets. Non-traditional payment mechanisms will become widely used in financial transactions in the future, and some Governments will collect a significant proportion of taxes using such methods. The expansion of the digital economy will greatly and effectively limit the informal economy in Arab countries.

11. According to the results of a survey on the future of software and society in 2025, prepared by the Global Agenda Council for the 2015 World Economic Forum, 5 per cent of consumer products will be made using three dimensional printing by 2025. Over a trillion sensors will be connected to the Internet, and the information flow to and from Internet-connected devices and household equipment will constitute around 50 per cent of household traffic. The transport sector is expected to undergo significant changes with the development of driverless cars and increased carpooling, which will affect the sector's management.

[4] OECD, OECD Digital Economy Outlook 2015, OECD Publishing, 2015. Available from http://dx.doi.org/10.1787/9789264232440-en.

[5] Ibid.

12. Despite promising prospects for the future of the digital economy in developed countries, security and privacy threats are affecting trust in digital products and services. Companies spend large amounts annually on privacy protection programmes to tackle such threats (Fortune 1000 companies spend $2.4 billion). Despite high Internet penetration in developed countries, there are disparities in citizens' Internet usage in terms of intensity and quality, and between social groups.[6] Governments are increasingly using ICT to develop the public sector and to promote a citizen-based approach therein.

13. ICT industries add value to developed countries' GDP and trade balance, and play a key role in driving growth and innovation in the digital economy. In the United States, the combined capitalization of Apple, Google, Microsoft, Facebook and Amazon has reached $2 trillion. These companies have the largest market value according to the FTSE 100 index. They are built on innovation and good management, affirming their ability to become global conglomerates. Some Arab companies and applications have become globally recognized in this field, making significant profits and gaining a share of the global market, such as Maktoob in Jordan and the Careem taxi application.

B. STRATEGIES AND PLANS OF THE DIGITAL ECONOMY IN DEVELOPED COUNTRIES

14. Countries and regions have developed many strategies and plans to shift towards the digital economy, achieving great success given the global nature of technology and its uses. Key plans include the Digital Agenda for Europe, which is one of the seven flagship initiatives of Europe 2020 aimed at achieving smart, sustainable and inclusive growth in European Union countries by 2020. The Agenda's main goal is to establish a digital single market, and calls for the improved use of ICT to promote innovation, economic growth and progress. The Agenda comprises the following seven action areas:

(a) A vibrant digital single market;
(b) Interoperability and standards;
(c) Trust and security;
(d) Fast and ultra-fast internet access;
(e) Research and innovation;
(f) Enhancing digital literacy, skills and inclusion;
(g) ICT-enabled benefits for EU society.

The digital economy strategies of European Union countries cover the goals set out in the Agenda.

15. Most OECD countries have adopted national strategies on the digital economy[7] covering several sectors, aimed at achieving economic growth, social wellbeing and sustainable development, and promoting competitiveness. A few developed countries are either in the process of developing these strategies (Austria and Switzerland), or have not adopted such strategies because their digital economy policies are linked to numerous issues and sectors that form a national digital economy framework (the Russian Federation and the United States). Table 1 gives an overview of national plans on the digital economy in several developed countries.

16. The following are the main goals of national strategies on the digital economy:

(a) Encouraging small and medium enterprises and institutions, in particular, to adopt ICT, focusing on key sectors such as health care, transport and education;

(b) Strengthening ICT skills, including basic and specialized skills;

(c) Tackling global challenges, such as Internet governance issues, climate change, and cooperation for sustainable development.

[6] Ibid.

[7] Ibid.

TABLE 1. DIGITAL ECONOMY PLANS IN SELECTED DEVELOPED COUNTRIES

Country	Plan
Denmark	Plan to support growth in the ICT sector, and ICT-based growth in the private sector, in general.
Germany	The Digital Agenda 2014-2017 focuses on increasing the potential of innovation to drive growth and create work opportunities, and on promoting trusted high-speed networks.
Italy	The Digital Agenda 2014-2020 aims to ensure economic and social growth by developing commercial skills and disseminating digital culture.
Mexico	The National Digital Strategy (2013) aims to make Mexico the leading country in digitization in Latin America by 2018. It focuses on promoting innovation and entrepreneurship in the digital economy, improving education quality, contributing to government transformation, ensuring full access to health care, and increasing civil participation.
France	The French digital plan aims to build a more competitive digital economy, target young people, and strengthen social values.
Japan	Japan aims to be the world's most advanced IT nation by 2020.
United Kingdom	The Information Economy Strategy aims to help the UK accelerate in the global economic race.

Source: OECD, Digital Economy Outlook 2015.

17. National strategies on the digital economy are founded on several pillars, notably developing communications infrastructure, including access to broadband services and telecommunications, and maintaining an open Internet; strengthening the ICT sector in all its fields and industries, including new technologies, products and services; increasing access to public sector services and data by improving e-government and open government; and strengthening trust, privacy and security.

18. The following section covers the production of new technologies, products and services, given their importance in increasing competitiveness, productivity and added value, thus driving economic growth.

C. KEY APPROACHES FOR EXPANDING PROGRAMMES PROMOTING THE DIGITAL ECONOMY

19. The following are approaches that policymakers and decision-makers can reference to promote national digital economy programmes:

1. *Research and development programmes*

20. Research and development programmes in many developed countries focus on promoting creativity, innovation and emerging technologies, especially the Internet of things, cloud computing, and by analysing big and other data. France, for example, has spent 850 million euros under its digital plan on research and development in strategic areas related to developing the ICT sector, including nano-electronics, cloud computing, software, e-health, e-learning, digital cities and smart networks, and on supporting business incubators. In Germany, two centres have been established to identify solutions for big data processing to support data-based innovation in the computerization of industry (Industry 4.0) and science. Other countries, such as Hungary and Poland,[8] are focusing on strengthening ICT sector export capacity. Table 2 contains excerpts from the digital strategies of several developed countries, highlighting their focus on research and development.

[8] Ibid.

TABLE 2. RESEARCH AND DEVELOPMENT PROGRAMMES IN DEVELOPED COUNTRIES

France	France's digital plan: invest 150 million euros to support research and development in the following five aspects of digital technology: Internet of things, supercomputing, cloud computing, big data analysis, and information network security.
Germany	Digital Agenda 2014-2017: support investment to develop ICT industry applications, IT security research, microelectronics, and digital services. Two centres have been established for big data analysis in Berlin and Dresden to encourage innovation in industry, science and health applications.
Japan	Digital strategy: support research and development programmes on advanced networking technologies, data processing and analysis technologies, including pattern-recognition technologies, hardware, sensors and robotics, software development and testing, and advanced multilingual translation systems.
South Korea	IT plan: investments in mobile platform technology research totalling 35 billion won ($32 million).
Poland	Dynamic Poland 2020: focus on creativity and economic efficiency, and support the Internet of things, especially in the energy sector (smart meters and power control systems).
Canada	Digital strategy: assist top-ranking higher education institutions in their ICT research, resulting in long-term economic advantages, and support innovative research and development to connect small and medium projects with universities, colleges and other research institutions.

Source: OECD, Digital Economy Outlook, 2015.

2. *Standards*

21. Developed countries' digital strategies focus on promoting ICT standards. The Digital Agenda for Europe, for example, emphasizes promoting "compatibility and standards" between European Union countries to ensure easy interaction between ICT devices, applications, data warehouses and services anywhere.

22. The Information Economy Strategy of the United Kingdom focuses on interoperability and standards. The Government has encouraged partnerships with stakeholders, especially those working in the standards field, to harmonize programmes and exchange knowledge so as to strengthen national capacity to influence standards at the international level. The British strategy stresses the importance of IPv6 and domain name system security, of developing clear definitions of concepts such as cloud computing, and of fifth generation mobile Internet and the Internet of things, so as to facilitate the inclusion of new ideas in standards and services.

23. The digital strategies of many developed countries promote standards for specific sectoral policies. The German digital strategy focuses on improving interoperability between ICT products and service provider, on the one hand, and traditional manufacturing industries, on the other, in line with the German Industry 4.0 strategy.

3. *Investment*

24. In its report,[9] OECD stresses the importance of increasing venture capital investments in ICT production to create trade opportunities in that sector. This is the case in the United States, where venture capital investments reached around $15 billion in the last quarter of 2014 – the highest rate registered since the dot-com bubble. The share of venture capital investments allocated to ICT industries increased from 48 per cent in 2011 to 67 per cent in 2014. A quarter of capital investments in the United States is earmarked for enterprises whose work is primarily Internet-based.

[9] Ibid.

25. Digital economy strategies promote venture capital investments in the technology sector. According to Digital Canada 150, the Business Development Bank of Canada is expected to invest 300 million Canadian dollars in ICT companies; and to fund the Canada Accelerator and Incubator Programme to support entrepreneurs, and finance training programmes in small and medium enterprises.

26. In Germany, the Digital Agenda 2014-2017 stresses the importance of investing venture capital in ICT to globalize the sector, focusing on supporting emerging companies. Measures set out in the Agenda include providing guidance to officials, improving funding through competitiveness, crowdfunding, homogenizing nascent companies with traditional enterprises with similar economic activities, and providing support to fledgling companies and including them in a joint network.

27. In France, the digital plan ensures support to incubator programmes for emerging companies. A total of 200 million euros was earmarked for the Halle Freyssinet incubator, expected to assimilate over 1,000 fledgling companies from early 2016. From this amount, 15 million euros was allocated to attract potential investors and startups to the incubator.

28. Revenues on investments in these fields are not direct; there is an incubation period before they bear fruit. Such investments are not regular investments measured by revenue or capital recovery period. They are investments resulting from country contributions, sovereign funds, or collective investment programmes.

4. *Exports*

29. Many countries are strengthening export capacity in the technology sector. For example, Dynamic Poland 2020, which promotes innovation and economic efficiency, aims to increase the international expansion of the ICT sector. Hungary is investing in promoting the digital economy under its strategy aimed at developing ICT services for export. The Mexican development agenda (PROSOFT 3.0) seeks to make Mexico the second technology exporter globally.

II. DIGITAL ECONOMY IN THE ARAB REGION: NECESSITY NOT LUXURY

30. Economic and social development have been positively and negatively affected by the significant changes in the Arab region this century, including the Arab population surpassing 350 million, considerably higher education and economic participation compared with last century, increased movement of people because of improved road and air transport, developments in the communications sector, and the emergence of the Internet which has changed the rules of the game. Although traditional policies focus on the ICT sector itself, new policies have taken a horizontal approach to cover additional issues such as trade activities, production growth, electronic public administration, employment, education, health, old age, the environment, and sustainable development. Consequently, new policies strive to promote positive economic and social conditions for economic growth and inclusive sustainable development. Over time, the digital economy has thus become a necessity rather than a luxury.

A. FEATURES OF THE DIGITAL ECONOMY IN THE ARAB REGION

31. The ICT sector in the Arab region has significantly developed following the emergence of new generations of smart phones, and wider broadband Internet penetration via fixed and mobile networks. This development is reflected in the considerable investments allocated by Governments to the ICT sector, as well as market growth and increased competitiveness. Since entering the market, the Internet and mobile phones have witnessed steady increases in penetration rates, reaching 100 per cent in most Arab countries. The mobile service market is considered a strong element in the infrastructure and ICT sector of the Arab region.

32. However, some Arab countries' investments in this sector have been directly affected by a lack of political and economic security, especially in Egypt, Iraq, Libya, Tunisia and Yemen. Table 3 shows telecommunications investments in several Arab countries over the period 2007-2015.

TABLE 3. TELECOMMUNICATIONS INVESTMENTS, 2007-2015
(*In millions of United States dollars*)

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jordan	31	90	164	301	295	127	107	329	650
Tunisia	76	99	287	966	181	222	130	114	0
Algeria	561	264	398	237	214	87	609	742	162
Sudan	478	207	357	478	382	343	208	301	..
Iraq	3,700	284	447	456	386	377	661	751	459
Oman	617	..	397	..	..	..	..	..	..
Palestine	..	..	597	..	56	..	34	..	..
Kuwait	..	..	346	..	..	..	..	..	..
Egypt	1,908	1,414	1,791	2,113	980	832	685	1,066	1,079
Morocco	716	843	240	1,124	803	820	441	881	605
Saudi Arabia	..	..	10,561	..	..	..	..	..	..
Mauritania	30	40	43	133	0	0	0	0	..
Yemen	21	50	50	59	365	0	0	0	..

Source: World Bank database, 2016.

33. Nine of 15 Arab countries[10] with available data dropped in the ease of doing business index in 2014 and 2015. The World Bank uses this indicator to measure the ease of establishing enterprises and creating job opportunities. The United Arab Emirates tops the list of Arab countries (table 4).

TABLE 4. RANKINGS OF SELECTED ARAB COUNTRIES IN THE EASE OF DOING BUSINESS INDICATOR, 2009-2015

	Ranking						Progress (+)/ regression (-) between 2014 and 2015
Country	2009	2010	2012	2013	2014	2015	
Jordan	107	111	106	116	107	113	6-
United Arab Emirates	37	40	26	25	32	31	1+
Bahrain	25	28	42	53	61	65	4-
Algeria	..	..	152	147	161	163	2-
Syrian Arab Republic	144	144	144	165	173	175	2-
Iraq	166	166	165	146	160	161	1-
Oman	57	57	47	60	77	70	7+
Palestine	133	135	135	139	143	..	
Kuwait	69	74	82	79	100	101	1-
Lebanon	109	113	115	102	121	123	2-
Egypt	99	94	109	113	126	131	5-
Morocco	..	..	97	68	80	75	5+
Saudi Arabia	12	11	22	44	84	82	2+
Mauritania	..	..	..	..	176	168	8+
Yemen	104	105	143	135	165	170	5-

Source: World Bank database, 2016.

34. ICT sector exports in Arab countries were greatly dissimilar to global rates, taken as a percentage of total exports from Arab countries included in the present document (table 5). ICT exports did not exceed 2 per cent in most of these countries, excluding Egypt in 2014, and Jordan, Lebanon, Morocco and Tunisia in other years, compared with the global index that ranged between 10.5 per cent and 12.2 per cent over the previous eight years.

[10] These Arab countries were selected because they have available data.

TABLE 5. ICT GOODS EXPORTS IN SELECTED ARAB COUNTRIES, 2007-2014

	ICT goods exports as a percentage of total goods exports							
Country	2007	2008	2009	2010	2011	2012	2013	2014
Jordan	6.88	3.77	1.56	1.29	1.47	1.61	1.39	1.89
United Arab Emirates	2.72	1.95	..	..	..	..	..	..
Bahrain	0.06	0.11	0.39	0.26	0.57	1.44	2.39	1.71
Tunisia	3.14	3.86	4.66	6.53	7.38	6.70	5.85	..
Algeria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syrian Arab Republic	0.00	0.01	0.01	0.02	..	..	..	..
Sudan	..	0.01	0.03	0.01	0.01	0.01	..	..
Iraq	..	..	..	..	..	..	..	..
Oman	0.28	0.27	0.28	0.10	0.14	0.11	0.09	..
Palestine	0.54	..	0.88	1.35	1.00	..	0.58	..
Qatar	0.04	..	0.04	..	0.02	..	0.00	0.00
Kuwait	0.16	0.18	0.29	..	..	..	0.05	0.06
Lebanon	1.22	1.14	2.86	7.11	0.95	0.65	0.87	1.04
Libya	..	..	..	..	..	..	..	..
Egypt	0.03	0.34	0.17	0.14	0.23	0.24	0.42	2.84
Morocco	5.13	3.24	4.12	3.77	3.26	3.08	2.87	2.71
Saudi Arabia	0.08	0.03	0.07	0.11	0.11	0.13	0.22	..
Mauritania	..	..	..	..	..	..	..	..
Yemen	0.05	0.05	0.05	0.04	0.01	0.01	0.01	0.08
World	12.20	11.27	11.97	11.79	10.69	10.55	10.48	10.83
Arab region	1.05	0.82	..	..	..	..	..	..

Source: World Bank database, 2016.

35. ICT service exports as a percentage of total exports registered significantly higher rates than ICT goods exports, surpassing 50 per cent in some countries such as Algeria, Kuwait and Mauritania (table 6).

TABLE 6. ICT SERVICES EXPORTS IN SELECTED ARAB COUNTRIES, 2007-2015

	ICT service exports as a percentage of total service exports								
Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jordan	..		..		..		..	6.75	5.56
United Arab Emirates	..	..	..	..	..	..	..	..	..
Bahrain	23.11	22.92	24.23	23.11	27.97	22.85	21.60	21.57	..
Tunisia	5.66	5.81	7.29	8.22	10.76	9.56	10.50	10.10	..
Algeria	39.51	43.00	43.70	56.65	60.20	57.86	59.20	49.40	50.67
Syrian Arab Republic	8.26	5.46	4.50	2.46	..	..	..	..	..
Sudan	6.31	7.37	7.22	30.95	6.32	4.20	9.08	8.45	5.68
Iraq	5.01	1.48	2.90	4.51	4.36	11.97	..	..	..
Oman	38.02	29.77	21.35	26.19	16.96	16.25	16.90	16.46	..
Palestine	26.19	..	15.49	..	4.35	..	18.17	..	..
Qatar	..	..	..	..	..	..	..	..	..
Kuwait	52.16	..	60.06	39.50	35.68	39.00	54.60	49.30	45.00
Lebanon	51.56	61.66	55.36	26.74	48.13	27.84	34.24	24.78	23.21
Libya	..	..	..	..	..	..	..	..	..
Egypt	10.24	14.52	13.01	8.77	7.04	7.28	7.09	10.50	..
Morocco	17.17	18.21	19.06	20.15	20.11	21.77	22.68	17.40	19.20
Saudi Arabia	48.38	2.74	2.68	3.39	2.92	3.59	3.26	3.60	1.86
Mauritania	..	..	..	..	..	46.85	50.45	64.91	56.85
Yemen	14.89	9.04	8.63	7.27	10.27	20.78	22.00	13.10	..
World	27.98	28.15	29.52	28.32	30.28	30.65	30.67	31.02	..
Arab region	..	..	26.28	17.33	..	..	..	..	..

Source: World Bank database, 2016.

B. ARAB STRATEGIES ON THE INFORMATION SOCIETY AND DIGITAL ECONOMY

36. The Arab region was among the first regional blocs to acknowledge the importance of adopting national and regional strategies to build a knowledge economy and information society. Many Arab countries have prepared and updated their national strategies in this field.

1. *Examples of national strategies*

Jordan

37. In 2016, Jordan prepared a digital vision under the REACH 2025 initiative, aimed at establishing a digital economy that enables individuals and business sectors to increase productivity to ensure growth and prosperity. It has made Jordan an attractive country for investments, and strengthened its status in the health, education, clean/renewable technology, transport, communications, information security, and finance sectors. Jordan had previously adopted an ICT sector strategy (2013-2017).

United Arab Emirates

38. In 2010, the United Arab Emirates launched UAE Vision 2021, comprising six key pillars, including "United in knowledge" that stresses the importance of innovation, research, science and technology in building a productive and competitive knowledge-based economy. In 2014, the United Arab Emirates adopted an ICT strategy for 2021 consisting of 36 performance indicators on quality, speed, prices, infrastructure, employment, education, innovation, and raising the country's global ranking.

Bahrain

39. In 2013, Bahrain launched Vision 2030, which is an integrated economic vision covering all sectors, based on the principles of sustainability, competitiveness and justice. The Vision includes the ICT sector and the science, technology and innovation sector, and is consistent with the Sustainable Development Goals (SGDs) on industry, innovation, infrastructure and partnerships (Goals 9 and 17).

Egypt

40. Egypt has adopted the 2030 ICT Strategy to strengthen the sector's contribution to economic growth, to build a digital economy providing wide access to knowledge and digital rights for citizens, and to promote national industry, competitiveness and innovation. The Strategy includes sub-workplans on cloud computing and Arabic digital content. Egypt also adopted the National ICT Strategy for 2012-2017. In this context, it has developed a sustainable development strategy under the Egypt Vision 2030, with pillars covering knowledge development, innovations and scientific research.

Morocco

41. The Moroccan Government prepared Morocco Digital 2020 to support innovation in the technology field. This new strategy, focusing on human capital and digital trust, supplants Morocco Digital 2013 that aimed to make Morocco a regional ICT centre and included many social and economic aspects, such as information technology production.

2. *Arab strategy on the information society*

42. Regional and international developments in the information society, especially following the World Summit on the Information Society[11] that called for stronger ICT sectors and information technology, resulted

[11] Over its two phases: Geneva in 2003, and Tunisia in 2005.

in the General Arab ICT Strategy 2007-2012 under the auspices of the League of Arab States. The Strategy promotes interaction between all stakeholders to employ ICT in the sustainable development process. It is based on several principles and goals,[12] as follows:

Basic principles

43. The General Arab ICT Strategy 2007-2012 is based on the following basic principles:

(a) Greater service liberalization to develop a competitive Arab market that can be incorporated into the global economy;

(b) Partnerships with the private sector, civil society and non-governmental organizations;

(c) An integrated approach to providing ICT and media services;

(d) Stronger economic-based Arab cooperation to establish effective bodies in this field;

(e) Interaction with the international community and its mechanisms to transfer and develop technology, attract investments, and create employment opportunities;

(f) Enhanced communication and awareness to ensure the Strategy's success by familiarizing all stakeholders with its components, targets and objectives, and with the roles that guarantee its success and development;

(g) Development and operationalization of mechanisms to follow up on its implementation, given their importance to the Strategy's success;

(h) ICT use to improve the lives of Arabs;

(i) Continued efforts to increase benefits from ICT systems.

Goals

44. The Strategy aims to achieve the following goals:

(a) Develop a competitive market for an Arab information society, as part of the global information society;

(b) Achieve comprehensive access, and improve the quality of services available to citizens through ICT;

(c) Grow the ICT industry to create new employment opportunities, and prepare its products and services for export to the global market.

45. The achievements of these goals requires harmonized policies and legislation to develop an enabling environment for each goal. The Strategy comprises 13 pillars, constituting an action plan for implementing its goals.

46. Although the Strategy primarily focuses on developing competitive markets and industry in the ICT field, as set out in the first and third strategic goals, it is challenging to conduct studies highlighting qualitative successes in that regard, as recognized by ESCWA and the League of Arab States and shown by published figures and statistics.

47. Consequently, ESCWA is currently preparing a detailed study on the digital economy in the Arab region, analysing existing national strategies and those under preparation. ESCWA developed an Arab action plan for the information society 10 years ago, and provided support to the League of Arab States in formulating the

[12] See the Strategy document on the website of the League of Arab States. Available from www.lasportal.org/ar/.

Arab ICT Strategy. It is currently supporting the League and a team comprising representatives of Arab States in updating the Strategy.

48. ESCWA is also formulating an Arab digital agenda and Arab Internet governance roadmap, for reference in developing or updating national strategies and plans. It is also preparing programmes and timetables generally aimed at assisting Arab countries in achieving their development goals and the SDGs.

C. DIGITAL ECONOMY IN THE ARAB REGION AND ITS SOCIAL IMPACT

49. The last pillar of the National Readiness Index of the World Economic Forum measures the social impact of the digital economy. This process is still underway. Three survey indicators have been developed for the business community to gauge opinion on: the impact of ICT on basic services (health, education and financial services), on improving the quality of government services, and on ICT use in schools for educational purposes. The Network Readiness Index uses the supplementary index of the United Nations E-Government Survey, known as the E-Participation Index.

Box 1. Digital economy in Arab countries

The Arab region suffers from weak supply in the ICT and innovation sectors, especially in the field of digital creativity. Indicators are used to measure the global share of ICT enterprises in the top 1,000 companies worldwide, their number of patents, and their ability to cover fixed and mobile broadband costs, Internet connectivity (qualitative and quantitative speed, secure servers), and third generation coverage. According to a study by the McKenzie Institute International, demand exceeds supply, especially in Bahrain, Qatar and the United Arab Emirates. There are disparities between Arab countries in the use of ICT for trade activities, with good usage levels in the United Arab Emirates only. Governments have played a key role in ICT adoption, especially in Bahrain, Saud Arabia the United Arab Emirates; less so in Lebanon, and much less so in Egypt and Kuwait.

The digital economy in all sectors constitutes 4.1 per cent of GDP in the Middle East, measured in terms of individual consumption, private investment, government expenditure, and imports and exports. The Middle East's digital contribution to GDP is equal to 50 per cent of that of the United States. These rates hide disparities between countries, especially between Bahrain, which tops the list with 8 per cent because of its significant digital exports to its regional neighbours, and Oman (0.8 per cent) and Qatar (0.4 per cent). There are no data available for Egypt and Lebanon.

The digital economy is achieved at 8.4 per cent in the Arab region, compared with 18 per cent in the United States and 15 per cent in Europe. The region's average rate hides disparities between it countries: the United Arab Emirates (16.4 per cent), Qatar (14.9 per cent), Bahrain (14.6 per cent), Saudi Arabia (11.5 per cent), Egypt (6.6 per cent), and Lebanon (4.7 per cent).

Only 1 per cent of the biggest 1,000 ICT companies worldwide, in terms of annual revenue, are in the Middle East. Unicorn digital companies, which are emerging companies with a market value of over $1 billion, are weakly represented in the region. Currently, they have only one representative in the Middle East (dot-com market in the United Arab Emirates); Jumia Egypt is preparing to also become their representative (with a slight drop in market value).

Comparing digital venture capital in the Middle East with other regions reveals another weakness. Over 1,000 emerging companies are active in GCC countries, but the Middle East gets $120 for every $1million of nominal GDP from venture capital compared with $2,300 in the United States, $640 in Asia and the Pacific, and $370 in Europe. Again, these averages hide disparities between Arab countries: the United Arab Emirates (530), Jordan (400), Lebanon (100), and Egypt (45), compared with Bahrain (3.7), Saudi Arabia (0.7), Kuwait (0.05), and Oman (0.03).

It is estimated that only 1.7 per cent of the labour force in the Middle East has digital skills, compared with 3.8 per cent in the United States, and 3.7 per cent in Europe. Few disparities exist between Arab countries, except Saudi Arabia (0.9 per cent). There are no data available for Jordan and Lebanon.

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Source: McKinsey and Company, Digital Middle East: Transforming the region into a leading digital economy, October 2016.

50. A new study by the McKenzie Institute International[13] considers the status of Arab countries in the digital economy, compared with Europe and the United Sates. Although the study is limited to nine Arab countries in the Middle East (the six Gulf Cooperation Council (GCC) countries, Egypt and Lebanon) with reference to only 24 key indicators, the analysis provides added value (box 1).

D. DIGITAL ECONOMY IN THE ARAB REGION AND BROADER OPPORTUNITIES

51. Undoubtedly, Arab countries have made significant strides in improving access to communications and Internet services, as a result of widespread mobile communication networks established by public sector actors. This applies to all Arab countries (GCC, Mashreq and Maghreb countries, including low-income countries). The average rate of mobile phone subscribers in Arab countries is 110 per cent per 100 persons, which is lower than Europe, the Commonwealth of Independent States, and North and Latin America according to statistics by the International Telecommunications Union.

52. There is considerable evidence of emerging digital activities undertaken by young entrepreneurs in some Arab countries, but with limited global impact. However, global impact is not an objective in itself, given that local impact could be more vital, such as with Arab platforms. Nevertheless, despite some successes in niche markets, Arab platforms have limited users compared with global and Asian platforms (table 7).

TABLE 7. KEY DIGITAL PLATFORMS BY DIGITAL DOMAIN: MIDDLE EAST, WORLD, ASIA
(*Millions of users*)

Digital domain	Middle East offers	Users	World leaders	Users	Asia leaders	Users
Research	-	-	Google	1,400	Baidu	300
Social media	-	-	Facebook	1,712	Tencent	812
Communications	-	-	WhatsApp	1,000	WeChat	1,120
Video	-	-	YouTube	1,000	Yoko	500
Music	Anghami	4	Spotify	100	QQ Player	500
E-commerce	Dot-com market	6	Amazon.com	304	Alibaba.com	434
Payments	CASHU	1	PayPal	179	Ali Bey	300
Online fashion	Namshi	5	Zalando	18	Zalora	5
Travel and tourism	-	-	Airbnb	50	Tojya	40
Labour market	Beit	18	LinkedIn	450	Daiji.com	32
Transport	Careem	4	Uber	8	Didi Chong	250
Education	Academy of Skills	8	Coursera	17		
Social trading	Cobone	3	Groupon	50	Mitwan.com	20

53. Regarding digital creativity, limited top-level Internet domain names (public or national) and few Wikipedia edits and YouTube uploads (as proxy indicators) highlight that most Internet users in Arab countries still consume content developed in the West. This is the result of several barriers, such as language (Latin letters used on the Internet). Nevertheless, Arabic digital content has had some recent successes, as a result of efforts by Arab countries, the League of Arab States and ESCWA, making it the fourth content globally.

E. PROPOSALS FOR DIGITAL ECONOMY POLICIES

54. Developed countries have greater opportunities to acquire many modern techniques. However, least developed countries can greatly benefit from digital innovations that provide opportunities and qualitative leaps. The Arab region can also benefit from the growing digital economy and Internet economy at the global and regional levels. They must formulate national digital agendas to promote economic and social growth;

[13] McKinsey and Company, Digital Middle East: Transforming the region into a leading digital economy, October 2016.

develop digital economies by strengthening policies on technological innovation and ICT venture capital investments to create employment opportunities, reduce poverty and inequality; and move towards smart societies in a way that increases economic added value.

55. However, the digital economy in Arab countries lacks competitiveness at the industrial and commercial levels. While global business expenditure on research and development is rising and ICT patents are increasing, Arab countries, with some exceptions, only consume technology rather that produce it. While global trade in ICT goods and services is increasing, Arab countries continue to import rather than export these products.

56. If Arab countries want to ensure a sustainable future for younger generations, a move towards the digital economy is not a choice but an inevitability, as is shifting from a consumption model to a production model. Several issues must be tackled to drive economic growth in the coming years, especially shifting to ICT industry and trade; identifying sub-industries that can be established; benefiting from the digital economy to drive innovation and inclusive growth; and benefiting from greater broadband penetration to generate wealth.

57. Consequently, national digital policies in Arab countries must cover issues such as establishing digital businesses, increasing productivity, and strengthening competitiveness in the fields of public administration, employment, education, health, old age, the environment and development. Internet policies must form part of inclusive government policies.

58. ESCWA proposes the following procedures and policies to assist countries in transforming towards the digital economy:

(a) Promote cooperation between policymakers in the technology field, who are responsible for the digital economy in their countries, and their counterparts in other sectors, to benefit from new digital markets in increasing employment and to facilitate labour movements to new types of digital jobs;

(b) Continue investing in ICT broadband infrastructure, focusing on regulatory aspects; test innovative licensing systems that contribute to increasing the efficient use of the frequency spectrum, and broaden regulations to include new fields, such as the Internet of things, domain name services and participatory platforms;

(c) Protect competition and reduce artificial entry barriers; enhance regulatory coordination; and strengthen competitiveness, especially given that digital economy competitiveness is facing challenges resulting from key transformations such as technical convergence, and integrated business models used by service providers and key actors in the Internet field;

(d) Provide methods to refine skills, education and training needed by citizens in smart societies to benefit from ICT, through collaboration between Governments and civil society;

(e) Manage threats from online social and economic activities to promote entrepreneurship, employment and integration in cyberspace;

(f) Identify sub-industries in smart industries where Arab countries have a comparative advantage, select the right link in the global supply chain to guide these industries towards exports rather than consumption only, and benefit from them as a source of employment replacing jobs that have been made redundant through digitization;

(g) Cooperate with the businesses sector to lead these industries through solid partnerships that prioritize national products and services, so as to establish markets and equalize supply and demand;

(h) Adopt policies that strengthen trust in e-transactions, and develop legislation to regulate such activities as a prerequisite for a successful knowledge economy.

III. ESCWA PLAN TO SUPPORT THE DIGITAL ECONOMY IN THE ARAB REGION

ISDEHAR PROGRAMME

59. The digital economy is based on the ICT and Internet sector that affects many other sectors, drives development, and offers a solution to the global slowdown witnessed since 2008. The Arab region must develop this sector, increase its industries and strengthen competitiveness by adopting appropriate methods and strategies, so as to build the digital economy on solid foundations. To help Arab countries develop this sector, ESCWA has prepared the ISDEHAR programme to promote cooperation in building an information society and digital economy in the Arab region.

60. ISDEHAR is an acronym for "Information Society and Digital Economy Hub for the Arab Region". Under this programme, ESCWA will document developments and emerging challenges in the digital economy, highlight ways to benefit from ICT and the Internet in achieving public policy objectives, and provide information to Arab policymakers to strengthen the contribution of the digital economy to achieving inclusive growth.

ISDEHAR GENERAL FRAMEWORK

<table>
<tr><td colspan="3">International and regional strategic frameworks</td></tr>
<tr><td>Society
Digital transformation: institutional development for social inclusion</td><td>State
Governance: infrastructure, regulations, legislation and rights</td><td>Economy
Competitiveness: production for economic growth</td></tr>
<tr><td colspan="3">Capacity-building</td></tr>
</table>

61. ESCWA will tackle the issue of the Internet economy in meetings and events organized by member States, to involve stakeholders in discussions on the digital economy, including the benefits and challenges of moving towards the digital economy, regional networking, the Internet of things, demand-side initiatives promoting innovation and trust in the digital economy, and job creation and skills development to increase the benefits of the digital economy. ESCWA is planning to launch a questionnaire on challenges faced by Arab countries in promoting the digital economy and its industries, and the public policy options available to them in this field.

62. ESCWA calls on member States to participate in ISDEHAR and its activities, appoint ISDEHAR focal points through the subnet action network for digital economy or the sub-network of smart communities, and exchange ideas and information on developments in practices. ESCWA also invites member States to encourage the private sector to fund ISDEHAR and its activities, as a key partner in the programme and in developing the digital economy in the region.

63. ESCWA has established a technological innovation section to support Arab countries in developing policies on technological innovation, so as to create a knowledge economy made up of Arab minds, and establish national infrastructure and metadata to keep pace with technological and global development processes. This section complements the ICT Policy Section concerned with the digital economy, smart societies, and the ISDEHAR programme.
