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Water in the 2030 Agenda for Sustainable Development

The water-energy nexus in the Arab region

Summary

The present document considers the energy-water nexus, given its importance in implementing sustainable development plans in the Arab region, especially in view of increasing demand for energy and water resources to meet human needs and ensure social stability. Energy production requires large amounts of water, including for generating hydroelectric power and creating steam necessary for producing electricity in thermal plants and for extracting and processing fossil fuels. Moreover, the water sector requires electricity to extract, treat and transport water.

The present document sets out the activities of the Economic and Social Commission for Western Asia (ESCWA) related to implementing the project entitled "Developing the capacity of ESCWA member countries to address the water and energy nexus for achieving sustainable development goals", funded by the United Nations Development Account.

The present document provides a new perspective on resource scarcity, appropriate technologies, water and energy consumption patterns and overlaps, and climate change and its effects on local environments. It highlights the need to adopt integrated policies and strategies on energy and water for the medium and long terms, so as to develop a sustainable approach to the energy-water nexus to tackle challenges and benefit from opportunities.

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Introduction

1. Effectiveness and efficiency in natural resources management, especially water and energy resources, are key elements in implementing sustainable development plans today, given their great importance for meeting basic needs, improving individual living standards, and implementing social and economic development plans at the national level, particularly since fresh water resources and fossil energy sources are scarce and inequitably distributed across the world.

2. Energy and water resources are under significant pressure because of increasing demand for human uses, industry, ecological systems and growing economies. When the world's population reaches 9 billion, demand for agricultural production is expected to rise, thus further driving already taxing water extraction processes.

3. Recognizing the importance of the energy and water sectors, the United Nations has included a specific Goal for each in the 2030 Agenda for Sustainable Development:[1] Goal 6 on ensuring the availability and sustainable management of water and sanitation for all, and Goal 7 on ensuring access to affordable, reliable, sustainable and modern energy for all.

4. In view of the interlinkages between energy, water and the environment, Goal 13 on taking urgent action to combat climate change and its impacts can be considered a common concern on which to build national policies and plans on energy and water, especially in the Arab region that is considerably vulnerable to the detrimental effects of climate change on the economy and the environment, which could exacerbate water scarcity and increase energy consumption.

5. Arab countries depend on fossil fuels as a principal energy source, regardless of whether they import or export them, except the Sudan that relies on the Nile River. Water is used to extract fossil fuels and in thermal plants (steam, gas, combined cycle, solar) for electricity production and cooling processes. Water supply and treatment require energy, especially in Gulf countries that depend on seawater desalination to meet water needs given their desert environment and freshwater scarcity. Consequently, energy and water supply are priority issues in national, regional and global workplans.

6. Undoubtedly, efficiency in energy and water sector management directly affects the implementation of sustainable development plans, thus highlighting the strategic necessity of the energy-water nexus.

I. THE ENERGY-WATER NEXUS IN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

7. The 2030 Agenda for Sustainable Development clearly states that the Sustainable Development Goals (SDGs) are integrated and indivisible (in the preamble and in paras. 5, 18, 55 and 71 of the Declaration) and that the interlinkages and integrated nature of those Goals are of crucial importance in ensuring that the purpose of the new Agenda is realized.[2]

8. The energy-water nexus can be considered a principal means for achieving economic and social development within a framework of good governance at the national level and of regional cooperation at the regional level, on the basis of linkages between Goals 6 and 7 and their relationship to the environmental dimension of Goal 13 and the food security dimension of Goal 2. The aim of the nexus is to improve natural resources management and implement these Goals and their related targets and means of implementation, taking into account climate change and food issues as shown in the table below.

[1] See www.un.org/sustainabledevelopment/.

[2] United Nations General Assembly resolution 70/1 dated 25 September 2015 and entitled "Transforming our world: the 2030 Agenda for Sustainable Development" (A/RES/70/1).

Sustainable Development Goals related to energy, water and the environment

Goal	Targets	Means of implementation
 End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons 2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality 2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and	2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries 2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round 2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

Goal	Targets	Means of implementation
	diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	
 Ensure availability and sustainable management of water and sanitation for all	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations. 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies 6.b Support and strengthen the participation of local communities in improving water and sanitation management

Goal	Targets	Means of implementation
 Ensure access to affordable, reliable, sustainable and modern energy for all	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix 7.3 By 2030, double the global rate of improvement in energy efficiency	7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support
 Take urgent action to combat climate change and its impacts*	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries 13.2 Integrate climate change measures into national policies, strategies and planning 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Source: A/RES/70/1.

* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

II. IMPORTANCE OF THE ENERGY-WATER NEXUS IN SUPPORTING SUSTAINABLE DEVELOPMENT

9. The energy-water nexus promotes the efficient use of natural resources, increases stakeholder awareness on integration areas between water and energy policies, reduces economic and environmental costs, and supports the achievement of the SDGs. Policymakers and decision-makers should review current and future development strategies and plans from an energy-water nexus perspective, comparing between the cost of expediting the adoption of a nexus approach and the cost of a business-as-usual scenario (sectoral policies).

10. Energy, water and food security and climate change pose significant challenges for the Arab region. The Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR), coordinated by ESCWA, estimates that the Arab region will be affected by a general temperature increase, hotter summers, and lower monthly rainfall averages.[3] Undoubtedly, population growth in the region has increased demand for natural resources to provide basic human services and to implement national development plans.

11. Energy and water subsidies in many Arab countries have resulted in irresponsible consumption patterns, intensive use of resources, draining of public funds on projects to provide new energy services and water for daily life, and a lack of social awareness on sustainable development as a personal lifestyle and as a basis for medium and long-term national strategies.

12. Procedures and measures that should be adopted in that regard, such as improving the efficiency of energy and water resources, expanding the use of renewable energy applications in line with national specificities and promoting regional cooperation, require integrated policies for the efficient and effective management of resources, which take into account the energy-water nexus, support research and development, and provide the private sector with investment opportunities in related fields.

A. ENERGY AND WATER EXCHANGES

13. The link is clear between natural energy sources and water resources. Nearly all electricity-generating processes require large amounts of water, including for producing hydroelectric power, creating steam to generate electricity in thermal plants, and extracting and processing fossil fuels. Moreover, the water sector requires electricity to extract, treat and transport water. The following summarizes water use in fossil fuel extraction (crude oil and natural gas) and in power plants (thermal plants and renewable energy applications), and electricity use in the water sector.

14. Water uses:

(a) *In extracting fossil fuels*[4]

(i) Crude oil: Oil is extracted over three stages. The first is the production stage where oil flows aided by the natural pressure of a reservoir or gravitational pull. Conventional pumping techniques can be used, or water injection to extract from the surface around 10 per cent of the oil. During the second stage, industrial measures are employed to equalize the natural pressure in a reservoir to preserve it, including water injection through injection wells. This process allows for the extraction of an additional 20-40 per cent of oil. The third stage involves boosting production to extract more oil of high viscosity (bitumen) that cannot be extracted using pipes or turbines. Steam is therefore injected

[3] ESCWA, Climate Projections and Extreme Climate Indices for the Arab Region, 2016. E/ESCWA/SDPD/2015/Booklet.2.

[4] ESCWA, Developing the Capacity of ESCWA Member Countries to Address the Water and Energy Nexus for Achieving Sustainable Development Goals, Water-Energy Nexus Operational Toolkit: Resource Efficiency Module, 2017, pp. 21, 26 and 27.

to increase the temperature of the crude oil, thus reducing its viscosity and enabling the extraction of a further 30-60 per cent. The more successful the extraction stages, the more water is needed;

(ii) Natural gas:[5] Small amounts of water are used in the drilling stage to extract natural gas from conventional wells. Water is mainly used for cooling in gas liquefaction plants and for heating, in liquefied natural gas terminals where it is reconverted into gas, and in the removal of carbon dioxide and hydrogen sulphide from the gas.

(b) *In electricity production*[6]

(i) Thermal power plants: Plants powered by natural gas use less water to produce a unit of electricity. Plants running on coal and oil require around twice as much water to produce one unit, and nuclear plants consume approximately three times as much water than a gas-powered plant;

(ii) Renewable energy applications in electricity production: These applications include wind farms, direct solar systems (photocell/ photovoltaic) that use minimal amounts of water for cleaning purposes. Solar thermal plants require twice as much water as coal-fuelled plants and five times as much water as gas plants;

15. Energy uses:

(a) *To heat and desalinate water*

Some Arab countries widely use solar thermal systems to heat water in the household and service sectors - a renewable energy application that contributes to reducing energy consumption. Photovoltaic cell systems are used in water desalination, especially in Gulf countries, and in water pumping to a lesser extent. Energy consumption in water desalination processes depends on the technology used;

(b) *To pump, treat and transport water*

(i) Electricity is used to exploit water resources (surface, ground, desalinated and treated). Surface water requires less energy because of gravity use. The amount of energy needed to pump ground water depends on local conditions (well depth and efficiency, nature of the land, surrounding environment, etc.). Few renewable energy dual systems (solar/wind), or renewable and traditional dual systems are used to pump water (pilot projects).

(ii) Varied amounts of energy are required to treat and drain wastewater depending on treatment levels and the technology employed; however, this process requires less energy than water desalination. Countries that desalinate water should therefore exploit treated wastewater because of its economic and environmental benefits.

B. ENERGY AND WATER DESALINATION

16. Water desalination is a life necessity in Gulf countries because of the scarcity of fresh water sources. Around 54 per cent of global desalination capacity is concentrated in the Middle East.[7] Six Arab countries are listed among the top 10 countries globally in this field, namely Algeria, Kuwait, Libya, Qatar, Saudi Arabia and the United Arab Emirates.

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[5] Ibid, p. 27.

[6] EBG Capital, Environmental Investments, World Policy Papers, The Water Energy Nexus, Adding Water to the Energy Agenda, Diana Glassman, Michele Wucker, Tanushree Isaacman and Corinne Champilou, March 2011, pp. 4 and 5.

[7] See http://hbfreshwater.com/desalination-101/desalination-worldwide.

17. Technology plays a key role in improving the efficiency of energy use in desalination in the Arab region, especially in view of increasing demand for electricity and water given the scarcity of natural resources for their production in most countries. As such, water desalination will maintain its importance in the Arab region. Renewable energy will play a major part in meeting growing demand for new energy services and fresh water, especially in rural and remote areas. Governments are facing a significant challenge in that respect: providing capital costs related to renewable energy choices.

18. The Arab region must therefore focus on and support research and development in the field of technology for cleaner production from fossil fuels, and limit thermal plant emissions by applying measures to improve energy efficiency and use in all electricity and water production, transport, distribution and consumption processes.

III. APPROACH TO SUPPORT THE ENERGY-WATER NEXUS

19. The nexus approach entails a joint responsibility to preserve resources, and efforts to achieve a balance in opportunities and benefits between the energy and water sectors, in addition to promoting flexibility, coordination and communication between related institutions while relying on innovative methods, programmes and operational tools to support this trend.

20. The development of a general policy framework on the energy-water nexus requires public awareness of energy and water security issues. A human rights-based approach could provide a common basis for such a framework. Governments must adopt independent policies to support linkages between the energy and water sectors, both horizontally and vertically, to improve the efficiency of related units at the State level, taking into account international and regional relationships in the fields of trade, investment and climate change mitigation.

21. In view of the above, an innovative outlook is required on climate change and its impact on local environments, resource scarcity, available technology options, national capacity, and energy and water consumption patterns and their interlinkages.

22. To tackle challenges and benefit from opportunities, it is necessary to develop a sustainable nexus approach that takes into account energy-water integration, uses accurate data, and employs modelling and analysis to improve understanding of these issues, propose appropriate solutions, identify stakeholders and domestic partners, and strengthen regional cooperation in all related fields, especially research and development and the exchange of expertise.

23. It is necessary to highlight the SDG interlinkages and incorporate them into relevant policies, strategies, programmes and plans, while determining the objectives of the energy-water nexus. It is also vital to adopt suitable indicators and identify relationships between them to facilitate measuring and monitoring progress.

IV. ESCWA ACTIVITIES SUPPORTING THE ENERGY-WATER-FOOD NEXUS

A. ESCWA NEXUS APPROACH

24. ESCWA has adopted a ‘clusters’ approach, grouping linked sectors into three categories designated as ‘clusters’ to tackle the most urgent challenges in the Arab region. Cluster I covers sustainable growth, decent work and poverty eradication; Cluster II involves energy, water and food security; And Cluster III comprises equality, inclusiveness and justice.[8] This methodology was presented at the twenty-ninth ESCWA session, and

[8] ESCWA, Implementation of the 2030 Agenda for Sustainable Development in the Arab Countries, 2016 (available in Arabic only) E/ESCWA/29/11.

is set out in the work of the subprogrammes for 2017 and 2018-2019. It has been supported using additional funds approved by the General Assembly.

B. Project on "Developing the capacity of ESCWA member countries to address the water and energy nexus for achieving sustainable development goals"

25. In June 2012, ESCWA held a joint advisory meeting for member State representatives in the Committee on Water Resources and Committee on Energy on linkages between the water and energy sectors.[9] Participants identified the following seven priority fields:

(a) Knowledge and awareness raising;
(b) Increasing policy coherence;
(c) Examining the water-energy security nexus;
(d) Improving efficiency;
(e) Informing technology choices;
(f) Promoting renewable energy;
(g) Addressing climate change and natural disasters.

26. Under the same framework, ESCWA launched a project funded by the United Nations Development Account entitled "Developing the capacity of ESCWA member countries to address the water and energy nexus for achieving sustainable development goals". The project extends over three years, from December 2014 to December 2017. It aims to assist member States in developing an integrated approach to the SDGs, through a capacity-building programme on the water-energy nexus. The project is implemented on two parallel and complementary tracks. The first targets high-level officials in energy and water ministries; it trains them to incorporate the water-energy nexus in policies and strategies at the national and regional levels. The second targets service providers in the water and energy sectors.

27. Under the first track, ESCWA held a regional workshop on water-energy nexus policies (Amman, 30-31 October 2016), attended by members of the Committee on Water Resources and Committee on Energy or their representatives. The workshop considered a regional policy tool launched by ESCWA in 2016, comprising seven modules covering the priorities identified at the joint advisory meeting of the two committees.[10] The modules were developed to train participants to adopt the water-energy nexus approach in formulation integrated plans and policies, and discuss the benefits, opportunities and challenges resulting from the adoption of a nexus approach to strengthen the integrated management of natural resources under political and institutional frameworks in the Arab region. Participants exchanged information on regional initiatives, projects and partnerships assisting Arab countries with the nexus approach. At the closing of the workshop, participants were requested to propose political or methodological tools to promote the water-energy nexus at the national level. ESCWA shall consider the proposals, select three tools and provide technical support to test them at the national level. Lessons learned from the three pilot initiatives shall be presented at a second training workshop on nexus policies, to be held in November 2017.

28. The project under the second track focuses on service providers in the water and energy sectors, and on examining three technical fields by preparing three modules on resource efficiency, renewable energy, and technology transfer. Each of the three modules will be discussed at respective technical training workshops to be held in 2017, attended by stakeholders from various sectors. ESCWA organized the first regional capacity-building workshop on the theme "Water-energy nexus: efficient resource use", held in Manama on 20 and 21 February 2017. The workshop aimed to build the technical capacity of government officials overseeing the provision of water and energy services. They were briefed on technology strategies suited to the water-energy nexus in Arab countries, so as to improve the efficiency of resource production and consumption and provide

[9] ESCWA, Report of the Joint advisory meeting of the Committee on Water Resources and Committee on Energy on linkages between the water and energy sectors in ESCWA member States, 2012. E/ESCWA/SDPD/2012/IC.1/2/Report.

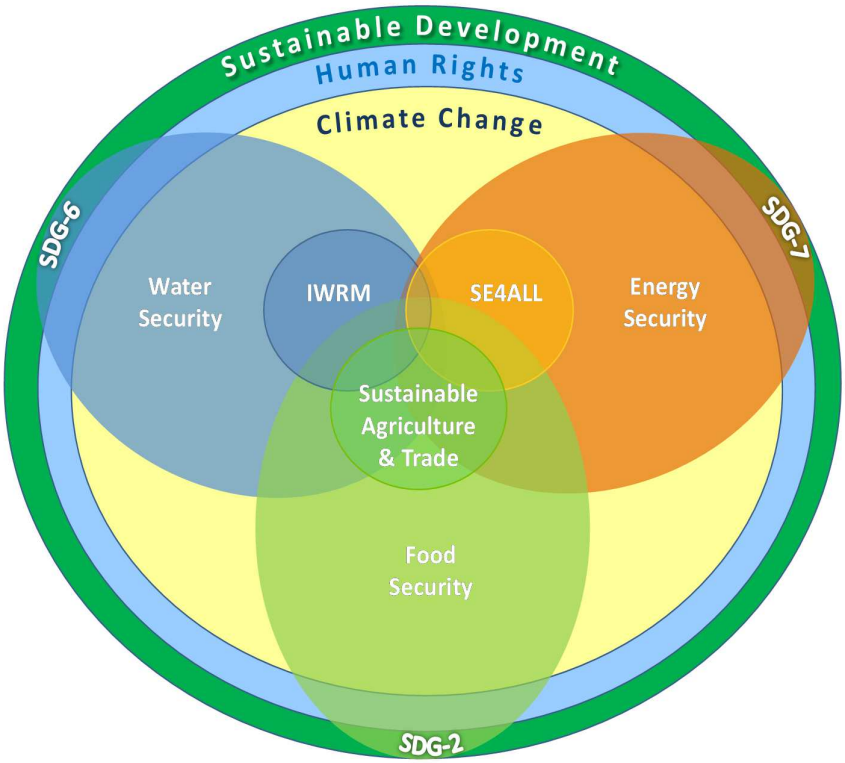
[10] See E/ESCWA/SDPD/2016/Manual.

water and energy services, through presentations on the operational model for the efficient use of resources prepared by ESCWA.[11]

C. ESCWA Water Development Report 6: The Water, Energy and Food Security Nexus in the Arab Region

29. ESCWA published the sixth Water Development Report,[12] setting out an analytical framework and case studies to clarify the water-energy-food security nexus in the Arab region. The framework considers the effects of the nexus on achieving water, energy and food security under the 2030 Agenda, requiring a balance between mitigating the effects of climate change and ensuring access to food, water and sustainable energy for all, in accordance with a human rights-based approach while benefiting from tools for the integrated management of water resources, from regional efforts to support the Sustainable Energy for All initiative and from investments to promote sustainable agricultural practices and reliable trading systems (figure below).

Water-energy-food security nexus



30. ESCWA has published a booklet summarizing key factors for the water-energy-food security nexus in the Arab region,[13] containing the analytical framework necessary to understanding the nexus and the factors required for its implementation and for achieving the SDGs, so as to mitigate the effects of climate change and ensure access to food, water and sustainable energy for all. Developing the analytical framework requires a common vision based on principles accepted by all Arab countries, which surpasses disparities in natural resources and economic and social capital and endorses a human-centred approach in achieving the SDGs where water, energy and food security hold equal importance.

[11] See E/ESCWA/SDPD/2016/TOOLKIT.1.

[12] See E/ESCWA/SDPD/2015/2.

[13] See E/ESCWA/SDPD/2015/Booklet.3.

D. PROJECT ON "PROMOTING FOOD AND WATER SECURITY THROUGH COOPERATION AND CAPACITY DEVELOPMENT IN THE ARAB REGION"

31. Under the League of Arab States initiative on the water-energy-food nexus, ESCWA, in collaboration with various regional and international organizations, is implementing a project entitled "Promoting food and water security through cooperation and capacity development in the Arab region". The project aims to promote food and water security in Arab countries by strengthening national and regional knowledge bases, building capacity and enhancing coordination and cooperation in the development of policies and strategies and in implementing water and agriculture programmes. The implementation of the project, funded by the Swedish International Development Cooperation Agency (Sida), is expected to continue until the end of 2018. The project is based on the following four pillars:

(a) Evaluating agricultural production in view of decreasing water supplies caused by climate change;

(b) Strengthening coordination between the agriculture and water sectors in the development and implementation of water and agriculture policies in the Arab region;

(c) Improving the efficiency of food production in the Arab region by promoting best agricultural practices;

(d) Building national and regional capacity for evaluating and monitoring food security levels in the Arab region.

32. The project's activities include preparing scientific studies and reports on policies, and organizing expert group meetings, training workshops and other field activities.

E. PARTICIPATION IN REGIONAL MEETINGS ON THE ENERGY-WATER-FOOD NEXUS

33. At a meeting held in Cairo at the League of Arab States headquarters on 16 and 17 March 2016, ESCWA presented its nexus activities and means of cooperation with partners in the region under the League of Arab States initiative on the energy-water-food nexus.

34. ESCWA participated in an international workshop on the theme "Water-energy nexus: integrated planning on water and energy in Western Asia and North Africa", held by the West Asia-North Africa Institute (WANA), in collaboration with the Wuppertal Institute for Climate, Environment and Energy and the Friedrich Ebert Foundation, in Amman on 6 and 7 April 2016.

35. ESCWA participated in a seminar held in Bangkok from 21 to 23 June 2016, organized by the United Nations Economic and Social Commission for Asia and the Pacific on supporting SDG 7, especially target 1 on ensuring universal access to affordable, reliable and modern energy services by 2030. The seminar agenda covered the energy-water nexus. The outcomes focused on the following: (a) identifying the relationship under the energy-water nexus and other development determinants, and incorporating this relationship in sustainable development strategies, programmes, plans and policies; (b) determining linkages between Goal 7 on energy and the other SDGs; (c) recognizing variations in linkage levels with other SDGs between regions, countries and areas within countries; (d) identifying linkage objectives and developing appropriate indicators for measurement and monitoring; (e) examining the impact of providing new energy services on the economic, social and environmental dimensions of development; (f) identifying good plans or practices and challenges that impede SDG implementation at the national level; and (g) disseminating knowledge on Goal 7 and its relationship to the other SDGs at the global and national levels.

36. The executive secretaries of the five United Nations regional commissions, including ESCWA, issued a joint statement on the occasion of the Fifth International Forum on Energy for Sustainable Development,[14] held in Tunis in November 2014. The statement called for strengthening capacity to analyse interactions

[14] See https://unictunis.org.tn/2014/11/04/.

between the various issues covered by energy policies, especially links between energy and water and between water, food and energy, so as to develop policies comprising innovative and sustainable approaches to tackle the multi-domain issues related to energy.

V. LEAGUE OF ARAB STATES INITIATIVE ON THE ENERGY-WATER-FOOD NEXUS

37. The League of Arab States formulated a regional initiative on the energy-water-food nexus on the sidelines of the first Arab regional south-south development exhibition, held in Doha on 20 February 2014. The League invited ESCWA and the German Agency for International Cooperation (GIZ) to coordinate support to the Arab Ministerial Council of Electricity and the Arab Ministerial Council of Water. The councils issued two resolutions[15] requesting ESCWA and GIZ to fund studies and implement activities under the regional initiative.

38. The Arab Ministerial Council of Electricity issued resolution 208-11 of 9 June 20415 on requesting the Council's secretariat to coordinate with stakeholders (ESCWA and the Arab Ministerial Council of Water secretariat) to implement proposed activities and studies on the energy-water-food nexus, and to prepare a report on progress achieved for submission to the Council at its next session.

39. At its seventh and eighths sessions, held in 2015 and 2016, respectively, the Arab Ministerial Council of Water issued two resolutions[16] on operationalizing the regional initiative on the energy-water-food nexus and coordinating activities and studies in that regard.

40. In 2016, under the regional initiative, GIZ launched summary reports on policies related to the water-energy-food nexus that covered the following: (a) understanding the water-energy-food nexus; (b) challenges and opportunities; (c) managing the nexus and the role of institutions; (d) linkages between the water, energy and food sectors and the efficient use of resources and sustainable development; (e) capacity-building needs; and (f) nexus technology and innovation case studies.

VI. FUTURE OUTLOOK

41. ESCWA invites the Committee on Water Resources and Committee on Energy to provide guidance on the desired future work for the water-energy-food nexus, in view of current projects and emerging issues.

42. ESCWA invites member States to participate in the activities and events of the project on "Developing the capacity of ESCWA member countries to address the water and energy nexus for achieving sustainable development goals". It also invites them to provide guidance on benefiting from the analytical framework of the water-energy-food nexus in the Arab region to facilitate cooperation and support regional integration.

43. ESCWA also invites member States to participate in the activities and events of the project to promote food and water security in the Arab region, especially those related to institutional coordination between the water and agriculture sectors; to benefit from national capacity-building activities on evaluating the impact of climate change and water availability fluctuations on agricultural production; and to coordinate with bodies responsible for implementing those activities (ESCWA, FAO, Arab Center for the Studies of Arid Zones and Dry Lands).

44. ESCWA member States are also invited to adopt the nexus approach when formulating strategies and policies, especially in efforts to achieve the SDGs.

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[15] Arab Ministerial Council of Electricity resolution 232 of 16 September 2014; and Arab Ministerial Council of Water resolution 103 of 27 May 2014.

[16] Resolution 121 of 27 May 2015 and resolution 129 of 26 October 2016.