

**Economic and Social Commission for Western Asia (ESCWA)****REPORT****REGIONAL WORKSHOP ON SCIENCE, TECHNOLOGY AND INNOVATION
OBSERVATORIES IN ESCWA MEMBER COUNTRIES****PHASE II: CAPACITY-BUILDING ON STI INDICATORS AND OBSERVATORIES
BEIRUT, 18-20 JANUARY 2010****Summary**

The ICT Division of ESCWA organized the follow-up Workshop on Science, Technology and Innovation Observatories in ESCWA Member Countries – Phase II: Capacity-building on STI Indicators and Observatories, at United Nations House, Beirut, 18-20 January 2010. The three-day Workshop included public sector specialists and technology experts who are involved in the creation and implementation of STI observatories and the development of STI indicators. This second phase of the Workshop followed up on the first phase, which was held in November 2009 and aimed at establishing national and regional STI observatories in the ESCWA region.

Phase II of the Workshop included training coupled with review case studies, namely: (a) STI role in development and policymaking; (b) production of STI statistics; (c) models for setting up STI observatories; and (d) regional cooperation and capacity-building in the field of STI. The Workshop was attended by 20 participants from Egypt, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, the Sudan, the Syrian Arab Republic and Tunisia. Participants included candidate operators of potential STI observatories, and regional and international experts involved in the establishment and implementation of STI observatories.

The Workshop recommendations included the following: (a) raising awareness on STI observatories in the region; (b) setting a plan of work with the institutions involved in the establishment of national STI observatories; (c) building capacities on setting national STI observatories and the required resources; (d) identifying the STI indicators that are applicable for the region and conducting training on the use of these STI indicators; (e) promoting the identification of lead agencies for national STI observatories; (f) establishing a website for STI observatories for knowledge-sharing among observatories and partner institutions; (g) enabling access to STI databases and repositories; and (h) partnering with universities on technology research and transfer.

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Introduction

1. It is broadly recognized that science, technology and innovation (STI) are essential components within the development efforts, whether for supporting development processes or for providing basic information and assessment reports that are needed in the formulation and implementation of policies and plans.
2. The ICT Division of ESCWA organized the Workshop on Science, Technology and Innovation Observatories in ESCWA Member Countries – Phase II: Capacity-building on STI Indicators and Observatories, at United Nations House in Beirut, 18-20 January 2010. The three-day Workshop included public sector specialists and technology experts who are involved in the creation and implementation of STI observatories and the development of STI indicators. The Workshop follows up on the first phase that was held in November 2009 and aimed at establishing national and regional STI observatories for the ESCWA region.
3. The objectives of the second phase of the Workshop were to strengthen capacities of member countries in producing STI indicators; promote the use of indicators to support evidence-based STI policymaking; assist in establishing national STI observatories; and foster regional cooperation on STI indicators and observatories.
4. This Workshop covered the following issues: (a) role of STI in development and policymaking; (b) production of STI statistics; (c) models for setting up STI observatories; and (d) regional cooperation and capacity-building in the field of STI. It was attended by 20 participants from Egypt, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, the Sudan, the Syrian Arab Republic and Tunisia. Participants included candidate operators of potential STI observatories, and regional and international experts involved in the establishment and implementation of STI observatories.

I. RECOMMENDATIONS

5. Based on discussions during the Workshop, the following recommendations were proposed towards building capacities on STI indicators and observatories in the region:
 - (a) Raising awareness on STI observatories among all stakeholders in the ESCWA region;
 - (b) Setting a timetable and work structure for working in parallel with the institutions involved in the establishment of national STI observatories in member countries;
 - (c) Building capacities on setting the framework of national STI observatories and the required resources;
 - (d) Identifying, analysing and defining the STI indicators that are applicable for the region, based on such international manuals as the Frascati and Oslo Manuals and established experiences;
 - (e) Translating the STI indicators for the region into Arabic and making them available to all stakeholders for use in national surveys and further analysis;
 - (f) Conducting comprehensive training on STI indicators and use of surveys aimed at enhancing the skills of statisticians and researchers in terms of working techniques in various member countries;
 - (g) Identifying lead agencies for the national STI observatories in each member country;
 - (h) Establishing a dedicated website for STI observatories that enables networking and facilitates communication and knowledge sharing among STI observatories and partner institutions;

- (i) Enabling access to STI databases and other repositories for the partners on the STI observatories;
- (j) Partnering and collaborating with universities in relation to technology research and transfer.

II. PRESENTATIONS AND DISCUSSIONS

6. The Workshop presentations covered the following principal themes: (a) science and technology (ST) indicators, methodologies and policymaking; (b) innovation environment, indicators and surveys; (c) setting up national STI observatories; (d) case studies from Tunisia and Africa; and (e) establishment of a regional STI observatory. The presentations and subsequent deliberations during a round table discussion are summarized below.

A. SCIENCE AND TECHNOLOGY INDICATORS, METHODOLOGY AND POLICYMAKING

7. Mr. Nabil Saleh of the National Research Centre in Egypt gave three presentations, entitled “ST indicators and policymaking”, “Methodology related to ST indicators” and “ST indicators related to personnel and expenditure”. He presented an overview of the current situation on science and technology indicators from the policymaking perspective; existing STI indicators, especially research and development (R and D) and their importance for policymaking; and the methodology related to these indicators with an emphasis on the measurement of personnel and expenditure data. In addressing the methodology related to science and technology indicators, the Frascati Manual was the reference document for data collection and practices on R and D surveys, with an emphasis on the chapters related to personnel and expenditure as the two important inputs to science and technology indicators.¹ The reviewed methodology was related to the scope of R and D surveys, the target population and respondents, and the inputs and outputs. Reference was also made to the Oslo Manual on innovation data.²

8. Science and technology indicators support STI policymaking and are essential in the evaluation of STI performance. Equally important is the existence of a national system for STI data collection, evaluation and development. STI indicators are key in monitoring scientific and technological development, determining technological trends, conducting foresight exercises and determining specific areas of investment. They are also essential in the formulation, update and implementation of STI policies and strategies. STI observatories would facilitate data collection and analyse indicators, thereby playing a vital role in the work of policymakers and strategy analysts.

9. National systems for science and technology, particularly R and D, are essential for setting statistical databases, and are established in Tunisia and Morocco. Establishment of these systems are underway in Egypt, Jordan, Lebanon and Oman. The Latin American experience was considered suitable to apply in the Arab region, and this could include categorizing countries according to the level of development of their R and D systems. This entails planning that is tailored to national level and needs, and that involves periodic follow-up to sustain capacity-building and operability of the system. National training activities could build capacities among more institutions and promote greater national commitment through wider national participation and partial cost sharing. A key area in the establishment of national STI systems is the coordination among the various organizations involved in science and technology. The coordination of activities among stakeholders can yield benefits to all through more effective work.

B. INNOVATION ENVIRONMENTS, INDICATORS AND SURVEYS

10. The first presentation under this theme, entitled “Assessing the national innovation environments in Africa”, was delivered by Mr. Victor Konde of the Economic Commission for Africa (ECA). The policies and the major challenge facing policymakers were addressed in terms of promoting the innovation environment at all levels and prioritizing the allocation of funds to innovation. In assessing the innovation

¹ OECD, *Frascati Manual* (2002), which is available at: <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9202081e.pdf>.

² OECD, *Oslo Manual* (2005), which is available at: <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9205111e.pdf>.

environment, these aspects are defining indicators and, moreover, provide a valuable link between innovation performance and framework conditions. A national innovation policy supports an economy that is driven by knowledge and innovation.

11. Promoting innovation and awareness of the importance of innovation needs to start early in the education system. Financing through either subsidies or incentives could enable the use of innovation as a tool to inform policymakers. Moreover, governments are the main players in promoting innovation. The most common approach in assessing the innovation environment is by looking at the framework conditions for innovation. This approach assesses public research, cooperation between academia and industry, financing innovation and market conditions. Competition is another area for policy conditions. Adopting assessment tools is important in comparing between countries in the region and across regions. The assessment of the innovation environment was developed by the Organisation for Economic Co-operation and Development (OECD).

12. The second presentation, entitled “Innovation surveys: toward international standards”, was given by Mr. Hatem M’Henni of the Higher School of Economic and Commercial Sciences, Tunisia. The speaker outlined the need for innovation data to support evidence-based policies, defined innovation and its types, and elaborated on innovation surveys and their procedures with examples from developing countries. Innovation surveys enable decision makers to identify the basic reasons for institutions to renovate their technologies. Large institutions tend to have more human and financial resources than more modest counterparts and are therefore better able to take the risk associated with innovation-based projects without compromising their market existence.

13. An innovation survey assesses the challenges incorporated in innovation projects that could risk their implementation. The survey gives an idea on the type of innovation that could be related to the four types of innovation, namely: product, process, marketing and organizational innovations. Companies can be classified by the degree of innovativeness, and the outcome of innovation can be assessed by the impact of innovation on a company’s product sales, market share and competitiveness. The procedures of innovation surveys were outlined, including the target population, methods, estimations and presentation of results. The innovation surveys could be conducted on a two-year basis or, when less economically feasible, over a three- or four-year period.

14. The principal adaptations of member countries lie in the use of ICTs for automating activities or processes of institutions, and including human resource management in terms of collecting data on training resources. The methodologies of innovation surveys in developing countries need to involve national statistics offices and include variables that can measure corporate performance.

C. NATIONAL STI OBSERVATORY IN TUNISIA

15. Additionally, Mr. Hatem M’Henni gave two presentations on the Tunisian experience, namely, “Collecting and producing STI indicators in Tunisia” and “National Observatory of Science and Technology”. The first presentation briefed participants on the actors of the STI system in Tunisia, the procedures for national surveys, the various output indicators, and the challenges and opportunities for the system. The Bureau of Planning and Statistics collects and produces ST statistics, while the National Observatory of Science and Technology collects and analyses data from administrative procedures, surveys and international databases; and generates indicators. The production of indicators needs estimates of public expenditure on R and D in higher education, business enterprises and cooperation.

16. The constraints facing the STI system in Tunisia are of an international nature and relate mainly to limited financing resources, technical continuity in the administrative procedures with limited memory of R and D collection and, above all, systemic limitations related to governance, coordination and cultural aspects. The future plans seek to enhance the quality of indicators, calculate the technological balance of payments and estimate the economic impacts of R and D investments and on lifelong learning and the private, non-

profit sector. Despite this financing constraint, the gross domestic expenditure on research and development (GERD) shows that Tunisia represents the Arab country that funds R and D to the greatest extent. Furthermore, the Tunisian experience in STI indicators could be adopted by many other countries.

17. The second presentation elaborated on the National Observatory of Science and Technology, covering its inception, mission, national experience and challenges. The creation of the Tunisian Observatory stemmed from the recognition of the vital role played by of scientific research for development, and the formulation of a strategy for integrated scientific and technological research. Basic assessment of status required field and analytical studies and a scientific approach for producing indicators. Established in 2006, together with its mandate and organizational structure, the Observatory began to report to the Ministry of Higher Education and Scientific and Technological Research in 2008.

18. The Observatory aims primarily to assess the status of scientific research and technology in Tunisia; monitor national and international developments in science and technology; and extend technical support to decision makers on science and technology in order to formulate better national development programmes. The Observatory produces annual reports that profile the progress made in the national science and technology system, conducts analytical studies that support policymaking, and establishes relevant databases. With regard to the potential challenges that face the Observatory, these are associated with the setting of responsibilities, administrative hierarchies and cost-sharing.

D. AFRICAN STI OBSERVATORY

19. Mr. Victor Konde of ECA presented the “African STI Knowledge Hub (Observatory)”, which was conceived in 2004 with the African STI Indicators Initiative (ASTII) and led by the New Partnership for Africa’s Development (NEPAD). The Initiative evolved to become a fully operational STI observatory in 2009. The Knowledge Hub builds the capacity of teams on data collection, analysis and reports production in 19 African countries. Financing of the Knowledge Hub comes from the African Union Commission (AUC) and the African Ministerial Council on Science and Technology (AMCOST), with a committed setting up budget of \$3.6 million. The African STI observatory is projected to attain the goals of increasing productivity, competitiveness, employment, economic growth and, most importantly, quality of life and individual prosperity.

20. Given the absence and unavailability of basic STI data in African countries, the African observatory could fill an information gap, enable tailored policymaking and research, and promote an environment favourable to innovation. Its main outputs include producing R and D data at the national level, reports on national innovation policy surveys, STI policies, profiles of STI institutions and projects, and technological exchange and investments.

21. Moreover, the African Knowledge Hub could establish a platform for information exchange and cooperation among scientists, and encourage a competitive and innovation culture. In addition to information sharing, the platform widens the scope of R and D collaborative opportunities and provides public access to international R and D projects and outputs. The observatory can track R and D trends and policies that could benefit African countries; network between R and D and STI experts and institutions; build capacities of statistical institutions in member countries; disseminate information on innovation performance, output indicators and activities; and identify and share investment opportunities. The challenges facing STI indicators in the African observatory relate mainly to the policy focus of indicators, which could be addressed within one of the three implementation phases of the project.

E. NATIONAL AND REGIONAL STI OBSERVATORIES

22. Mr. Hratch Kouyoumjian, consultant with the ICT Division of ESCWA, gave two presentations, entitled “Setting up national STI observatories” and “Regional STI observatory”. The first presentation outlined the guidelines for setting up national STI observatories, including promoting political will, pooling

existing resources and structures, formulating an organizational design, allocating the budget for its operational and research costs, assigning the skilled human resources that include a technical team of specialists and a director, and identifying a supporting network of affiliated institutions and experts.

23. The key aspects in setting up national STI observatories are the collaborative and cooperative efforts among national actors. The necessary conditions for its design include political and financial support from the onset of work, as well as the engagement of the private productive sectors, and meeting national needs and priorities. Political support to a national observatory is tied to a well-defined autonomous mandate and work programme. Additionally, a national observatory requires strong leadership and a robust technical support base that can govern its operations and provide access to required infrastructure and databases. Moreover, quality assurance of its products is essential, as well as learning and evolving capabilities that guarantee development of the system within a changing context of needs and priorities. Evaluation of performance is needed in addition to a monitoring system within a network of cooperating institutions and involved stakeholders.

24. In the second presentation, Mr. Kouyoumjian distinguished between establishing national STI observatories and an eventual regional observatory, and outlined the perceived structure of the regional STI observatory. The regional observatory would be part of the ESCWA Regional Technology Centre that could facilitate and promote the work of national STI observatories. The speaker stressed the significant role of the regional observatory within an increasingly globalized and competitive world, especially for the evaluation and monitoring of the STI situation in the region. While the acquisition of appropriate technologies is essential in tackling development, ESCWA member countries are facing challenges that relate to their ability to assess the situation and chart progress, and convert available knowledge and expertise into socio-economic benefits. The production of output indicators could convey and enhance knowledge on the region, and the national indicators could be combined and spread through a regional network to be used for policy formulation and by decision makers. Once a regional STI observatory is established, through joined national and regional efforts, the technical skills and financial resources could be allocated for its mandate.

F. DISCUSSIONS

25. The discussions over the duration of the Workshop, following presentations and within the framework of round table talks, are summarized below. Participants also briefed on the status of STI systems in their countries.

26. Workshop discussions covered the applicability of STI indicators and their methodologies, and the challenges facing science and technology in the Arab region. Deliberations and sharing of experiences during the round table discussions included many suggestions for promoting coordinated and systematic work across those involved and with high performance. The quality assurance was emphasized with a reference to the standards system of the International Standards Organization, in addition to the need to start from the current status and progress to achievable targets.

27. The unavailability of data coupled with low response rates to surveys represented the main challenges facing the development of an STI system. National STI systems do not contribute to research efforts. Data availability is also limited for policymaking, and policies are often based on the subjectivities of decision makers rather than on empirical evidence. Even when data are available, the outcome of research is not shared among institutions or made available for decision makers.

28. The relationship between innovation and R and D was addressed in the discussion, and the system for patents. Most patents in the Arab region tend to be rejected owing to a lack of experience in describing a patent in writing, rather than as a function of its importance. Without national offices for registering patents, registration is done at the international level, and R and D might not result in patent registration. Scientific articles produced in the region are not easily published in international scientific journals. This requires connecting with international research networks and databases, and building links between Arab researchers and journals. Most Arab journals are not available or recorded in research databases. There is a need to

strengthen the region's journals by rendering them open to peer reviews and by making them available internationally.

29. With regard to the status of STI in Arab countries, the region lacks clear policies and strategies, does not rely on science and technology indicators and rarely exhibits signs of evidence-based policymaking. Policies in the region are based on the subjectivities of decision makers and owe to their support. This divide between science and technology indicators and policymaking therefore needs significant effort to be bridged.

30. STI indicators related to the impact of technology on society were considered in terms of the introduction, development or transfer of technology. Indicators related to patents were also considered in terms of accounting for registered, under registration and renewed patents. Furthermore, participants proposed a preliminary list of indicators for the Arab region, including data collection on patents, commercialized products, postgraduate degrees, collaboration among institutions, research publications and R and D funding. Emphasis was placed on assessing whether R and D activities met local needs and addressed existing problems. Participants also stressed the need to connect between STI indicators and development and to assess the outcome of projects. A preliminary list of indicators requires revisiting in order to set the core STI indicators that will be needed for the work of STI observatories. Once defined, the applicability of STI indicators could be considered in national surveys.

31. The challenges facing science and technology in the Arab region and the issues that need addressing include the lack of an effective science and technology structure, and of laws and regulations that govern research and development; and an absence of a clear vision for science and technology that can promote innovation and achieve a knowledge-based economy. The region needs to increase expenditure on science and technology and their corresponding facilities, use technology foresight methodologies in setting priorities, and focus on technology research and development rather than purely on technology transfer.

32. National STI observatories could monitor the work of the science and technology system, and have access to information produced by all research institutions. However, observatories must be independent bodies. A regional observatory could be established through a virtual network for sharing experiences among participating institutions in the areas of STI indicators and foresight.

33. The need for technical assistance was emphasized in relation to setting national organizational structures that enable institutions to function as observatories. This could be either by coordinating between units involved in data collection and development of indicators, or by building the capacity of an existing entity to take up the functions of the observatory.

34. The status of STI data and systems in those ESCWA members represented during the Workshop is summarized below.

1. *Egypt*

35. The recent reform of the scientific research system in Egypt resulted in the formulation of a national science and technology organizational structure. The scientific research structure includes the Science and Technology Development Fund (STDF) that consists of a planning and monitoring working group encompassing units, one of which is the Egyptian STI observatory. STDF was established as an independent institute by a decree that identified its objectives, including the development and monitoring of science and technology indicators and providing these indicators to the Higher Council for Science and Technology (HCST). The main activities of the Egyptian STI observatory rely on consultants for forecasting, and a transition period is needed for the current unit to become a fully fledged observatory that facilitates the combined efforts. The unit started its work on science and technology indicators by assessing the status of these indicators in Egypt and the needs for enhancement. Activities of this unit also covered developing a desalination technology roadmap for 2030 in collaboration with national stakeholders, in particular the Ministry of Water Resources and Irrigation.

2. *Iraq*

36. The nascent Ministry of Science and Technology (MoST) in Iraq leads national efforts on the national innovation system and is capable of accommodating an STI observatory. While the national statistics office collects information from ministries and publishes statistics on all activities, the information does not cover science and technology. However, part of the higher education indicators could be relevant. The efforts of the MoST could need support in terms of thorough training and wider participation of national bodies. The participation of concerned bodies could be mandated by a decree that requests from public bodies to contribute regularly to the work of the eventual observatory.

3. *Jordan*

37. The Higher Council for Science and Technology (HCST) is responsible for collecting science and technology data in Jordan. Efforts are under way in Jordan for starting a national STI observatory in collaboration with those institutions involved in data collection and statistics. The establishment of an STI observatory in Jordan can contribute to the success of a number of projects that could in turn be supporting and complementing efforts towards the establishment of an STI observatory. These projects include the formulation of a science and technology policy for Jordan; defining the scientific research priorities that would guide national efforts over a decade; and the support to research and technological development and innovation initiatives and strategies (SRTD) in Jordan that connects the industrial and private sectors, including enterprises, with universities. These national activities could in turn be supporting and complementing efforts towards the STI observatory.

4. *Kuwait*

38. The national STI observatory is at a conception phase, with the Kuwait Institute for Scientific Research (KISR) taking the leading role towards its establishment. KISR is undergoing a thorough transformation that could build on its initiative for knowledge management by starting the observatory. Collaboration with universities and collection of data on research and researchers could also feed into the work of the observatory. While STI indicators are not collected, efforts in that regard are evident.

5. *Lebanon*

39. The National Council for Scientific Research (NCSR) is the lead agency for the STI observatory in Lebanon, whose establishment was based on a recommendation resulting from the analysis of strengths, weaknesses, opportunities and threats, and the preparation of a national STI policy. The structural organization of the observatory was set in a report, and the efforts are directed towards its realization in collaboration with all stakeholders in Lebanon. Currently, a database is under development and is set to be followed by the compilation of basic statistical information. While a budget for the Lebanese observatory has not yet been allocated, it is hoped that a specific budget will be allocated for its operation.

6. *Oman*

40. Statistical work in Oman is managed, supervised and controlled by the statistical law issued by the royal decree 29/2001 and the National Statistical Committee that mandates the conducting of surveys. Government bodies involved in the data collection and analyses of STI indicators include mainly the Ministries of Education, Higher Education, National Economy, and Commerce and Industry, in addition to the Research Council. With data collection for STI indicators distributed among different organizations, data are not compiled in a national STI report.

41. Without periodic review of STI indicators in Oman, the follow-up and reporting on STI indicators need to be mandated to one of the institutions. The Research Council could host and take up the functions of a national STI observatory through the Unit of Studies and Strategic Planning. The national STI policy developed in 2007 by the Research Council was based on the data collected for major R and D institutes. Oman has a research directory that connects between research organizations and researchers. The directory

compiles science and technology indicators that need updating. With regard to innovation indicators, the data could be compiled from the Ministries of National Economy and Commerce and Industry.

7. Palestine

42. The Palestine Academy is the central body for science and technology and has a database for researchers and scientific research studies in Palestine. The Academy collaborates with many ministries on the collection of national STI information, including the national statistics office and a UNESCO project to collect data for scientific indicators. A national observatory could be set up within the Academy as a third unit that is mandated with adopting STI indicators. It is important to note that there is an issue of data collection for the Gaza Strip.

8. The Sudan

43. A national committee of the Ministry of Science and Technology (MST) was recently established and is responsible for Scientific Research and data collection for STI indicators. Within the MST, the national committee is following the Egyptian approach. However, there is a need to establish a distinct unit that takes up the role of an STI observatory.

9. Syrian Arab Republic

44. National efforts towards the establishment of an STI observatory in the Syrian Arab Republic started in 2008 through the Ministry of Communication and Technology (MoCT) and the National Planning Council, and in collaboration with the Higher Council for Scientific Research (HCSR). HCSR is the lead agency for the STI observatory and is collecting data from research institutions through questionnaires. Recent activities within the national efforts on the STI observatory include the assignment of focal points in participating ministries for data collection, as well as the distribution of questionnaires and a Government directive that requests the ministries to submit annual reports that contain all STI data required by the observatory. The completion and submission of these reports could be facilitated by the assigned focal points. In parallel, HCSR continues to publish the report on scientific research, and efforts are directed towards formulating a national science and technology strategy. The national statistics offices collect sectoral data and participate in the work of the STI observatory through their established data collection system and published reports. Furthermore, HCSR takes a central role in supporting the national networks of scientific research that include experts and expatriates who could amalgamate the national efforts. The national STI observatory is expected to operate with an estimated annual budget of some \$300,000.

III. ORGANIZATION OF WORK

A. VENUE AND DATE

45. The Workshop was organized by ESCWA and was held at the United Nations House, Beirut, 18-20 January 2010.

B. OPENING

46. Mr. Yousef Nusseir, Chief of the ICT Division of ESCWA, gave the opening statement of the Workshop, highlighting the need for STI for development and enhancing employment opportunities in the Arab region, as well as for reducing the economic divide between developed and developing countries. Mr. Nusseir considered that the chronic shortage of data on STI in the region has reflected on the work of planners and decision makers, and on the implementation of development plans. With weak spending on R and D in the region, scientists and researchers have limited employment opportunities, which trigger a brain drain. Skilled workforce also sought employment abroad and the effect reached the financing of projects. Support for scientific research is needed, as well as for its overall institutional system that functions within a network at the regional and international levels. The situation requires an STI policy that sets roles within a

cooperative method in the STI system. For setting this policy, an assessment of available resources is needed, as well as a complementing strategy.

47. Within the efforts to build STI observatories, a unified conception of the method of its establishment is essential. Identifying the indicators for assessing the status and progress in the region is central for producing results that feed into the processes of economic development. In that context, the efforts of ESCWA towards enhancing the role of STI in development of the region included the establishment of the ESCWA Technology Centre that can support technology projects and facilitate coordination across the region. The Centre coordinates regional efforts and hosts a regional STI observatory. The request of member countries for technical assistance on the establishment of STI observatories has led to the convening of this Workshop, in two phases. The first phase involved decision makers of STI systems in the region, while this second phase involved candidate operators of the projected STI observatories.

48. An overview of the second phase of the Workshop was presented by Mr. Mansour Farah, Chief of Policies Section of ICT Division, briefing on the Workshop objective of building capacity in member countries in support of the establishment of national STI observatories in a practical manner and within coordinated activities. The representatives from those ESCWA members that participated in the Workshop would be involved in establishing the national STI observatories. In this second phase, the Workshop tried to address the indicators, definitions and data collection. While STI observatories are not yet established in ESCWA member countries, national observatories are starting in Egypt, Jordan, Lebanon, Palestine and Syrian Arab Republic. Using an existing STI observatory in Tunisia as suitable case study for the Workshop, lessons and methodologies were learned and shared.

49. The Workshop considered the indicators that are based on existing international manuals, and then addressed the experiences and structure of observatories and their functions in dealing with indicators at the national level. Subsequently, discussions tackled the method of establishing a regional observatory that could coordinate among national observatories. Every session of the Workshop included moderated discussions in order to reach a common understanding on the issues addressed.

C. PARTICIPANTS

50. The Workshop was attended by 20 participants, including technology experts and candidate operators of potential STI observatories, representing institutions involved in STI activities in Egypt, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, the Sudan, the Syrian Arab Republic and Tunisia. Participants also included regional and international experts involved in implementing STI observatories. The list of participants is contained in annex I of this report.

D. DOCUMENTS

51. The documents submitted to the Workshop are listed in annex II of this report and are available online on a dedicated website.³

³ Available at: <http://www.escwa.un.org/information/meetingdetails.asp?referenceNum=1224E>.

Annex I*

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Annex II

LIST OF DOCUMENTS

(a) Background documents:

- Information Note
- Agenda

(b) Presentations and papers:

- ST indicators and policymaking, Nabil Saleh
- Assessing the national innovation environments in Africa, Victor Konde
- Methodology related to ST indicators, Nabil Saleh
- Paper – ST Indicators, Nabil Saleh
- Innovation surveys: toward international standards, Hatem M'Henni
- ST indicators related to personnel, Nabil Saleh
- ST indicators related to expenditure, Nabil Saleh
- Collecting and producing STI indicators in Tunisia, Hatem M'Henni
- Setting up National STI Observatories – Possible models, Hratch Kouyoumjian
- Paper – Guidelines for national STIOs, Hratch Kouyoumjian
- Paper – Examples of STIOs from the ESCWA region, Hratch Kouyoumjian
- Tunisian National Observatory of Sciences and Technology, Hatem M'Henni
- African Observatory of STI, Victor Konde
- Regional STI Observatory, Hratch Kouyoumjian
- Paper – Regional STI Observatory, Hratch Kouyoumjian