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Economic and Social Commission for Western Asia (ESCWA)

REPORT

**REGIONAL WORKSHOP ON “STRENGTHENING SOUTH-SOUTH COOPERATION AND
PARTNERSHIPS BETWEEN THE PUBLIC AND PRIVATE SECTORS IN RENEWABLE
ENERGY PROJECTS FOR RURAL DEVELOPMENT”
BEIRUT, 27 NOVEMBER 2012
AND THE INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY
FOR DEVELOPING COUNTRIES
BEIRUT, 28-29 NOVEMBER 2012**

Summary

The Economic and Social Commission for Western Asia (ESCWA), in cooperation with the Lebanese Association for Energy Saving and for Environment (ALMEE), held a regional workshop on “Strengthening South-South Cooperation and Partnerships Between the Public and Private Sectors in Renewable Energy Projects for Rural Development” at the ESCWA headquarters in Beirut on 27 November 2012. The event, which was held in Beirut on 28-29 November, 2012, was preceded by the “International Conference on Renewable Energies for Developing Countries-2012” co-organized by ESCWA, ALMEE, and a group of Lebanese universities and European organizations active in this field.

The regional workshop is one of a series of activities in a project on capacity building in the area of climate change mitigation to reduce the effects of climate change and alleviate poverty in Western Asia. The project is being implemented by ESCWA and is funded by the United Nations Development Account (UNDA). The aim of the workshop is to discuss ways to strengthen South-South cooperation and building partnerships between the public and private sectors to develop small businesses in the field of renewable energy projects for rural development in ESCWA member countries, and attract potential investors for small businesses to promote renewable energy applications that can be an engine for development in rural areas. The deployment of these applications helps improve energy services, alleviate poverty, reduce climate change, and achieve sustainable development.

Over four sessions the workshop participants discussed over four sessions a number of topics focused on policy, best practices for renewable energy deployment in the countryside, technical aspects related to renewable energy projects, ways to create an environment suitable for the deployment of renewable energy projects in rural areas, and building partnerships between the public and private sectors to secure energy services in the countryside. Participants also exchanged views and experiences on the challenges facing renewable energy deployment in the countryside, the policies adopted and others required to address this issue, and the obstacles preventing the promotion of the concept of partnership between the public and private sectors in this area.

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Introduction

1. A large percentage of the population of ESCWA member countries live in rural areas. The percentage of people living in rural areas constitutes 68 percent of the total population in Yemen, 57 percent in Egypt, 55 percent in Sudan (1). It is estimated that 72.2 percent of the total rural population in Sudan, and 48 percent of the total population in Yemen do not benefit from the electric grid, and are thus deprived of modern energy services (2). They depend on traditional biomass (firewood and charcoal) to meet their energy needs. Also, the citizens of Palestine suffer from an acute shortage of power supply due to the Israeli siege and the unstable security situation. The lack of energy services usually perpetuates the cycle of extreme poverty in most rural areas in developing countries. This causes a deterioration of social and economic conditions, and reflects negatively on key issues such as food security, water supply, healthcare and social services, education, communications, and overall development. This eventually leads to a decrease in income amid a continuing deterioration in living conditions. The unregulated use of traditional sources of bioenergy leads to the cutting of trees and further desertification. This has a direct impact on food security and people living in these areas, and a negative effect on climate change. Renewable energy sources available in the ESCWA region (particularly solar and wind energy) can be a solution to provide these people with electricity, and/or mechanical and thermal energy for pumping and heating water, and to provide their basic needs, namely lighting.

2. Many renewable energy technologies are characterized by technical maturity. This allows the deployment of various renewable energy applications in rural areas, which can be a reliable solution to ensure the provision of energy services for the development of rural areas in ESCWA countries that do not get these services on a regular basis. It takes effort to encourage the private sector to invest in renewable energy projects in rural areas, which requires good knowledge in this field through the provision of information and data, and clarification of all financial and commercial aspects. On this basis, the regional workshop was held to encourage greater private sector [investment] in renewable energy by asserting the feasibility of business and financial opportunities related to renewable energy projects for rural development in ESCWA countries, in the presence of a legal framework and organizational structure to enhance investors' willingness to invest in this field, either individually or through a partnership between the public and private sectors.

3. In cooperation with the Lebanese Association for Energy Saving and for Environment (ALMEE), ESCWA organized the regional workshop on the dissemination of practices and strengthening South-South cooperation and partnerships between the public and private sectors in renewable energy projects for rural development in ESCWA member countries. The workshop, which was held on 27 November 2012 at the ESCWA headquarters, is part of a series of activities included in a project on capacity building [in the area of climate change mitigation] to reduce the effects of climate change and alleviate poverty in Western Asia. The project is being implemented by ESCWA and is funded by the United Nations Development Account (UNDA).

4. In association with ALMEE, a number of Lebanese universities, and European research bodies, ESCWA organized the "International Conference on Renewable Energies for Developing Countries-2012" on 28-29 November 2012 in Beirut, which was preceded by the regional workshop. Participants of the workshop had the opportunity to attend this international conference, and learn about the latest developments in the field of renewable energy technologies and policies, and get access to information, views and opinions contained in the presentations and interventions raised during the conference discussions.

I. THE REGIONAL WORKSHOP ON "STRENGTHENING SOUTH-SOUTH COOPERATION AND PARTNERSHIPS BETWEEN THE PUBLIC AND PRIVATE SECTORS IN RENEWABLE ENERGY PROJECTS FOR RURAL DEVELOPMENT"

5. The purpose of the regional workshop organized by ESCWA in cooperation with ALMEE is to discuss ways to strengthen South-South cooperation and build partnerships between the public and private

sectors to start small business in the field of renewable energy projects for rural development in ESCWA member countries, and attract potential investors to start small businesses to promote renewable energy applications that can stimulate development in rural areas because of its key role in climate change mitigation and sustainable development.

6. The participants discussed over four sessions a number of topics focused on policies and best practices for the deployment of renewable energy in the countryside, technical aspects related to renewable energy projects, ways to create a favorable environment for the deployment of renewable energy projects in rural areas, and the partnership between the public and private sectors to provide energy services in the countryside in the ESCWA region. These topics can be summarized as follows:

A. POLICIES AND BEST PRACTICES FOR THE DEPLOYMENT OF RENEWABLE ENERGY IN RURAL AREAS

7. Four papers were presented on this topic.

(a) In the first paper, Luis Baz, [policy officer] at the Alliance for Rural Electrification (ARE), an international NGO that comprises industrial and consulting institutions, gave a presentation on the legislative, political, and organizational frameworks for accelerating rural electrification on a sustainable basis, and the lessons learned from sub-Saharan Africa. The speaker discussed rural electrification in the ESCWA countries, explaining the role of renewable energy in this area. However, this role requires government support, and the adoption of policies and strategies for rural electrification, which include the development of frameworks, legislation, and incentives to encourage investment; creating isolated local [area] networks; and working to create energy markets in rural areas.

(b) In the second paper, Jawdat Bou Aatour, a consultant in the field of energy from Tunisia, gave a presentation on the Electrification of Isolated Areas through Renewable Energies in the Middle East and North Africa: Reality and Prospects. The presentation contained information on the status of renewable energy use in rural areas in the world and in Africa; experiences in Botswana, Gambia and Ghana; and experiences in North African countries, including Algeria, Mauritania, Morocco, and Tunisia. It also discussed the challenges facing the region in the areas of development of agricultural irrigation techniques, water desalination, the electrification of villages, research and development, and encouraging small and medium business partnerships.

(c) In the third paper, Joseph Al Assad, [team leader] at the Lebanese Center for Energy Conservation (LCEC), gave a presentation on sustainable solutions for lighting public roads in Lebanon. He discussed the National Energy Efficiency Action Plan [for Lebanon], which includes the national project for public street lighting using energy-saving systems that can achieve high efficiency and economic feasibility, and the steps taken in this direction.

(d) In the fourth paper, Touffic Allouabi from the Morocco National Bureau for Electricity & Drinking Water (ONEE) gave a presentation on the renewable energy strategy in Morocco: Solar energy a means for rural electrification. The presentation made a reference to the national strategy, which aims to diversify fuel sources, adopt energy efficiency methods, and expand the use of renewable energy to constitute 42 percent of the energy produced by 2020. The strategy includes the completion of rural electrification plans. The electrification of about 3,663 homes with photovoltaic (PV) systems has been completed, and efforts are underway to increase the percentage of rural electrification using photovoltaic systems to about 7 percent.

8. Interventions focused on the role of governments and local funding institutions to encourage citizens to use the appropriate renewable energy applications and attract investments in this field, as well as the importance of technology transfer and the establishment of a local industry for some components of renewable energy equipment. This would help expedite the supply of modern energy services to rural areas, and benefit from successful practices in developing countries.

B. TECHNICAL ASPECTS OF RENEWABLE ENERGY PROJECTS

9. Five papers were presented on this topic.

(a) In the first paper, Jalal Othman, vice president of the World Wind Energy Association (WWEA), gave a presentation on [the use of] renewable energy to meet the shortfall in water: Nile River II in 2050. The presentation included information about the current status of seawater desalination plants in Egypt in the Red Sea area, the northwestern coast, and the Sinai, and the potential use of renewable energy technologies in future seawater desalination plans in these areas extending until the year 2037.

(b) In the second paper, Mr. Mohammad Hilal, from the Mechanical and Electrical Research Institute (MERI), gave a presentation on solar energy technologies to produce electricity for sustainable development. The presentation addressed the potential of solar energy in Egypt and some pilot projects in the field of solar energy, including the use of photovoltaic cells for drip irrigation and electricity production needed to manage solar tracking units and operate desalination plants in some remote areas. A reference was made to ongoing studies on this subject, stressing the importance of technology ownership and the local manufacture of photovoltaic solar systems technology.

(c) In the third paper, Jad Jaber, a Lebanese researcher at a Swiss institute, gave a presentation on the potential of solar thermal concentrates in Lebanon as part of a feasibility study on parabolic [solar collector] techniques. The presentation noted the existing good potentials for the use of solar thermal energy in electricity production. It referred to a preliminary feasibility study on a solar thermal plant project in the Akkar region based on a comparison between different alternatives in terms of technical ability, thermal storage, investment cost, cost per unit of energy produced, and payback period of capital.

(d) In the fourth paper, Salah Abou Awff, [general director of PV Department] at New & Renewable Energy Authority (NREA) in Egypt, gave a presentation on photovoltaic systems for the development of desert communities in Egypt. The presentation focused on a pilot project involving the electrification of homes and streets, a health unit, a school, and a mosque in two remote villages in a region located in the Western Sahara, which would improve living conditions in these two communities in terms of increased income, better education and health, and job creation.

(e) In the fifth paper, Albert Khoury from the private sector in Lebanon gave a presentation on rural development and renewable energy. The presentation included information about the potential of wind power in Lebanon, and a summary of the main results of studies related to the implementation of the first Lebanese wind power plant in the Akkar region with a capacity of 60 MW (which might reach 100 MW), the gains expected from this project compared to the energy produced from fossil fuel, and its impact on economic and social development in the local community.

10. The interventions focused on wind speed measurement, the economic cost of kilowatts [produced] by a wind plant based on the case study of the wind power project in Lebanon, and the cost of maintenance of the [fuel] cell system project in Egypt.

C. CREATING AN ENVIRONMENT SUITABLE FOR THE DEPLOYMENT OF RENEWABLE ENERGY PROJECTS IN RURAL AREAS/PILOT PROJECTS

11. Four papers were presented on this topic.

(a) In the first paper, Tunisian consultant Raffic Missawi discussed a model of a mechanism to accelerate renewable energy deployment in rural areas. The presentation noted the low income rate in rural areas in most developing countries, the limited consumption of conventional energy (mainly for water pumping, agriculture, the domestic sector, and services), and the modest market where renewable energy can help to provide the necessary modern energy services to rural areas for purposes such as water pumping.

This requires finding a local funding mechanism to facilitate and encourage the use of renewable energy technologies, with the adoption of capacity-building programs, the implementation of pilot projects, and raising public awareness.

(b) In the second paper, Mohammad Hajroon from the Ministry of Energy, Mines, Water and Environment of Morocco gave a presentation on “Rural Electrification: The Moroccan Experience.” The presentation included an overview of the history of rural electrification programs in Morocco from 1975 until 2012, where the percentage of supply of modern energy services reached nearly 98 percent of the rural population. These programs include financial incentives, and are based on cooperation between the National Electricity Office and the local authorities. The implementation of a number of pilot projects has contributed to building local capacity and improving the living conditions of the rural population. Thus, these programs have had a positive impact on economic and social development and job creation in rural areas.

(c) In the third paper, Tarek AlBarakati from the Tunisian National Agency for Energy Efficiency (ANME) gave a presentation on renewable energies in the Tunisian countryside. The presentation included information on energy sector policies and the institutional situation in general, and the status of renewable energy and energy efficiency in terms of legislation, policy stimulus, tax breaks and programs. It also highlighted the most important renewable energy future plans in cooperation with the private sector.

(d) In the fourth paper, Amina AlJaawini of the NREA in Egypt gave a presentation on wind energy and community development in the Egyptian desert. The presentation included information on the existing wind farms (with a 550 MW capacity) on the Red Sea coast, and its impact on development in desert areas in terms of establishing new urban clusters, provision of basic services and job creation, as well as an overview of wind power projects under construction and plans to implement them through public investment or participation from the private sector to increase capacity to 7,200 MW by 2020.

12. Interventions focused on policies to stimulate the use of renewable energy for electrification in Tunisia and Morocco, where partial [financial] support is provided [to cover] the cost of the systems used by citizens. Some national plans on the use of renewable energy in electricity production in Tunisia, Egypt, and Morocco are funded through public budgets and some renewable energy funds, and others by some European countries and financial institutions, while allowing the participation of the private sector.

D. FUNDING AND PARTNERSHIPS BETWEEN THE PUBLIC AND PRIVATE SECTORS TO SECURE ENERGY SERVICES IN RURAL AREAS

13. Three papers were presented on this topic.

(a) In the first paper, Mark Drake from the United Nations Industrial Development Organization (UNIDO) gave a presentation on renewable energy applications in rural areas and the industrial sector. He offered the organization’s point of view on the contribution of energy-efficient technologies in the industrial sector, and the role of renewable energy technologies [to build] a low-carbon economy and mitigate climate change. There are renewable energy applications suitable for isolated areas, whereby nanomaterials can be used in local networks and systems to provide energy services in remote and rural areas. There have been successful examples of such applications in Zambia. Solar energy applications can also be used in manufacturing and water heating. The global market size is expected to reach about 500 GW [of solar thermal capacity] in 2017.

(b) In the second paper, Assad Bakkar, an energy consultant in France, gave a presentation on photovoltaic cell systems: milestones and energy production through the public and private sectors. The presentation included an overview of the uses of [photovoltaic] cell systems in the world and its technologies, information on the cost of isolated systems connected to the network/power grid, the global market outlook for photovoltaics.

(c) In the third paper, Walid Deghaili, Energy Section chief at ESCWA, gave a presentation on the importance of funding and partnerships between the public and private sectors to provide energy services in rural areas in the ESCWA region. Deghaili discussed the characteristics of the energy sector in the ESCWA countries, noting that the issues of poverty and energy security are a challenge to achieving the Millennium Development Goals (MDGs). He stressed the key role of partnerships between the public and private sectors in renewable energy deployment in rural areas to achieve sustainable development through the implementation of successful projects that can attract more private investments to the countryside. He cited case studies on Egypt, Morocco, Saudi Arabia, and Tunisia, noting that there is no single formula on how to implement partnership projects. [He said that] governments should use a tool for assessing the performance of projects; benefit from successful practices in countries with similar circumstances; recognize the importance of good governance and legislative stability, and the application of established and firm policies to ensure transparency and confidence in order to create an energy market in rural areas; consider converting part of the support for fossil fuels to renewable energy projects, research and development; promote regional and international cooperation; and limit the provision of support to the poor segments.

14. Interventions focused on partnership policies between the public and private sectors. Each country has its own legislation, and gives the public sector an authority on decision-making, legislation, and policy development with the adoption of policies supporting traditional energy that cannot be easily changed. There is also the problem of directing Arab investments abroad despite the need for them in the Arab region. This situation can be addressed through good governance, and attracting Arab capital for investments in the field of renewable energy.

E. CONCLUDING OBSERVATIONS OF THE REGIONAL WORKSHOP

15. Participants expressed interest in the issue of adopting a common framework to attract Arab investments in the field of renewable energy, reviewing conventional energy support policies, and implementing structural reforms in the electricity sector to facilitate the entry of the private sector in this field. The goal is to reduce the burden of implementing rural development projects on governments, facilitate the transfer of technologies appropriate for the environment, locally manufacture some equipment, and exchange information on successful practices. It has been proposed that ESCWA be the communication and discussion channel in this regard.

II. THE INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY FOR DEVELOPING COUNTRIES

16. ESCWA, along with the Lebanese Association for Energy Saving and for Environment (ALMEE), a number of Lebanese universities, and European bodies, participated in organizing the International Conference on Renewable Energy for Developing Countries, which was held in Beirut on 28 and 29 November 2012. The aim of the conference was to benefit from international experiences in the field of renewable energies at the economic and scientific levels; discuss innovative scientific solutions that can be adopted by developing countries; offer feasible methods to invest in renewable energy; exchange views on laws and procedures that facilitate the increased use of renewable energy; and draw conclusions from case studies and successful programs implemented in this area in some countries, with a focus on renewable energy technologies, and energy conservation and efficiency procedures.

17. The international conference opened with statements by representatives of the organizing bodies. They stressed the importance of the event, which covers research, technical, institutional, economic and political aspects. The conference was attended by researchers and research teams from more than 25 countries from all over the world. It addressed the status of renewable energies in the world, the most recent scientific findings, and the potential to benefit from these energies in developing countries in general, and Arab countries in particular. More than 50 research papers, selected by a scientific committee comprising over 60 researchers, were presented at the conference. The papers addressed various scientific research topics related to renewable energy, including solar energy, wind energy, hydropower, biomass, and geothermal energy.

The conference saw heavy attendance and drew great attention from representatives of scientific bodies. It was also attended by the participants in the regional workshop organized by ESCWA on the day before the opening of the conference.

18. The conference included extensive discussions and presentations on various aspects of renewable energy. They were given over six parallel sessions and four plenary sessions by experts in the topics of discussions. The conference focused on the following main points:

(a) Solar and geothermal energy: papers discussed solar radiation estimates, the effect of shadow and different connections on the maximum capacity of photovoltaic panels, grid-connected photovoltaic power systems, isolated PV systems in remote areas, concentrated solar thermal technologies for electricity production, the technology of solar heating and cooling, and the potential use of hot water heat energy in the ground;

(b) Wind energy: papers discussed the impact of wind farms when connected to electrical grids, wind resource assessment, locating wind turbines, and isolated wind systems;

(c) Biomass technologies and the potential for the production of biogas and hydroelectric generation;

(d) Distributed generation systems: papers discussed wind/solar systems, multihybrid systems in isolated areas, and fuel cells technology and its applications;

(e) Energy efficiency in electrical grids and buildings;

(f) Energy management and planning, renewable energy policies, and education policies.

19. Interventions focused on the technical and economic aspects for the use of PV system technologies and solar thermal systems, choosing the appropriate locations, the impact of grid-connected wind farms on the stability of the network, the performance of wind turbines in terms of power curve and average wind speeds, and energy efficiency procedures in buildings.

20. The conference was an important opportunity to hold discussions and presentations, and to learn the latest scientific and technical developments in the field of renewable energy and energy efficiency. The main focus of the attendees was on mature renewable energy technologies, commercial deployment, and efficiency. Due to the success of the conference, the organizing committee decided to hold it periodically. The second conference will be held in the second half of the year 2014 (you can visit the conference website: www.redec2012.ressol-medbuild.eu/).

III. ORGANIZATION OF WORK

A. PLACE AND DATE OF THE WORKSHOP

21. The Regional Workshop on Strengthening South-South Cooperation and Partnerships Between the Public and Private Sectors in Renewable Energy Projects for Rural Development in ESCWA Member Countries, organized by ESCWA in cooperation with ALMEE, was held on 27 November 2012 at ESCWA headquarters. On the following day, of the workshop, the International Conference on Renewable Energies for Developing Countries was held in Beirut, on 28 and 29 November 2012.

B. OPENING

22. The workshop opened with a speech by Walid Deghaili, Energy Section chief at ESCWA. He touched on the issue of energy poverty in rural and remote areas, which include a large proportion of the population in the Arab region. This shortage is one of the major challenges to achieving economic and social development. The lack of modern energy services leads to a perpetual cycle of poverty in most of these

areas, further desertification, degradation of agricultural land, shortage of health and education services, the difficulty to secure food, and high unemployment rates. Renewable energy sources, which are abundant in ESCWA member countries, can contribute to the rural development system. This requires national action programs, which include policies, legislation, and institutional frameworks to create the appropriate environment to attract private sector investments in this sector. In the context of responding to member countries over issues and areas of national and regional importance, ESCWA organized workshops and activities designed to promote renewable energy applications that can help improve energy services, alleviate poverty, and mitigate climate change.

C. ATTENDANCE

23. The workshop was attended by experts from ESCWA member countries representing bodies concerned with renewable energies in ministries of energy, electricity, planning, and environment; in centers for research, planning, and energy control; the private sector and consulting firms; and international associations and organizations working in the field.

D. EVALUATION

24. The ESCWA team distributed evaluation forms to the participants in the regional workshop. The questionnaire results were as follows: (a) The objectives of the workshop were achieved to a large extent (96 percent); (b) (100 per cent) of participants said that the organizational arrangements before and during the workshop were good and very good; 88 percent of respondents said that the presentations were clear; (c) Approximately 80 percent of participants said that the workshop was a good and very good opportunity for exchanging information; about 68 percent of participants said that the workshop was useful in terms of establishing new and useful business contacts; and 72 percent of participants said that the workshop was good and very good in terms of allowing [different parties] to benefit from its results; (d) 91.3 percent of respondents requested follow-up activities to the workshop. Details of the evaluation are included in Annex II to this report.

Annex I*

LIST OF PARTICIPANTS

A. ESCWA MEMBER COUNTRIES

Kuwait

Mr. Adel Abdel Majid Mohammed Hussein
Director of the Department of Building
Technologies and Energy - Energy Group
Kuwait Institute for Scientific Research (KISR)
Kuwait

Mr. Saad Salem AlJandal
Associate Research Scientist
Department of Building Technologies and Energy
- Energy Group
Kuwait Institute for Scientific Research (KISR)
Kuwait

Tunisia

Ms. Jawdat Bou Aatour
Consultant / Tunis, Tunisia

Mr. Tarek Bin Ali AlBarakati
Department Head
National Agency for Energy Control
Tunis, Tunisia

Morocco

Mr. Mohammad Hajroun
Head of Rural Electrical and Kahrama'a
Equipment
Ministry of Energy, Minerals, Water and
Environment
Rabat, Morocco

Mr. Toufik Laabi
Director of Strategy and Planning
National Bureau of Electricity and Drinking
Water
Casablanca, Morocco

Egypt

Mr. Mohammad Adel Ali Mohammed Younis
Director of the Mechanical and Electrical
Research Institute
National Center for Water Research - Mechanical
and Electrical Research Institute

Mr. Mohammad Ali Hilal Ibrahim Cherif
Full Time Professor
National Center for Water Research – Mechanical
and Electrical Research Institute

Mr. Mohammad Jalal Abdel Hamid Othman
Othman
Vice President
Global Wind Energy Association

Mr. Salah Hassan Sayed Abu Aouf
Director General of the Department of
photovoltaic Cells
The New and Renewable Energy Authority

Ms. Omnia Ahmad Hafez Ibrahim AlJaawini
Head of Projects
The New and Renewable Energy Authority

Libya

Mr. Mohammad Ali Mohamed Ekhlat
Undersecretary of the Ministry of Electricity and
Renewable Energy

Sudan

Mr. Yasser Abdallah Saiid AlHajj
Director of Renewable and Alternative Energy
Ministry of Electricity and Dams - Ministry of
Water Resources and Electricity

Oman

Mr. Ahmad Bin Saiid AlHarithy
Senior Manager of Regulatory Affairs and
Support Services in the Rural Areas Electricity
Company

Yemen

Mr. Ahmad Hassan Al Ayni
Undersecretary
Ministry of Electricity

* Issued as submitted.

Iraq

Eng. Mr. Ali Abdel Aziz Majid AlSaudi
Member of the Committee on Energy ESCWA
(Eighth Session)
Chemical Engineer / Industrial Planning Office
Ministry of Planning

Lebanon

Mr. Joseph Al Assad
Energy Expert
Advisor at the Lebanese Center for Energy
Conservation
Ministry of Energy and Water

Mr. Wassim Sader
Mechanical Engineer (Power Generation)
Électricité Du Liban (EDL)

Mr. Albert Khoury
Beirut, Lebanon

Consultants

Mr. Raffic Missawi
Manager
ALCOR
Tunis, Tunisia

Mr. Assaad Bakkar
Undersecretary of the Ministry of Electricity and
Renewable Energy
Energy Advisor
France

Luis-Carlos Miró Baz
Policy Officer
Alliance for Rural Electrification
Renewable Energy House

Mr. Ali Hajjar
Engineer
Ecole de Mines
France

Mr. Jad Jaber
Engineer

Mr. Hassan SHUKOR
Engineer
Ecole Polytechnique Fédérale de Lausanne

Mr. Menouer Boughedaoui
Consultant/ Professor

United Nations Industrial Development Organization (UNIDO)

Mr. Mark Draeck
Renewable and Rural Energy Unit
Energy and Climate Change Branch
Programme Development and Technical
Cooperation Division.

Ms. Nada Sabra
National Programme Coordinator of Montreal
Protocol Activities & Environment Matters in
Jordan, Lebanon and Syria

Lebanese Association for Energy Saving and Environment (ALMEE)

Mr. Hassan Jaber
Vice President, ALMEE

Mr. Emilio Matar
ALMEE

B. ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)

Mr. Walid Deghaili
Sustainable Development and Productivity Division
(ESCWA)
Chief, Energy Section

Mr. Mongi Bida
First Economic Affairs Officer
Sustainable Development and Productivity Division
(ESCWA)
Energy Section

Ms. Bothayna Rashed
Economic Affairs Officer
Energy Section
Sustainable Development and Productivity Division
(ESCWA)

Mr. Philip Schutt
Consultant
Economic Development and Globalization Division
(ESCWA)

Ms. Lara Geadah
Research Assistant
Energy Section
Sustainable Development and Productivity Division
(ESCWA)

Ms. Noha Ziade
Administrative Assistant
Energy Section
Sustainable Development and Productivity Division
(ESCWA)

Annex II

EVALUATION SUMMARY

(a) The objectives of the workshop in terms of:

	Unfulfilled	To some extent	Acceptable	To a large extent
Achievement of objectives	(0%)	(4%)	(60%)	(36%)

(b) Arrangements and presentations:

Organizational arrangements before and during the workshop	(0%) bad	(0%) fair	(41.7%) good	(56.3%) very good
Clarity of the presentations	(4%) bad	(8%) fair	(52%) good	(36%) very good

(c) Feasibility of the workshop in terms of:

Exchanging information between participants	(4%) bad	(16%) fair	(52%) good	(28%) very good
Establishing new and useful business contacts	(4%) bad	(28%) fair	(36%) good	(32%) very good
Future benefits	(0%) bad	(28%) fair	(52%) good	(20%) very good

(d) Follow-up request

Follow-up activities of the workshop	(91.3%) yes	(8.7%) no
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