



# NERC

## The National Energy Research Center



### NERC Activities 2017-2018



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## Science for Peace: A Message from HRH Princess Sumaya bint El Hassan



Science for Peace: A Message from HRH Princess Sumaya bint El Hassan

<https://www.youtube.com/watch?v=jkb1jtZj2Lw&t=4s&fbclid=IwAR2-x4wNhXJfjCqbB-tR-I9xJi2uegscR-HKfruk7sr1ggux3EEaBsayZIs>





## About RSS

The Royal Scientific Society touches the lives of many Jordanians through its work and impacts the future of Jordan through its research and collaboration.

Born out of the great hearts and spirit of His Majesty the Late King Hussein and HRH Prince Hassan in 1970, the Royal Scientific Society (RSS) aims to be the knowledge leader for science and technology locally and regionally. The RSS uses excellent scientific and engineering research to power economic development and social progress.

HRH Princess Sumaya bint El Hassan serves as the President of the Royal Scientific Society and is greatly recognized for her work in promoting various scientific endeavors on a local and international level.

The Royal Scientific Society is the largest applied research institution, consultancy, and technical support service provider in Jordan and is a regional leader in the fields of science and technology.



## RSS launched its New Brand Identity starting 1/1/2019

### What We Do

Supported by more than 500 science specialists, researchers, technical support staff, highly skilled management, and faculty, the RSS has become recognised as a local, regional and international research and development hub.

RSS provides expert testing services via 38 specialised locally and internationally accredited laboratories and prides itself on offering both the public and private sectors a unique scientific resource and a wide range of project expertise.

## About NERC

The National Energy Research Center (NERC) which is part of the Royal Scientific Society (RSS) has been established in Amman for the purposes of **research, development, training** in the fields of **new and renewable energy** and raising the standards of energy use in the different sectors and to promote the utilization of renewable energy in Jordan.

The main goal of NERC is to ensure energy efficiency conditions in the relevant sectors (industry, buildings) and support the relevant market key actors as also energy consumers in reducing overall energy consumption.

## Vision

As part of the Royal Scientific Society, our vision is to become a unique center on the national and regional levels, with high credibility and good reputation among both private and governmental institutions.

## Mission

Conduct applied research, provide services, implement projects, prepare technical & financial studies and provide consultations in the field of renewable energy and improving the efficiency of energy use in the local economy and foster cooperation and communication with both the public and private sectors.

## Services

NERC has four specialized departments which carry out technical work and implement projects:

- Energy Efficiency & Solar Thermal Division
- Photovoltaic Division
- Wind Energy Division
- Oil Shale & Bio-Energy Division

## Laboratories

In addition, NERC has five specialized RE/EE testing laboratories as follows:

- Lighting Testing Lab
- Photovoltaic System Testing Lab
- Washing Machines Testing Lab
- Air Conditioners testing Lab
- Refrigerators Testing Lab
- Solar Thermal Testing Lab

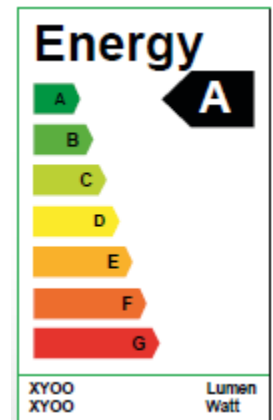
## Laboratories

### Lighting Testing Laboratory

#### First accredited lab in Jordan for testing energy efficiency class for lamps

The lab is accredited according to Jordanian Technical Regulation 2092: Energy efficiency labeling of household electric lamps.

The lab is capable of testing and verifying energy efficiency class of lamps by measuring luminous flux and input power parameters. The energy efficiency of the lamp is rated in terms of a set of energy efficiency classes from A to G on the label; A being the most energy efficient, and G the least efficient.



The lab is capable of testing the following lamp types:

- Double capped fluorescent lamps
- Single capped fluorescent lamps
- Tungsten halogen lamps
- Tungsten filament lamps
- Self- ballasted LED lamps
- Self -ballasted lamps



The lighting testing lab performs tests on lamps according to the following standards:

- JS EN 60081: Double-capped fluorescent lamps - Performance specifications
- JS EN 60901: Single-capped fluorescent lamps - Performance specifications
- JS IEC 60969: Self-ballasted lamps for general lighting services - Performance requirements
- IEC 60064: Tungsten filament lamps for domestic and similar general lighting purposes – Performance requirements
- IEC 60357: Tungsten halogen lamps (non-vehicle) – Performance specifications
- IEC 62612: Self-ballasted LED lamps for general lighting services with supply voltages > 50 V – Performance requirements
- CIE 84: Measurement of Luminous Flux
- CIE 127: Measurement of LEDs
- CIE S 025: Test Method for LED Lamps, LED Luminaires and LED Modules
- CIE 121: The Photometry and Goniophotometry of Luminaires
- JS 2092: Energy efficiency labeling of household electric lamps

## Photovoltaic System Testing Laboratory

Photovoltaic Laboratory is the first laboratory from its type to provide tests and assessments on Photovoltaic modules in Jordan. The laboratory is funded by the European Union.

The laboratory's instruments are:

 <p>Figure 1: LED SUN SIMULATOR</p>	 <p>Figure 2: LED SUN SIMULATOR OUTPUT</p>	 <p>Figure 3: ELECTROLUMINESCENCE TESTER (EL TEST)</p>
 <p>Figure 4: EL TEST OUTPUT</p>	 <p>Figure 5: SOLAR PV SIMULATOR</p>	 <p>Figure 6: UTILITY GRID SIMULATOR</p>
 <p>Figure 7: Solar Installation Test Kit</p>	 <p>Figure 8: Solar Path Finder</p>	 <p>Figure 9: High Voltage Insulation Kit</p>
 <p>Figure 10: Infrared Camera</p>	 <p>Figure 11: DC &amp; AC Power Analyzer</p>	 <p>Figure 12: IV Curve Tracer</p>



## Energy Labeling Laboratory

The **Energy Labeling Laboratory** was established in response to the issuance of Energy Label Technical Rules and Eco-design regulations for household appliances by Jordan Standards and Metrology Organization (JSMO).

**The Energy Labeling Laboratory** is accredited according to Jordan Association System, and adheres to Jordan Institution for Standards and Metrology specifications that ensures testing of the household appliances is according to Jordanian standards.

**The Energy labeling Laboratory consists of three laboratories:**

### 1- Washing Machines Lab

The purpose of this lab is to evaluate the energy efficiency level of Washing Machines in accordance with EU-Standard EN 60456 and Jordanian Technical Regulation 2104:2013 as well as SASO, so it would WM performance characteristics that represented in energy labeling and Eco-design requirements; **EEI, AEC, AWc, Rinsing performance, RMC, Spin Speed.**

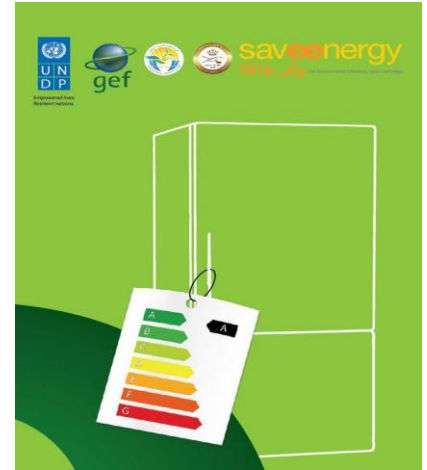
### 2- Air Conditioners Lab

The purpose of this lab is to evaluate the needed parameters for energy efficiency label of air conditioners according to EUROPEAN STANDARD: EN 14511 & EN 14825, and Jordanian Technical Regulation 2108:2013 about Energy labeling of air conditioners, so it can measure the following parameters: **EER, COP, SCOP, SEER.**

The steady state heating or cooling capacities determined using the calorimeter method shall be determined with a maximum uncertainty of 5 %.

### 3- Refrigerating Appliances Test Lab

The purpose of this lab is to measure the energy consumption of refrigerating appliances under specified test condition. Through condition test according to standard (BS EN 62552) and Jordanian Technical Regulation 2101:2013, so it can measure the following parameters: **Energy consumption, Testing storage temperature, Energy Efficiency Class (EEI).**



## Solar Thermal Lab

Solar thermal lab is located in the royal scientific society and was built in 2017. The main target of building this lab is to carry out the thermal performance of solar collectors and solar water heater system and also to test the durability of solar water heater parts. The lab is now ready for carrying out the tests according to the following internal standards:

1. EN\_12976-2(2006)
2. ISO 9806-2013
3. ISO 9459 (2 to 5)

The above mentioned test standards cover all requirements of SHAMCI quality mark for Arab countries.



## Awards

### NERC Project wins the 2016 Energy Global National Award for the best environmental project in Jordan



A recycling system that converts animal manure into energy and heat sources has been awarded the 2016 Energy Global National Award for the best environmental project in Jordan.

Developed by the National Energy Research Centre (NERC) of the Royal Scientific Society, the project on a farm in Irbid uses cow manure to produce biogas through anaerobic digestion. The digester mixes manure with warm water, which is heated by a thermal system, to generate biogas and fertilizer, according to the website for the awards, which are granted by the Austrian Energy Globe Foundation

Some of the biogas is used to generate electricity, and the rest is used as thermal energy for the stove.

The project seeks to treat animal waste in farms and to develop a new source of energy for livestock breeders, with the vision of replicating the system, in partnership with the concerned ministries, so that other livestock breeders can transform waste into sources for electricity and heat.

The overall cost of the project is around JD 6,000, noting that the project has a lifespan of 25 years.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=160>



## RSS Wins Two Prizes from Al Hussein Fund



The Royal Scientific Society won two awards from Al Hussein Fund for Innovation and Excellence for the year 2016.

The Water and Environment Center at the Royal Scientific Society won the first prize of Al Hussein Award for Environmental Innovation and Excellence for the project "Aquaculture on the Roofs: A New and Innovative Approach to Food Security in Urban Areas" implemented by Eng. Mohamad Ahmad Mashatleh.

The second prize was awarded to the National Energy Research Center (NERC) with half of Al Hussein Award for Innovation and Excellence in Alternative Energy for the project "Innovation Promotion in the Mediterranean Region through the Development of Innovative Models using High Technology to be applied on small and medium-sized enterprises - Fostering Solar Technology in the Mediterranean Area". The project was carried out by the project team engineers; Eng. Shaker Hammad, Eng. Dyala Haddad, Eng. Hazem Assi, Eng. Saif Abu Bakr, Eng. Sahel Bani Moustafa, Eng. Rashed Manna and Eng. Abeer Arafat.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=165>



## Agreements

### Agreement with Armoush Tourist Investment Co. ATIC McDonald's Jordan



Armoush Tourist Investment Co. ATIC / McDonald's Jordan has signed an agreement for engineering, procurement, construction, commissioning, start-up, and 10-year operation & maintenance of a 4402 kWp wheeling photovoltaic plant with Spectrum International for Renewable Energy on November 26, 2018 which will be built in Jalad, As-salt in order to cover the consumption of 26 branches in the middle governorates of Jordan under JEPCO's jurisdiction. The agreement was signed by Mr. Ahmad Armoush, Chairman of ATIC and Dr. Tarik Arikat, CEO of Spectrum in the presence of Eng. Walid Shahin, Director of the National Energy Research Center/ Royal Scientific Society "NERC/RSS". It is worth mentioning that ATIC has signed a consulting services agreement with NERC/RSS in April 2017 to take advantage of NERC/RSS experience in preparation of project financial models, tender documents, engineering designs review and installation process supervision.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=2167>



## Agreement with JREEEF for implementing the schools heating program



The National Energy Research Center/ Royal Scientific Society signed an agreement with the Jordan Renewable Energy and Energy Efficiency Fund - JREEEF to implement the second phase of King Abdullah II Initiative to heat 35 schools and enhance the energy efficiency with a total budget of One Million Jordanian Dinars.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=159>

## Agreement with private sector companies for implementing the schools heating program



In response to King Abdullah II initiative for heating public schools, and providing a proper learning environment for students;

The Royal Scientific Society / National Energy Research Center (RSS/NERC) signed two

agreements on April 24, 2018 with the private sector as part of the “Schools’ Heating Program” implemented by the Jordan Renewable Energy & Energy Efficiency Fund (JREEEF) to conduct required measures for improving energy efficiency and use of renewable energy for heating 58 public schools in the cooler regions of the Kingdom including the Central, Southern and Northern regions using solar energy.

An agreement was signed with Ezzat Marji Group to implement the project in the schools of the Northern and Central Regions, and another agreement was signed with Green Tech in the coalition with Ahmed Yousef Tarawneh and his partners company to implement the project in the schools of the Southern Region.

The National Energy Research Center conducted detailed energy audits for the selected schools to raise their energy efficiency and upgrade their existing energy systems including the lighting and fire systems, as well as for the development and improvement of the building Envelope through general maintenance and thermal insulation. The studies also included the use of renewable energy resources for electricity generation and water heating. A detailed study for the installation of energy-saving air conditioning systems (inverter technology) was carried out to heat the schools effectively and permanently, and for the installation of control systems for air conditioning and solar systems.

The National Energy Research Center (NERC) as a consultant for the project has prepared the tender documents, and conducted the solicitation and evaluation process for all the offers received by qualified energy contractors to implement the required measures and procedures to improve energy efficiency and renewable energy.

It is worth mentioning that the National Energy Research Center supervises the implementation of energy efficiency and renewable energy measures in 150 schools within the frame of other programs.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=163>



## Agreement with King Hussein Business Park for Electricity Generation Using Photovoltaic Solar Panels



The Royal Scientific Society / National Energy Research Center (NERC) signed an agreement with King Hussein Business Park, by which NERC will provide consultancy and supervisory services for the electricity generation project to cover the Business Park demand utilizing photovoltaic solar panels. NERC will prepare the technical studies for KHBP electricity generation project using photovoltaic solar panels in light of the current and forecasted electricity demand. NERC will also study and advise on the proposed sites/locations and their suitability for the installation of the PV system, prepare the feasibility study and determine the electrical supply generated by the PV system, in addition to determining the requirements and recommendations for supporting electricity sources. The agreement was signed by Eng. Soud Soror, CEO of the King Hussein Business Park and Eng. Walid Shaheen, Director of the National Energy Research Center.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=157>





## Agreement with the Ministry of Public Works for Street Lighting Measurements



The National Energy Research Center (NERC) has signed a contract with the Ministry of Public Works to do measurements of road lighting and test the degree of luminance protection of LED lights on 7/1/2018.

NERC has carried out appropriate tests of illuminance and luminance to more than 37 roads in Jordan, using the latest equipment from KONICA and according to international standards.

And that the degree of protection (IP) was examined in collaboration with the Middle East Company for Laboratory Testing and Technical Services of the Royal Scientific Society.

## Agreement with the Ministry of Environment for Solar-Powered Pumping Project (EU Project)



RSS/NERC and the Ministry of Environment are currently developing and executing solar-powered pumping project for the agricultural sector in Jordan. The project aims to adopt energy conservation and renewable energy practices in 300 farming units located in Jordan valley (200 units) and High-lands “Mafraq, Azraq, Madaba” (100 units) not only to reduce those units’ dependence on the conventional types of energy but also to assist Jordan in achieving its energy strategy targets.

As part of the development process, RSS/NERC had performed energy assessments for 350 farming units - in close collaboration with Water Authority of Joran and Jordan Valley Authority to select the targeted 300 units where the selection process relied on clear and specific criteria for both the valley and High-lands’ units.

It is worth mentioning that this project is fully funded by the European Union through the Renewable Energy and Energy Efficiency Program II and will be fully executed by July 2019 through the following stages:

- 46 Photovoltaic systems in Jordan valley and southern Ghour area
- 166 Photovoltaic systems in Jordan valley and southern Ghour area
- 106 Photovoltaic systems in the highlands

## International Projects

### MINARET Project 2016-2020



The MENA Region Initiative as a Model of NEXUS Approach and Renewable Energy Technologies (MINARET) aims to come out with a NEXUS model that can be applied at municipal level in the MENA region countries. It is the first Project in the region that utilizes a NEXUS approach to find sustainable solutions to the unique water, energy and food security challenges that face each of the countries from a local municipal level. Stakeholders from all around the region discuss and plan together how to overcome the increasing constraints their countries and the region faces through fundamentally rethinking how we produce and consume energy in relation to the water and food sectors.

The 4-year project kicked off in the first quarter of 2017 to be implemented in Jordan, Tunisia and Lebanon.

The project partners include the Royal Scientific Society/National Energy Research Center (RSS/NERC)-Lead partner, the International Union for Conservation of Nature (IUCN) and Future Pioneers for Empowering Communities (FPEC), and is funded by the Swedish International Development Cooperation's (SIDA).

Launching of the project took place in Jordan, Lebanon and Tunisia during February and March 2017, to introduce the project's overall objectives and components, inform stakeholders, governmental entities and partner organizations about the purpose of the MINARET project, expected results, phases of implementation, and the greater effect they will have on their communities on both small and large scales.

The first year of the project focused on studies, data collection, needs assessment, consultation meetings, focus group meetings and workshops with all partners and stakeholders to collect information and build a clear framework that help coming out with the required baseline.

#### **MINARET Activities in One Year:**

<https://www.yumpu.com/en/document/view/61729208/minaret-in-one-year>



## MEDA Agreement – Jordan Valley Links Project 2018-2020



Under the patronage of HRH Princess Sumaya bint El Hassan, in presence of Global Affairs Canada's representative Mr. Diya al-Fadel, MEDA's Jordan Valley Links Project. Funded by Global Affairs Canada signed a partnership agreement with a consortium led by the Royal Scientific Society/ **NERC (National Energy Research Center)**. This consortium brings together unique expertise of research **NERC (National Energy Research Center)**, development organization (Future Pioneers) & private sector (GreenTech Company) to build capacity and promote women and youth as clean tech entrepreneurs.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=166>

### Shots from Signing Ceremony:

<https://www.youtube.com/watch?v=pVqGFW3XjQc&feature=share>





## MEDA - Jordan Valley Links Activities



NERC participated in the Jordan Valley Links Project (JVL) **Technical Advisory Committee** meeting with all partners of the project with the aim to develop common understanding on the project's overall outcomes, share annual work plans, lessons learned, and explore opportunity to collaborate and create synergies for multiplier impact.

NERC participated in the Jordan Valley Links training on “**Gender Sensitization**” on **4-5 July 2018** for the partners working in the four targeted sectors. The training aims at building the capacity on Gender and gender related topics, raise their awareness on the importance of gender mainstreaming in their interventions and provide them with skills that enable them to deliver awareness messages to the clients and community members on gender issues. The training targets Project Managers, Gender Focal Points and the Field Staff.

### **Focus groups**

NERC team held focus groups' workshops with concerned parties at eight municipalities in the Jordan Valley, in coordination with the mayors of each municipality and gave them an overview about the project. Focus groups were formulated from the following municipalities: Mo'ath ben jabal, Tabaqet Fahel, Sharhabeel ben Hasna, Deir Alla Ajadeedeh, Alshouneh Alwosta, AlAghwar Aljanoubeyeh, Sweimeh, Alm'adi Aljadeedeh.



## SUDEP Project 2015-2017: Making Sahab City Green

### Sustainable Urban Demonstration Project - Green Development at Sahab Municipality

The Main Project objective is to enable Sahab Municipality in Jordan to be a pilot for the local authorities in ENPI South partner countries to address local sustainable development challenges related to energy. This will be achieved through the following specific objectives:

- Develop a local Energy Efficiency & Renewable Energy Plan for Sahab Municipality to transform it into a green municipality and reduce CO2 emissions in different sectors
- Promote and implement energy efficiency, energy savings & renewable energy measures at Sahab Municipality buildings as replicable pilots for other municipalities in Jordan
- Introduce energy efficient technologies such as indoor and outdoor efficient lighting bulbs and gear
- Build capacities of employees of Sahab Municipality in the field of sustainable energy
- Raise public awareness of the general public and relevant stakeholders and involve them in finding solutions for the energy sustainability in line with National Energy Strategies
- Enable Sahab to become a model Municipality through joining the Covenant of Mayors and through implementing energy efficiency demonstration pilots at their buildings such as cultural centre, stadium, schools, masjids and bus stations

#### Some of the achieved results:



Sustainable Urban Demonstration Projects – SUDEP South  
Support Mechanism  
A project Funded by the European Union



Sustainable Urban Demonstration Projects – SUDEP South  
Support Mechanism  
A project Funded by the European Union

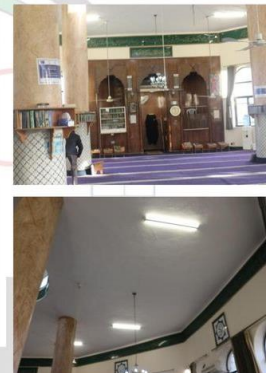


#### Media Campaign

- ❖ 200,000 (SMS) to Sahab have been sent to Sahab Citizens that includes awareness texts
- ❖ 1,000,000 e-mail have been sent to promote Sahab project
- ❖ 2,000 DVDs of an interactive game for students about solar power have been distributed
- ❖ 10,000 stickers have been distributed that promote awareness messages
- ❖ A documentary movie have been developed
- ❖ Facebook
- ❖ Participate in talk shows such as Yum Jadeed
- ❖ Develop a T.V. spot which will be broadcasted soon on T.V. channels to promote Sahab Project.

#### SAHAB MASJIDS

- **Lighting Retrofit**
  - Oied Masjid;
  - Replacing (38) fluorescent lighting units by LED lighting units.
  - Southern Sahab Masjid;
  - Replacing (74) fluorescent lighting units by LED lighting units.
  - Masjid Al Noor;
  - Replacing (104) fluorescent lighting units by LED lighting units.
- **Saved energy so far : 3110.4 kWh**
- **Reduction of CO<sub>2</sub> : 1741.824 kg**



SWITCHMED – MED TEST II 2015-2017  
**Transfer of Environmentally Sound Technology (TEST) in the South  
Mediterranean Region – Jordan**



The SwitchMed program is funded by the European Union and implemented by the United Nations Industrial Development Organization (UNIDO) in cooperation with UN Environment Mediterranean Action Plan (UN Environment/MAP), the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC), and the UN Environment Economy Division.

MED TEST II project in Jordan has been led by the Royal Scientific Society / Water and Environment Center (WEC) in cooperation with the National Energy Research Center (NERC), in partnership with Amman Chamber of Industry (ACI), and was implemented under the patronage of the Ministry of Industry, Trade and Supply (MoITS) and the Ministry of Environment (MoEnv).

Types of services provided:

- Policy instruments and institutional capacity building
- Conduct marketing and awareness campaigns
- Develop a selection criteria of the companies and application form/questionnaire to collect the required information from the interested companies
- Recommend to UNIDO demonstration companies for final approval. Sign an agreement/contract with these companies.
- Conduct industrial assessment at demonstration companies in line with UNIDO TEST guidelines.
- Prepare training master plan and deliver on-the-job trainings to company staff and professionals from local service providers.

**Results of the TEST demonstration projects:**

Initial assessments in the 12 MED TEST II demonstration companies in Jordan showed clear potential to reduce consumption of raw materials, water and/or energy with an estimated potential of 10-20% savings on the total energy bill.

REEEP (EU Project) 2015  
**RENEWABLE ENERGY & ENERGY EFFICIENCY PROGRAM**

## REEEP®

The Royal scientific Society / National Energy Research Center (RSS/NERC) implemented the Renewable Energy and Energy Efficiency Program in buildings to reduce energy consumption costs through implementing the most proper and cost-effective energy efficiency measures & renewable energy technologies.

To achieve this goal, a cooperation agreement was signed between RSS and the Ministry of Energy and Mineral Resources where RSS/NERC was assigned to execute comprehensive energy efficiency & renewable energy audits for buildings both public and private, in order to identify the potential of energy saving opportunities and the major maintenance and design features that make these buildings more efficient and comfortable, in addition to conducting trainings for public officers on EE & RE.

The program targeted 11 buildings within the Energy Efficiency & Renewable Energy Scope:

- 1- Agricultural Credit Corporation (ACC)
- 2- Princess Sumaya University Of Technology (PSUT)
- 3- Jordan Petroleum Refinery Company (JPRC) Headquarter Building
- 4- National Petroleum Co. (NPC) Management Building.
- 5- King Abdullah University Hospital (KAUH)
- 6- Electricity Distribution Company (EDCO) Management Building
- 7- Central Electricity Generating Company (CEGCO) Management Building
- 8- Samra Electric Power Company (SEPCO) Management Building
- 9- Irbid District Electricity Co. (IDECO) Management Building
- 10-Hashemite University (HU), Faculty of Engineering
- 11-Housing &Urban Development Corporation Headquarters (HUD)

The following points summarize the core Energy Efficiency activities conducted by NERC:

- Provide complete audit results and recommendations
- Identify the overall reduction of energy use through recommended changes to systems or policies and procedures
- Identify and quantify the current and previous year utility usage and expense
- Identify the recommended energy saving opportunities
- Provide final audit report which contains all the above mentioned points



## Workshops & Training Courses

### Enforcement of Building Codes Meeting at RSS on 28/11/2018



Consultation Meeting within the IKI Project “Accelerating 0-emission building sector ambitions in the MENA region”. More than 30 participants attended the meeting representing different organizations including: Irbid Municipality, Greater Amman Municipality, Sahab Municipality, Jordan Standards and Metrology Organization, Ministry of Energy and Mineral Resources, Jordan Engineers Association, Jordan Green Building Council, Ministry of Awqaf - Islamic Affairs and Holy Places, United Nation Development Program, Housing and Urban Development Corporation, University of Jordan, EU project Manager – REEE II as well as independent engineers and RSS staff.

Presentations were given on these topics: **Jordanian Building Codes and Manuals, Jordanian Energy Codes, Sustainable Urbanization and Resource Efficiency Project**, which were followed by a discussion moderated by Dr. Adnan ElKhasawneh- Director of RSS Laboratories highlighting the following topics:

1. Jordanian Building Codes
2. Implementation of Jordanian Building Codes – Responsibility and Barriers
3. Laws, Regulations, Instructions for the Implementation of the Codes
4. Promoting the implementation of the codes – incentives, penalties

Participants have discussed the process of formulation codes, classification, update, approval, enforcement, implementation and follow-ups, in addition to integrating the efforts of all x



## Certified RETScreen® Expert (CRE) Training in October 2018



The Royal Scientific Society / National Energy Research Center held two training programs from 7-11/10/2018:

- 1- Advanced Measurement and Verification Training
- 2- Certified RETScreen® Expert (CRE) Training

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=1167>

The training was conducted by Dr. Dragos Paraschiv from the Canadian Institute for Energy Training (CIET) and attended by 28 engineers from the following institutions: Ministry of Energy and Mineral Resources (MEMR), Jordan Renewable Energy & Energy Efficiency Fund (JREEEF), Jordan Institution for Standards and Metrology, Jordanian Electric Power Company (JEPCO), Irbid District Electricity Company (IDECO), Princess Sumaya University for Technology, Center of Environment / Royal Scientific Society, National Energy Research Center / Royal Scientific Society. This training is co-funded by the projects: TECHNICAL ASSISTANCE TO THE RENEWABLE ENERGY AND ENERGY EFFICIENCY PROGRAMME IN JORDAN (REEE II-TA) funded by the EU and MINARET Project funded by Sida.



## Training on EE & RE in the Household Sector in July 2018



Energy Efficiency & Renewable Energy training in the field of household sector, was held in July between (22-26/7/2018) with total of 25 hours. The training course was presented by NERC (National Energy Research Center)/ Royal Scientific Society (RSS) for CBOs. The session was held at the Royal Scientific Society (RSS) administrative hall.

This training was held by RSS/NERC under the framework of the Sustainable Education through Renewable Energy in the Northern Governorates project, which is being implemented by Princess Alia Foundation (PAF) – the applicant, Future Pioneers for Empowering Communities (FPEC) - partner organization, and Horizons for Green Development - Partner Organization, and is funded by the Netherlands.





## Awareness Campaign on Photovoltaics Technology on 29/5/2017



Royal Scientific Society / National Energy Research Center held a training course on “Photovoltaic (PV) Awareness Campaign for Governmental Entities and Community Members” on 29/5/2017 at Movenpick, Aqaba, funded by Friedrich-Ebert-Stiftung “FES”, Amman Office.

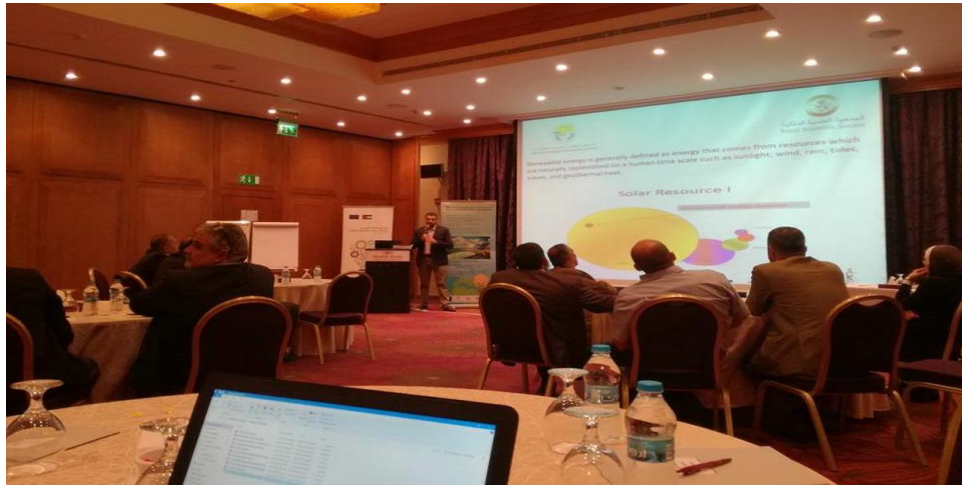
This training aims for educating and raising the awareness of the local community as well as workers in governmental entities like municipalities, Directorate of Civil Defense, Directorate of Public Security and the General Customs Department in the southern governorates of Jordan (Aqaba, Maan and Tafila) about renewable energy, energy efficiency, guidelines for maintaining the PV system and benefits for investing in this technology, and knowing about ways of benefiting from the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) funds for installing PV systems.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=158>





## One Day Training on PV Technology on 25/4/2018

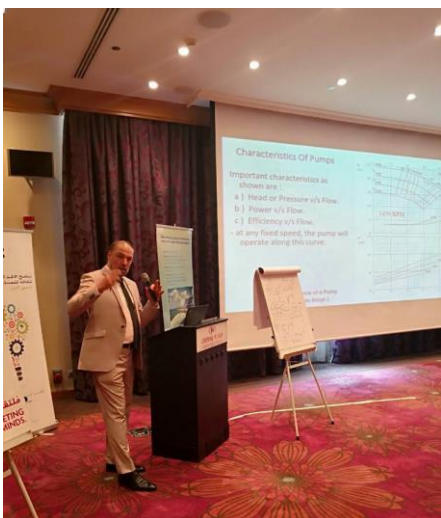


RSS/NERC and in collaboration with REEE II-TA organized a full day training about the PV technology, PV Pumping Applications, PV installation and PV Operation and Maintenance for Jordan Valley Authority “JVA” engineers and technicians on 25/4/2018 at Crowne Plaza Hotel, Dead Sea.

The training aimed to raise JVA employees’ knowledge in the RE fields “PV in particular” and to introduce the PV pumping applications and its impact on the energy consumption of farming units as well as its positive impact on the environment.

The training was facilitated by NERC Renewable Energy and Energy Efficiency experts and covered the following Topics: EE in WaterPumping, PV Technology and Installation, PV Pumping Applications, PV Operations and Maintenance, PV Construction, PV Civil Structures and PV Economics.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=164>



## NERC Conferences

First meetMED Regional Experts Network (REN) Workshop on 3<sup>rd</sup> October 2018



The Royal Scientific Society / National Energy Research Center (RSS/NERC) hosted the First meetMED Workshop on Energy Efficiency and Renewable Energy Strategies and Policies on 3<sup>rd</sup> of October 2018.

Bringing together for the first time the meetMED Regional Experts Network (REN) to present best practices and Country Policy Papers on Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia contributing to a meetMED regional report on EE and RE strategies and policies expected in December 2019.

Participants were coming from the following organizations: Portuguese Energy Agency (ADENE), The Lebanese Association for Energy Saving and for Environment (ALMEE), French Agency for Environment and Energy Management (ADEME), Italian National Agency For New Technologies, Energy And Sustainable Economic Development (ENEA), The National Agency for Energy Management in Tunisia (ANME), Regional Center for Renewable Energy and Energy Efficiency in Egypt (RCREEE), The Spanish Institute for Energy Diversification and Saving (IDAE) and The Greek Centre for Renewable Energy Sources and Saving (CRES).

The workshop took place at the campus of the Royal Scientific Society (RSS), and was organized by the Portuguese Energy Agency (ADENE), the Lebanese Association for Energy Saving and for Environment (ALMEE) and RCREEE.

## 6<sup>th</sup> MEDENER International Conference in Amman, Jordan on 4<sup>th</sup> October 2018



The Royal Scientific Society / National Energy Research Center (RSS/NERC) hosted the 6<sup>th</sup> MEDENER International Conference in Amman, Jordan on 4<sup>th</sup> October 2018.

The meetMED Workshop was followed by the 6<sup>th</sup> MEDENER International Conference on Energy Transition in the Euro-Mediterranean Region at Holiday Inn Hotel Amman on 4<sup>th</sup> October 2018.

The event was organized by the Mediterranean Association of the National Agencies for Energy Conservation (MEDENER) in cooperation with the Jordanian National Energy Research Centre (NERC) as part of the activities of the meetMED (Mitigation Enabling Energy Transition in the Mediterranean Region) project, an EU-funded project developed by MEDENER and the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE).



Representatives of the national energy agencies and departments, international organizations, investors, financial institutions and donors gathered to discuss the dichotomy between energy prices and energy efficiency policies and measures. After an in-depth analysis of the economic and political challenges related to energy prices and energy efficiency in the Euro-Mediterranean region, the conference focused on specific country studies on energy efficiency in households and in the transport sector on the one side, and to energy efficiency the industrial one, on the other side.

The 6<sup>th</sup> MEDENER International Conference provided a fruitful debate among energy experts from Mediterranean countries on major issues related to energy efficiency and prices, such as sustainable urban mobility and citizens' behavioral change, the link between fuel prices and the choice of technologies for industrial manufacturing, the concept of prosumers for the industrial sector and the possible solutions. The design of energy efficiency policies and their implementation was discussed also in contexts of limited open markets.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=1165>

See more photos:

<http://www.nerc.gov.jo/DetailsPage/NERCEN/PhotoGalleryEN.aspx?ID=1183>





First Finnish-Jordan Renewable Energy Conference under the title:  
"PROSPECTS OF RENEWABLE ENERGY INVESTMENTS IN JORDAN" in  
October 2018



RSS / NERC hosted the First Finnish-Jordan Renewable Energy Conference under the title: "PROSPECTS OF RENEWABLE ENERGY INVESTMENTS IN JORDAN" on 9-10 October 2018. With the attendance of more than 15 Finnish business and academic representatives at Princess Sumaya University for Technology, Al-Sadaqah hall. The conference was organized jointly by the **Royal Scientific Society / National Energy Research Center (RSS/NERC)**, **Karelia University of Applied Sciences**, **Finpetra project**, and **Business Finland Ltd**. This conference brings together the most relevant stakeholders of renewable energy sector from both countries to co-create joint initiatives of business, research and innovations.

<http://www.nerc.gov.jo/DetailsPage/NERCEN/NewsDetailsEN.aspx?ID=1166>

See more photos:

<http://www.nerc.gov.jo/DetailsPage/NERCEN/PhotoGalleryEN.aspx?ID=2182>



## NERC Participation at Other Conferences



Eng. Walid Shahin, director of the National Energy Research Center (NERC) / Royal Scientific Society (RSS) participated as a moderator in the panel discussion “Electrical Interconnection between Arab countries and among Europe, Africa, and Asia” in the second day for 6th Arab Union of Electricity conference which was held in the Dead Sea in Jordan on 5-6 December 2018.

Eng. Walid Shahin, Director of the National Energy Research Center / Royal Scientific Society participated on Tuesday 3<sup>rd</sup> of April, 2018 at the 6<sup>th</sup> Global Conference on Renewables and Energy Efficiency for Desert Regions (GCREEDER) that was inaugurated by HRH Prince Hamza Bin Al Hussein and organized by the faculty of Engineering at the University of Jordan, with wide international participation of professionals from the industry and academic fields. GCREEDER discusses the challenges facing the use of renewable energy in the desert, investment opportunities and applications of renewable energy used in the desert areas, in addition to the challenges facing investment in the sector.



The participation of Royal Scientific Society (RSS) in the First Conference on Environment and Development in Amman, Jordan on 6-7 November 2018.

