



Project Title: Modernising Undergraduate Renewable Energy Education:EU Experience for Jordan

Acronym: MUREE

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Deliverable Title	<i>Methodology Implementation of RE Education in JO</i>		
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A meeting was held on 24 December 2012, 8:30 am at **Princess Sumaya University for Technology**, in order to discuss DEV1.1: “Methodology Implementation of RE Education in JO” of the MUREE TEMPUS project which aims at providing a scoping and needs analysis exercise to investigate the current status quo of renewable energy in Jordan. The meeting was attended by Abdallah Al-Zoubi, Wejdan Abu-El-Haija, and Sanad Kawar from PSUT, Suhil Kiwan, JUST and Bashar Hammad, Hashemite University.

The participants agreed to commence the investigation will with desk research and prepare a survey and conduct interviews with appropriate stakeholder, focusing on all academic programmes being in offer in the field of renewable energy, actual market demands, and trends and needs as well government policies and regulations.

The meeting commenced with a discussion of the surveys that Dr. Suhil Kiwan has provided the team by email, and the feedback and comments which were sent back to Dr. Kiwan. 4 surveys were already prepared, as shown in Appendices 1-4, two targeting the renewable energy companies operating in Jordan and Europe and two targeting academic institutions involved in teaching renewable energy specialties in Jordan and Europe. During the meeting, Dr. Wejdan Abu-El-Haija suggested to have another questionnaire targeting power and energy engineers in



Jordan. The main purpose of these questionnaires is to provide proper data for the report which is going to be prepared and discussed in the Graz workshop which aims at designing 4 RE traditional courses, 2 eLearning courses and 4 remote labs. Three of the traditional courses will be offered in all partner universities in Jordan at the departmental level and 1 course will be taught as an elective at the university level since it would be difficult to offer a course as a college elective.

The purpose of the surveys was to provide an output for the design of these courses according to market and society needs.

The following was agreed upon:

- Three surveys will be prepared and interviews will be conducted by 31 December 2013:
 1. Survey targeting companies with at least a sample of 40 companies hoping to reach a sample of 30. Mr. Sanad Kawar will create a database of these companies by 10th of January 2013 and interviews will be conducted by 10 February 2013.

Two teams at JUST and MUTAH will assist in conducting these interviews in the North and South parts of the kingdom respectively.

2. Survey targeting universities which offer renewable energy programs and courses with at least a sample of 20 institutions hoping to reach a sample of 15. Dr. Bashar Hammad will create a database of these universities by 10 January 2013 and interviews will be conducted by 10 February 2013.

3. Survey targeting engineers with at least a sample of 150 companies hoping to reach a sample of 100. Mr. Feras Shadid will use the database at the Jordan engineering Association to follow up the questionnaire by 10 February 2013.

- Dr. Kiwan will take the responsibility of analyzing the results of the three surveys by 20 February 2013 and preparing the draft report by 30 March 2013.

Meeting ended at 10am.



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WP 1: Scoping and Needs Analysis

**Questionnaire 1
Current Situation and Need of Renewable Energy in Jordan Market**



Introduction

Brief introduction of the project and purpose of the interview...

1. General Information about the Organization

Organization Name	
Type of organization	(e.g. public, private, gov., NGO ...)
Contact Person & Position
Contact Details
Main Activities (Please select all those that apply to the activities of the organization)	Sales and Marketing Consulting / Engineering / Design Energy Policy Capacity Building / Training Research and Development Energy Efficiency Industrial Energy Efficiency Buildings Installations Monitoring and Measurements Fabrication / Manufacturing Production (Energy) Commercialization Distribution Solar Thermal Wind PV Geo-Thermal Bio-energy/gas Regulatory authority Others (please elaborate) ...
Number of employees	
Markets	Jordan MENA Region GCC EU Asia North America South America
Turnover (in JD)	REEE related turnover Other (specify)

2. Employees Qualifications

What is the total number (or percentage) of people working directly with REEE	
In which area of REEE do your employees work? and the (number) of professionals in each area	Sales and Marketing () Production () Installations () Finance and Business Planning () Research () Monitoring and Measurements () Inspection () Design and Engineering () Policy formulation / evaluation/ Economic studies () Capacity Buildings / Extension () Energy Audits () Others
What is the qualification and number of professionals recruited in the area of REEE in your organization?	BA/BSc. () MA/MSc. () PhD () Technical or Vocational degree Engineers () Business Adm./Economics degree() Others ()
How many employee have specialized degree in any of the REEE segments	
What kind of training do you provide to your employees in REEE?	No formalized training On-the-job training External courses, provide example e-learning Others, please elaborate
Do you have any experience with Distance Learning or Virtual labs or Remote lab?	Please elaborate

3. Labor Market

How do you recruit professionals in REEE?	Company website Direct recruiting Specialized agencies (e.g.....) From Jordanian Universities International Graduates Others
From your company experience,	

how do you rate the “availability of qualified professionals” for the REEE area in the Jordanian Labor Market?	Easily Available Occasionally available Not Available
For the type of activities your organization is conducting in the field of REEE, what are the HR professional and technical skills you find most difficult to identify in the current labor Market?	No difficulty Lack of technical expertise Lack of management expertise Lack of financial and economic Lack of qualifications in general in the area of REEE Lack of expertise in the economics and policy of REEE Others....
In terms of recruiting, what are the prospects for your organization in the REEE area in the short term (next 2 year)?	Recruit more Remain constant Negative (reduce staff) Don't know
If you plan to hire more staff, what are the target professional levels you will be considering?	Engineers (Basic Disciplines such as Mechanical, Electrical, Materials, Industrial, Chemical, Mechatronics) Engineers (with specialization in REEE) Multidisciplinary qualifications Technicians / vocational qualifications R&D staff Sales and Marketing Others

4. Training needs

Do you offer training to your employee in REEE?	Yes	No
Do You prefer in-house training?	Yes	No
If there are training programs at the Universities, are you willing to train you staff there?	Yes	No
Most effective long-life learning techniques in RE field are	Seminars tutorials Workshops Shorts courses Online courses Professional certificates	
With regard to the type of activities your organization is conducting in the field of REEE, what are the HR	Design Modelling Simulation	

<p>competencies / expertise you find most important for the growth of your business?</p>	<p>Analysis Installation Maintenance Troubleshooting Energy Auditing Hybrid Systems Smart Grid Others, Specify</p>
<p>With regard to the wider application of REEE in Jordan, what are the HR competencies / expertise that are needed and currently missing from the local labor market?</p>	<p>Design Modelling Simulation Analysis Installation Maintenance Troubleshooting Energy Auditing Hybrid Systems Smart Grid Others, Specify</p>
<p>With regard to the wider application of REEE in Jordan, in what REEE topics the HR expertise are needed the most for the local labor market?</p>	<p>Solar Energy; thermal application Solar Energy; PV systems design and simulation Solar Energy; controllers design Solar Desalination Wind Energy; techno-economic field Wind Energy; design and simulation Biogas Biomass Hydro power Ocean Energy Wave Energy Tidal Energy Hydrogen Production by RE RE Energy Storage Socio-economic field RE Energy Management Others, specify</p>

5. When carrying out your activities in the field of REEE, are there recurring difficulties in the dialogue/communication with other stakeholders / actors? If yes, what kind of professional profile could improve this dialogue?



Appendix 2: Questionnaire 2, Teaching, experimental and management facilities in the Jordan universities



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WP 1: Scoping and Needs Analysis

**Questionnaire 2
Current Situation and Need of Renewable Energy in Jordan**



To be filled by each of the **partner** Universities in Jordan. Non-partner Universities may skip parts 1 and 6.

1. Faculty and Research staff working in REEE area:

In the following table, please fill in the names, rank and areas of interest of current research and teaching staff currently working directly or indirectly within REEE area (if you need more space use the back of the form):

Name	Academic Rank	Area of Specialization within RE	Teaching Activities (courses)	Research Activities/ Interest

2. Current Education offered in REEE area:

In the following table, please list courses or course modules (part in another course) within REEE area. This may include engineering, policy or economics courses. Kindly attach corresponding course syllabus.

Course / Module Title	Department/ Faculty	Level (year 1, 2,..., master level, etc.)	Mandatory/ Elective	Average number of students taking this course

3. Dedicated units/centers working with REEE at your university:

Name of Center/Unit	
Focus Area	
Number of affiliated faculty	
Annual operating budget	
Example of output	
Outreach activities	

4. Laboratories and Equipment

a. In the following table please describe the type of facilities currently available for students and researcher in the area of REEE, e.g. performance measurements, monitoring equipment and instruments, demonstration stations, prototyping units, simulation software etc.:

Type of facility	Dedicated to: (e.g. SHW, PV, Wind, Biogas)	Instruments/ Software (e.g. Pyranometers, flow meters, temp. sensors, data loggers)

APPENDIX 3



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**Modernising Undergraduate Renewable Energy Education:
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WP1: Scoping and Needs Analysis

**Questionnaire 3
Current Situation and Need of Renewable Energy**



Introduction

Brief introduction of the project and purpose of the interview ...

1. General information about the organization

Organization Name	
Type of organization	(e.g. public, private, gov., NGO ...)
Contact Person & Position	
Contact Details	
Main Activities (Please select all those that apply to the activities of the organization)	Sales and Marketing Consulting / Engineering / Design Energy Policy Capacity Building / Training Research and Development Energy Efficiency Industrial Energy Efficiency Buildings Installations Monitoring and Measurements Fabrication / Manufacturing Production (Energy) Commercialization Distribution Solar Thermal Wind PV Geo-Thermal Bio-energy/gas Regulatory authority Others (please elaborate) ...
Number of employees	
List of Markets	Jordan MENA Region GCC International EU Asia North America South America
Turn over (Specify unit)	REEE related turn over Other (specify)

2. Employees Qualifications

What is the total number (or percentage of people) working directly with REEE	
In which area of REEE do your employees work? and the (number) of	Sales and Marketing () Production ()

professionals in each area	Installations () Finance and Business Planning () Research () Monitoring and Measurements () Inspection () Design and Engineering () Policy formulation / evaluation/ Economic studies () Capacity Buildings / Extension () Energy Audits () Others
What is the qualification and number of professionals recruited in the area of REEE in your organization? (number)	BA/BS () MA/MS () PhD () Technical or Vocational degree Engineers () Business Adm/Economics degree () Others ()
How many have specialized degree in any of the REEE segments	
What kind of training do you provide to your employees in REEE?	No formalized training On-the-job training External courses, provide example e-learning Others, please elaborate

3. Labor Market

How do you recruit for professionals in REEE?	Our website Direct recruiting Specialized agencies (e.g.....) Others
From your company experience, how do you rate the “availability of qualified professionals” for the REEE area in the Labour Market?	Easily Available Occasionally available Not Available
For the type of activities your organization is conducting in the field of REEE, what are the HR professional and technical skills you find most difficult to identify in the current labor Market?	No difficulty Lack of technical expertise Lack of management expertise Lack of financial and economic Lack of qualifications in general in the area of REEE Lack of expertise in the economics and policy of REEE

	Others....
In terms of recruiting, what are the prospects for your organization in the REEE area in the short term (next 2 year)?	Recruit more Remain constant Negative Don't know
If you plan to hire more staff, what are the target professional levels you will be considering?	Engineers (Basic Disciplines such as Mechanical, Electrical, Materials, Industrial, Chemical) Engineers (with specialization in REEE) Multidisciplinary qualifications Technicians / vocational qualifications R&D staff Sales and Marketing Others

4. Training Needs

Do you offer training to your employee in REEE?	Yes	No
Do You prefer in-house training?	Yes	No

5. With regard to the type of activities your organization is conducting in the field of REEE, what are the HR competencies/expertise you find most important for the growth of your business?

6. With regard to the wider application of REEE in markets your company in, what are the HR competencies/expertise that are needed and currently missing from the local labor market?

7. When carrying out your activities in the field of REEE, are there recurring difficulties in the dialogue / communication with other stakeholders / actors? If yes, what kind of professional profile could improve this dialogue?



Appendix 4 Questionnaire 4: Teaching, experimental and management facilities in the European universities



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WP1: Scoping and Needs Analysis

**Questionnaire 4
Current Situation and Need of Renewable Energy**



To be filled by each of the partner Universities:

1. Faculty and Research staff working in REEE area:

In the following table, please fill in the names, rank and areas of interest of current research and teaching staff currently working directly or indirectly within REEE area (if you need more space use the back of the form):

Academic Rank	Number	Area of Specialization	Teaching Activities (courses)	Research Activities/ Interest

2. Current Education offered in REEE area:

In the following table, please list courses or course modules (part in another course) within REEE area. This may include engineering, policy or economics courses.

Course/ Module Title	Department/ Faculty	Level (yr 1, 2,..., master level, etc.)	Mandatory/ Elective	Average number of students taking this course

3. Dedicated units/centers working with REEE at your university:

Name of Center/Unit	
Focus Area	
Number of affiliated faculty	
Annual operating budget	
Example of output	
Outreach activities	

4. Laboratories and Equipment

a. In the following table please describe the type of facilities currently available for students and researcher in the area of REEE, e.g. performance measurements, monitoring equipment and instruments, demonstration stations, prototyping units, etc.:

Type of facility	Dedicated to: (e.g. SWH, PV, Wind, Biogas)	Instruments (e.g. pyranometers, flow meters, temp. sensors, data loggers)

b. In the following table please list and describe the kind of equipment/laboratories that are needed to better fulfill current and ongoing research and education activities within REEE:

Type of facility	Dedicated to: (e.g. SHW, PV, Wind, Biogas)	Instruments (e.g. pyranometers, flow meters, temp. sensors, data loggers)

5. Outreach Activities

Please detail if the university engages in any outreach activities with industry/society on any of the REEE areas? E.g. consulting to industry, policy studies, training, joint research projects, awareness raising)

Activity	Target Audience	Output

6. Research Project

In the following table please list recently completed or ongoing research projects in the area of REEE including doctoral and or master thesis projects, size and source of funding, local or international collaboration partners and output in terms of publications, books or reports:

Project	Description	Estimate budget and source of funding	Output