

## **Annex (1)**

# **Field Survey for Market Needs**



## PALESTINE POLYTECHNIC UNIVERSITY

### COLLEGE OF ENGINEERING

#### DEPARTMENT OF ELECTRICAL ENGINEERING

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## I. Survey Questionnaire on Labor Market Needs

### Introduction

It is required to get information about the labor market in the renewable energy sources especially highly qualified Engineers with master degrees that can work as:

- Technical manager for companies of renewable energies
- Sale manager for companies of renewable energies
- System designer and analyzer
- Developer and researcher for the renewable energies
- Lecturer at the universities.
- Researcher at the universities or research centers.

So, the Questionnaire must target the following stakeholders:

- The companies of the renewable energies and vendors
- The renewable energy authority
- The electrical supply authority
- The environmental authorities
- The research centers
- The universities and higher institutes

The Questionnaire must ask about the existing highly qualified engineers by the stakeholders and the possibility to hire new engineers and the expected growth of the workforce. Our M.Sc. engineers must be capable of working world wide.

Palestine Polytechnic University (PPU) is a member in a project funded by European Commission (EC) for establishing a M.Sc. degree in Renewable Energy for creating an awareness about renewable energy and trying to find and improve a clean and friendly environmental resources of energy in Palestine, taking into account that Palestine suffers from lack of conventional energy resources, and required to meet the growing demand for

energy consumption in the coming decades.

The M.Sc. program must be designed to satisfy the current and the future market needs for highly qualified engineers capable to lead the advancement in renewable energy.

The Deanship of Graduate Studies & Scientific Research needs your permanent help and we expect to get a strong support from you for the benefit of the society. So, we need your collaboration in:

- Knowing the current market of the renewable energy experts and M.Sc. engineers.
- Knowing the working scope and type of your company/institutions and it being adopted to renewable energy.
- Estimating the future need by determining the growth rate of their employment.
- Sending distinguished engineers to join the M.Sc. program at our faculty and giving them two days per week vacation to attend the courses and training.
- Taking part in the events of M.Sc. program as Conference days, workshops, career days, .....
- Proposing and co-supervising topics for the M.Sc. thesis
- Support program sustainability throughout partially funding and working together for fundraising...

The following list includes some of the Palestinian potential market for graduates of the upcoming joint master program.

Jerusalem District Electricity Company, JDECO: <http://www.jdeco.ps/>

<http://www.greenpalestine.ps/>

<http://www.sunergy.ps/en/initiatives>

<http://www.portlandtrust.org/projects/economic-infrastructure/alternative-and-renewable-energy>

<http://www.menageothermal.com/index.php?TemplateId=1&Lang=en>

[http://www.lacs.ps/documentsShow.aspx?ATT\\_ID=4799](http://www.lacs.ps/documentsShow.aspx?ATT_ID=4799)

<http://www.ecomena.org/renewables-palestine/>

So, these questions are about the above mentioned subjects and it is required to answer it:

**Dear Organization/Company/NGO,**

JAMILA project aims at establishing a new Master courses on Renewable and Sustainable Energy. The JAMILA M.Sc. program must be designed to satisfy the current and the future market needs from highly qualified Engineers to lead the advancement in renewable energy.

The Deanship of Graduate Studies & Scientific Research needs your permanent help and we expect to get a strong support from you for the benefit of the society. So, we need your collaboration in:

- Knowing the current market of the renewable energy experts and M.Sc. engineers.
- Knowing the working scope and type of your company/institutions and it being adopted to renewable energy.
- Estimating the future need by determining the growth rate of their employment.
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So, these questions are about the above mentioned subjects and it is required to answer it:

*JAMILA Team*

## 1. General information about the organization (company, institution, etc)

Organization Name		
Type of organization (e.g. public, private, gov., NGO ...)		
Telephone		
Fax		
Address (city, P.O. Box, Country)		
Website		
Contact Person	Name, Surname	
	Position	
	E-mail	
What kind of activity your company/ Institution is involved? (select all those that apply to the activity of your organization)		<input type="checkbox"/> Energy Production ( ) <input type="checkbox"/> Energy Transmission & Distribution ( ) <input type="checkbox"/> RE Production – PV ( ) <input type="checkbox"/> RE Production – Wind ( ) <input type="checkbox"/> RE Production – Geo-thermal ( ) <input type="checkbox"/> RE Installations ( ) <input type="checkbox"/> Sales and Marketing ( ) <input type="checkbox"/> Finance and Business Planning ( ) <input type="checkbox"/> Consulting & Design ( ) <input type="checkbox"/> Monitoring and Measurements ( ) <input type="checkbox"/> Fault Diagnostic & Maintenance ( ) <input type="checkbox"/> Energy Auditing ( ) <input type="checkbox"/> Policy maker & strategic planning ( ) <input type="checkbox"/> Energy research & Development ( ) <input type="checkbox"/> Implementation of tenders construction ( ) <input type="checkbox"/> RE fabrication & manufacturing ( ) <input type="checkbox"/> Policy formulation/evaluation/Economic studies ( ) <input type="checkbox"/> Others .....
Number of employees		<input type="checkbox"/> Less than 10 <input type="checkbox"/> More than 10 <input type="checkbox"/> More than 30 <input type="checkbox"/> More than 60
Markets		<input type="checkbox"/> National <input type="checkbox"/> PA/Egypt/Syria/..... <input type="checkbox"/> GCC Countries <sup>1</sup>

<sup>1</sup> Gulf Cooperation Council

	<input type="checkbox"/> International
Turn over (Specify unit)	<input type="checkbox"/> REEE related turn over

## 2. Employees qualifications

What is the total number (or percentage) working directly with REEE	
In which area of REEE do your employees work? (number)	<input type="checkbox"/> Sales and Marketing ( ) <input type="checkbox"/> Power Production ( ) <input type="checkbox"/> Power Transmission & Distribution ( ) <input type="checkbox"/> Monitoring, Inspection & Maintenance ( ) <input type="checkbox"/> Design & Engineering development ( ) <input type="checkbox"/> Research & Development ( ) <input type="checkbox"/> Energy Auditing ( ) <input type="checkbox"/> Capacity building ( ) <input type="checkbox"/> Policies & Economics ( ) <input type="checkbox"/> Others .....
What is the qualification of professionals recruited in the area of REEE in your organization? (No)	<input type="checkbox"/> BA/BS ( ) <input type="checkbox"/> MA/MS ( ) <input type="checkbox"/> PhD ( ) <input type="checkbox"/> Technical or Vocational degree <input type="checkbox"/> Engineers ( ) <input type="checkbox"/> Business Adm/Economics degree ( ) <input type="checkbox"/> Others ( )
How many are with formal qualification in REEE (e.g. specialized degree in any of the REEE segments)	
What kind of training do you provide to your employees in REEE?	<input type="checkbox"/> No formalized training <input type="checkbox"/> On-the-job training <input type="checkbox"/> External courses, provide example <input type="checkbox"/> e-learning <input type="checkbox"/> Others, please elaborate ....
What kind of software packaged related to REEE do you use in your company?	<input type="checkbox"/> PSCADE <input type="checkbox"/> ETAP <input type="checkbox"/> HOMER, RETSCREEN,... <input type="checkbox"/> POWERSYS <input type="checkbox"/> Others, please specify ....

## 3. Labor Market

How do you recruit for professionals in REEE?	<input type="checkbox"/> Direct recruiting on competitive bases <input type="checkbox"/> Specialized agencies (e.g.....) <input type="checkbox"/> From National Universities <input type="checkbox"/> From Other Arabic Universities <input type="checkbox"/> International Graduates <input type="checkbox"/> Others .....
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<p>From your company experience, what is the availability of qualified professionals for the REEE area in the National (Palestinian, Egyptian) Labor Market?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Easily Available</li> <li><input type="checkbox"/> Lack of qualified professionals in general</li> <li><input type="checkbox"/> Lack of qualified professionals related to design of REEE systems</li> <li><input type="checkbox"/> Lack of qualified professionals in management &amp; policies related to REEE</li> <li><input type="checkbox"/> Occasionally available</li> <li><input type="checkbox"/> Not Available</li> </ul>
<p>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?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> No difficulty</li> <li><input type="checkbox"/> Lack of system design &amp; element selection</li> <li><input type="checkbox"/> Lack of technical expertise</li> <li><input type="checkbox"/> Lack of management expertise</li> <li><input type="checkbox"/> Lack of financial and economic</li> <li><input type="checkbox"/> Lack of qualifications in general in the area of REEE</li> <li><input type="checkbox"/> Lack of expertise in the economics and policy of REEE</li> <li><input type="checkbox"/> Lack of Risk assessment, fault diagnostic &amp; maintenance</li> <li><input type="checkbox"/> Others....</li> </ul>
<p>In terms of recruiting, what are the prospects for your organization in the REEE area in the short term (next 2 year)?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Recruit more</li> <li><input type="checkbox"/> Remain constant</li> <li><input type="checkbox"/> Negative</li> <li><input type="checkbox"/> Depending on market growth</li> <li><input type="checkbox"/> Don't know</li> </ul>
<p>If you plan to hire more staff, what are the target professional levels you will be considering?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Engineers (Basic Disciplines such as Mechanical, Electrical, Materials, Industrial)</li> <li><input type="checkbox"/> Engineers (with specialization in REEE)</li> <li><input type="checkbox"/> Multidisciplinary qualifications</li> <li><input type="checkbox"/> Technicians &amp; vocational qualifications</li> <li><input type="checkbox"/> Research &amp; Development staff</li> <li><input type="checkbox"/> Maintenance engineers</li> <li><input type="checkbox"/> Sales and Marketing</li> <li><input type="checkbox"/> Others .....</li> </ul>



(open ended questions)

**4. 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?**

*State most important five competencies*

**5. With regard to the wider application of REEE in Egypt/Palestine, what are the HR competencies/expertise that are needed and currently missing from the local labor market?**

*State the most important missed competencies for market needs*

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

**7. Do you hire any M.Sc. engineer in your location/ company ?**

Yes

No

If yes, How many M.Sc. Engineers?

**8. Are you intending to hire a M.Sc. Engineers in the next three years?**

Yes

No

If yes, How many M.Sc. Engineers?

**9. Are you ready to cooperate with local University/ies to establish a custom M.Sc. Program in RE and/or sustaining it for the benefit of our society?**

Yes  No

If yes, would you ready to participate in this program by :

**10. Sending one of your Engineers to acquire his M.Sc. in our RE program?**

Yes  No

**11. Giving him two day vacation per week during four semesters making out two years which is the duration of the M.Sc. training?**

Yes  No

**12. Attending some meetings concerning the M.Sc. Program with its PPU team.**

Yes  No

**13. Attending the Event Days of the Program?**

Yes  No

**14. Proposing and co-supervising subjects for M.Sc. Thesis of the students?**

Yes  No

**13. Support the Sustainability of the program by taking part in the committee of sustainability (financially, technically & morally).**

Yes  No

*Please feel free and introduce them to us. They will be very much considered.*

*You can describe them in a separate sheet.*

*Thank you very much!*

## **II. SURVEY RESULTS**

This task aims at analyzing labor market needs where survey questionnaire and individual interviews with market stakeholders were conducted. Eleven 22 Companies and Universities were investigated and interviewed. Based on that the collected data was processed. Some of questionnaire results are illustrated on the following figures:

**Q1: What kind of activity your company/ Institution is involved? (select all those that apply to the activity of your organization) ?**

The results are displayed on fig.1.1, where the most of activities are in the field of RE production, consulting, installation, monitoring, energy auditing, policy making, etc., which means there is a needs to offer academic courses that cover these topics.

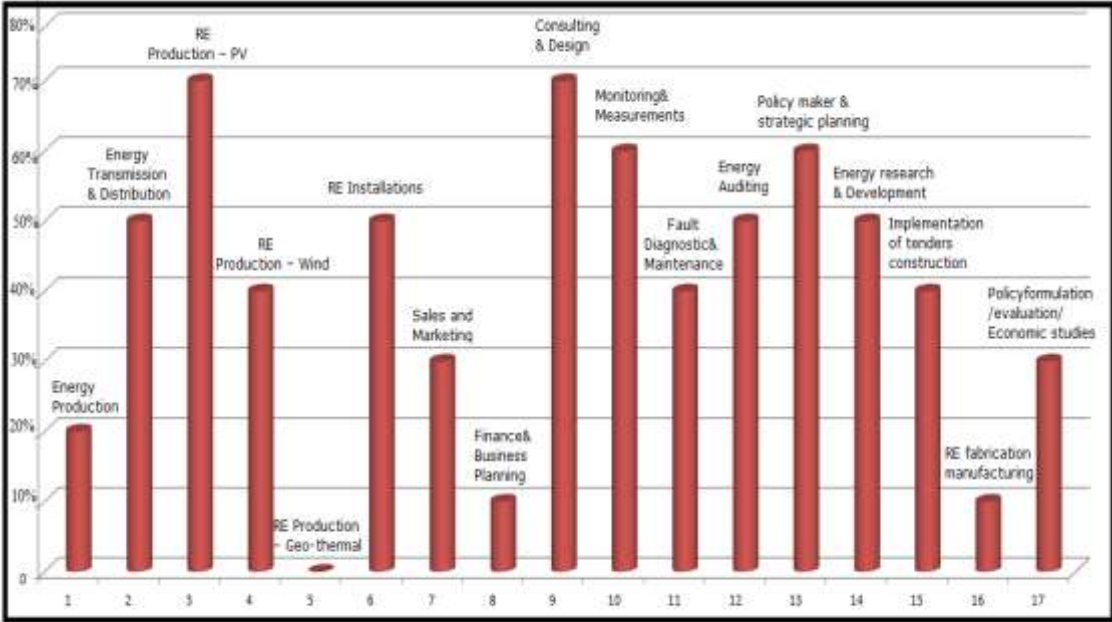


Fig.1: Frequency of company activities vs activity type .

**Q2: In which area of REEE do your employees work? (number)?**

Fig.2 illustrates the percentage employment for various activities, where it is seen that jobs in the field of sales & marketing are the most needed. Energy auditing and capacity building skills are also needed.

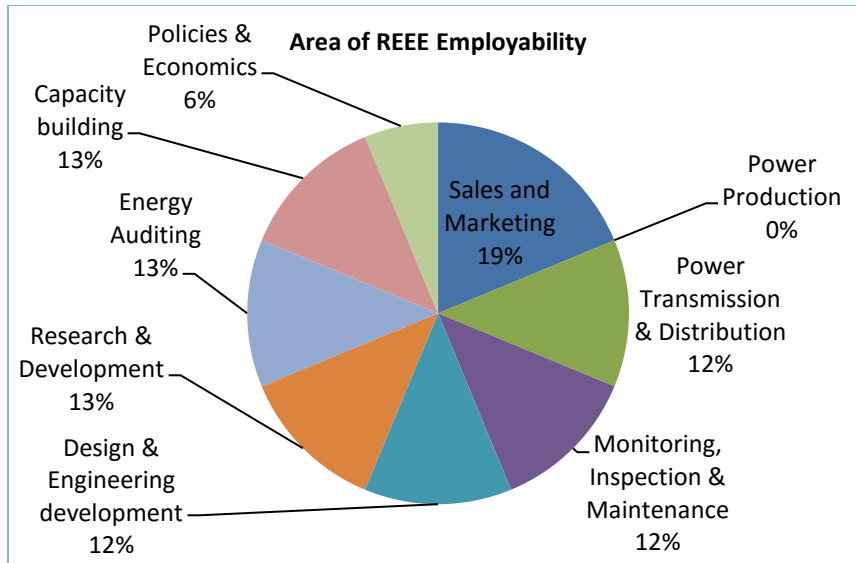
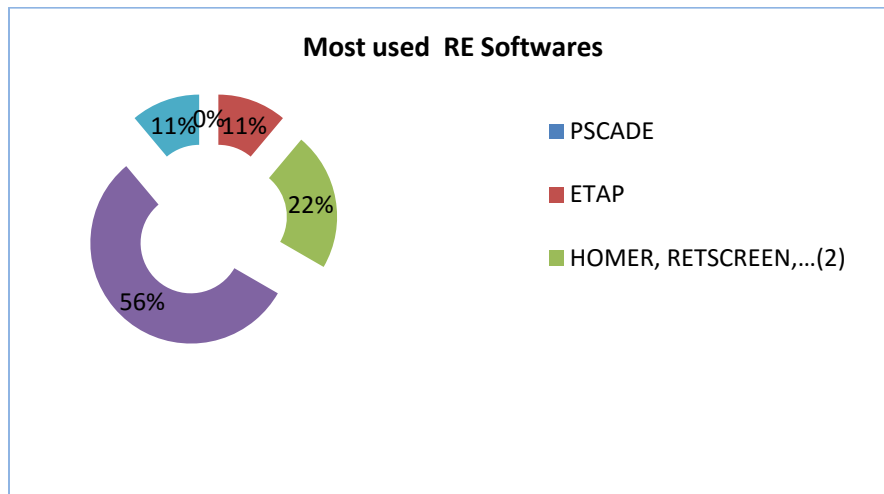


Fig.2: Percentage of employability vs skills type,

**Q3:** In What kind of software packaged related to REEE do you use in your company?

Fig.3 illustrates the percentage of most used RE software packages, where POWERSYS is the most used power software.



Fig, 3: Percentage of most used RE software packages.

**Q4:**From your company experience, what is the availability of qualified professionals for the REEE area in the National (Palestinian, Egyptian) Labor Market?

Fig.4 illustrates the availability of qualified professionals in various RE filed, where local market suffered from lack of skills in the field of management and policies related to RE.

**Q5:**From your company experience, what is the availability of qualified professionals for the REEE area in the National (Palestinian, Egyptian) Labor Market?

Fig.5 illustrates the status of local market with respect to availability of qualified professionals in RRE, it is clearly shown that there are shortages in energy management, design and hands-on skills in the field of RE.



Fig.4: Availability of qualified professionals in RE.

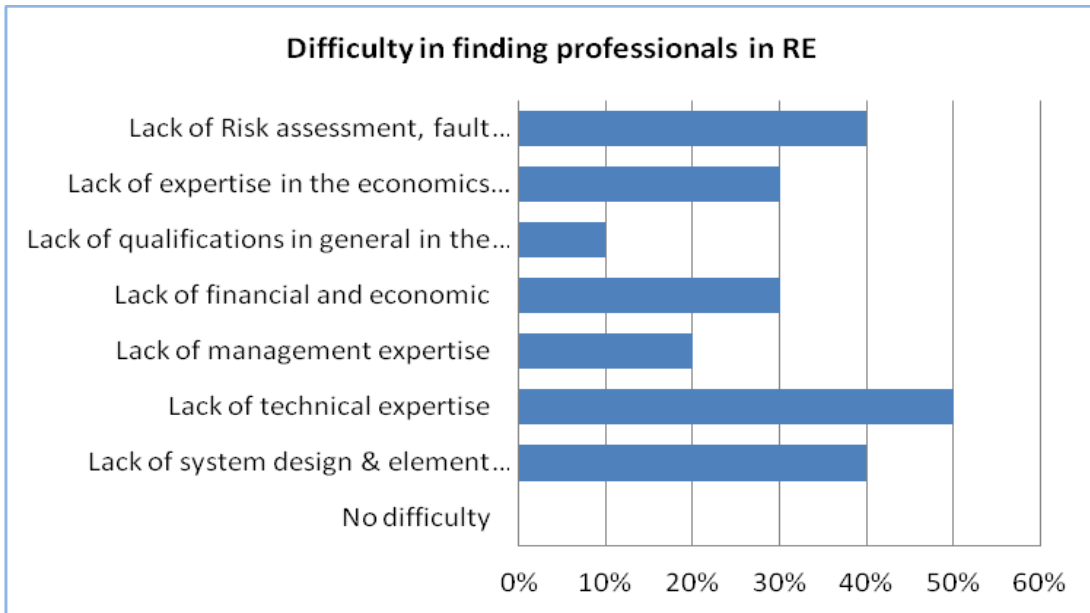


Fig.5: Difficulty in finding professionals in RE.

Q6: If you plan to hire more staff, what are the target professional levels you will be considering?

Fig.6 illustrates the perspectives in hiring new staff, where engineers with high specialization in RE has great chance to be hired, which add new dimensions for development of RE sector.

The rest of questions related to future status of proposed program with respect to employability growth, research collaboration, training staff, and support sustainability this program are illustrated of fig.7

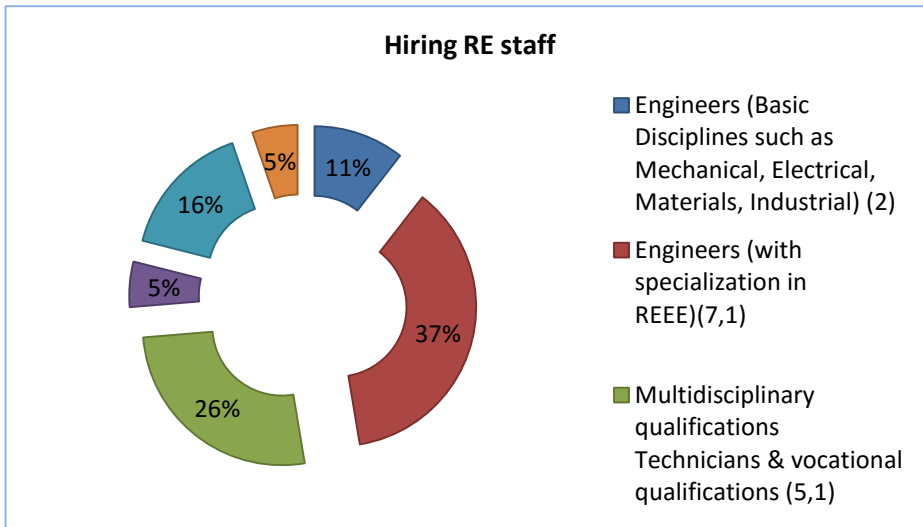
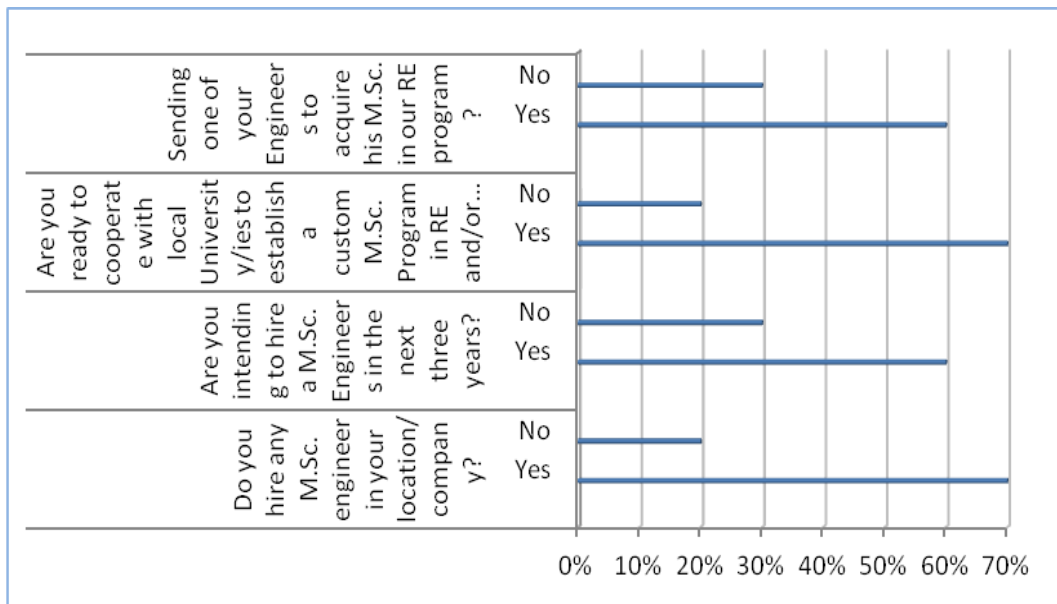
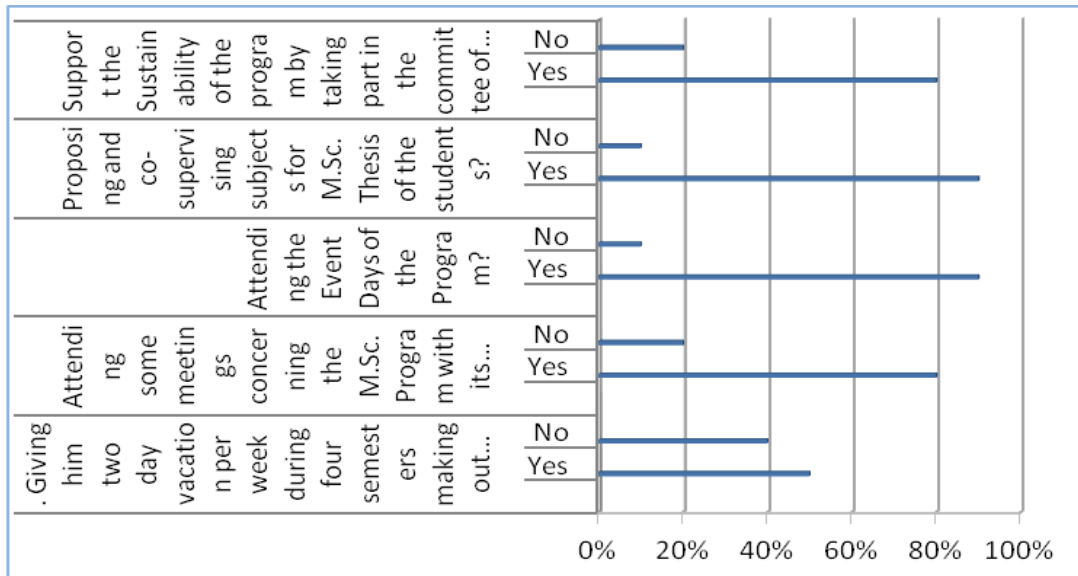


Fig.6: Hiring RE staff.



(a)



(b)

Fig.7: Future status of proposed program

**Based on processed data and displayed results the following key points and remarks can be stated:**

**2.1 : Most needed skills required for qualified engineer in RE field**

- Energy transmission & distribution
- Photovoltaic energy production, installation & management.
- Wind energy production, installation & management.
- Energy consulting & design
- Energy monitoring & measurements.
- Software skills in the field of RE
- Energy policy & strategic planning
- Energy research & development
- Fault diagnostics & system maintenance
- Tenders formulation & marketing



### ***2.2: The character of graduated from this program students***

Based on university required infrastructure and labor market needs and recommendations, the students after completion this program should have solid knowledge and hands-on skills in the following subjects:

- Renewable energy resources & systems including integrity with network.
- Renewable energy design, selection , installation and hands-on skills
- Electrical energy sources management and regulation.
- Software knowledge & simulation tool packages related to RE.
- Energy policies, marketing & economics.
- Fault detection , rectification & maintenance
- Scientific research
- Leadership and communication skills.

### ***2.3: Country Policies related to RE***

The status of RE in Palestine suffers from the following factors:

- Palestinian authority has no full control on the electrical grid in West Bank, which means the investments in RE in areas “A” & area “B” \* are even restricted on small scales.
- Furthermore, Palestinian Energy Authority cannot generate RE in the Grid in large scale (feed in tariff) due to Israeli restrictions and penalties.
- Despite that there is a need for complete rules and regulations regarding the use and development of RE in the regions under fully Palestinian control.

### ***2.4: Proposed Program Structure***

The proposed program structure should cover the aforementioned fields of knowledge and fulfill the market needs as follows:

**2.4.1 Matching between market needs and fields of the knowledge (Energy knowledge & skills).**

Table 1 illustrates the matching procedure between market needs & required field of knowledge and skills and proposed courses.

*Table 1: Matching procedure between needed knowledge & proposed courses*

<b>Field of Knowledge &amp; Skills</b>	<b>Knowledge Clustering</b>	<b>Proposed Courses to Cover the Required Knowledge</b>
Renewable energy resources & systems including integrity with network	Renewable Energy	Renewable Energy Resources
		Solar Photovoltaic Energy
		Wind Energy
		Fuel Cells & Hydro Energy
		Energy Storage Techniques
Renewable energy design, selection, installation and hands-on skills		CSP- Concentrated Solar Power
		Environment & Sustainable Development
		Green Buildings
		Special Topics in Renewable Energy
		Master Thesis
Conventional electrical energy sources	Electrical Energy	Energy Conversion Technologies
		Energy Auditing & Efficiency
Electrical energy transmission & distribution		Energy Management
		Electrical Power Generation

Software knowledge & simulation tools & packages related to RE.		Smart Grids
		Power System Stability
		ETAP, Power World, Simulink, Plecs, PSIM, Retcreen
Energy policies, management, marketing & economics.	Interdisciplin ary	Marketing Strategies
		Mathematical Modeling , Simulation & Optimization
		Project Management & Tendering
Fault detection , rectification & maintenance		Energy Policies & Economics
		Fault Diagnostics & System Maintenance
Leadership, research & communication skills		Research Methodologies
		Research Seminars

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\* According to Oslo agreement between Israel & PLO in 1993, West Bank & Gaza Strip were geographically scattered to areas A, B & C. Palestinian National Authority PNA have the right to control & conduct investment in areas A & B, while area "C" which presents more than 60% of West bank area is under fully Israeli control ' Occupation regulations & restrictions" and it should turn out to Palestinian control in 1998, but this did not happen, and there in no perspectives to happen on the short term .