

A joint venture project between engineering students of universities in Denmark, Israel and Palestine

Engineers without Borders –Denmark (EWB-Denmark) is an independent nongovernmental NGO organization – www.iug.dk. The members of IUG are engineers and engineering students. IUG have about 485 members of which 80 are students.

The students are all studying at one of the four student chapters that have been established at the Technical University of Denmark (DTU), Aalborg University (AAU), Aarhus School of Engineering (IHA) and University of Southern Denmark (SDU).

IUG is a part of the international network Engineers without Borders - International (EWB-I), and this specific project has been identified in collaboration with national EWBs in Palestine and Israel who are also part of the international network.

More information about EWB-I may be found at their website: <http://www.ewb-international.org/>.

Aim of the project

The aim of this project is to create a joint venture project between EWB-Denmark, EWB-Palestine and EWB-Israel. The outcome of this joint venture is to make projects that will help people who suffer from the conflict between Israel and Palestine.

The project will be carried out under the EWB-International umbrella to remain neutral in the conflict there. The project will be carried out by students from Denmark, Israel and Palestine. The students will work together on a distance at their respective Universities on the project design and all the preparations. The students will be supervised by their respective universities and by engineers from the three EWB countries. When the setup is ready the students will meet on location and construct/implement the system.

The project on the Danish side will be administrated and coordinated from at Aalborg University and it will primarily be students from this University that will carry out the project.

Project preparations

EWB-Denmark has carried out an assessment visit to Palestine. During his visit, he met with representatives from EWB-Israel and EWB-Palestine and a representative from the University in Hebron. He also met with the national engineering association of Palestine and a Human Rights Watch organization (EAPPI), he visited five different possible projects locations and meet with different energy equipment suppliers.



Figure 1 of Israel and Vest bank

Solar panel systems and a “milk shaker” for the people in Em-el-khar

The first project identified will be to install a solar energy project on the Vest Bank, south of Hebron, in the village Em-El-Khar.

Em-El-khar is located approximately 15 km south of Hebron and has about 130 inhabitants. The main occupation is goat herding. Most of the children go to school in a village nearby and a few is studying at the university in Hebron. Em-El-Khar is divided into two locations - 1 and 2. As can be seen from the picture Em-El-Khar is located next to an Israeli settlement and because of the conflict between Palestine and Israel, Em-El-Khar cannot have access to any kind of electricity supply. The Israeli authorities accept to some extent alternative energy sources such as solar energy systems.



Figure 2 map of the location of Em-El-Khar

The electricity request from the citizens in Em-El-Khar is mainly to supply them with reading light, mobile charging and radio. The reading light is mainly for study purposes (currently, the children study under the street lights from the Israeli settlements or next to a lit candle), the mobile charging is for charging a mobile so they can communicate with their surroundings and the radio is for information and entertainment.



Figure 3 pictures from Em-El-Khar

Installation of a solar panel system

The purpose of the project is to establish a small system in the two sections of the village (1 and 2). Each system will cover the demand for reading light, mobile charging and radio for two houses (approx 2 kWh/day). It is necessary to install 8-9 of these systems.

In section 1 there is a concrete house where it would be possible to install a larger system to which the refrigerator and the milk shaker can be connected. This installation is for the entire villages of Em-El-Khar. The people of Em-El-Khar will pay for the refrigerator and the milk shaker themselves (maybe some students can help design a simple milk shaker that can be made by local materials?)

At this point in time, the idea is that the systems will be owned by EWB. The villages have the right to use them as long as they are unable to access the public electricity grid. If one day they will be connected to the grid, then the systems will be removed and installed elsewhere in Palestine.

Project sustainability

In order to ensure project sustainability, EWB-Palestine will initiate the formation of a local committee that will be in charge of the system. The committee will have to take care of maintenance and collect money (if possible) from the users. The money will be used to maintain the system and could potentially also be used to cover a limited salary to the caretakers.

Budget estimate

The budget is only an estimate. The students will work on the final budget for the installations.

9 solar panel installations of \$ 2,000:	\$ 18,000
1 solar panel installation of \$ 5,000:	\$ 5,000
Hotel expenses, tools, car rental, daily allowance etc.:	\$ 5,000
EWB-Denmark administration 12,5 %	\$ 3,500
Total	\$ 32,200

The \$32,500 is equivalent to DKK 170,000 (exchange rate 5.28 DKK/USD, Danske bank 29/6 2009)

The students from Denmark will cover airfare and daily allowances through their own means.

The way forward on implementation of the project

The students from the EWB-students chapters will have to find a work form so that the work load is distributed among the students. The distribution of the workload will have to take interests, skills and safety aspects into consideration. The project will involve 2-5 students from each country.

The design phase will take 3-5 months and will include:

- Setting up the project groups
- Fund raising
- System design
- Involving all the different institutions, governments, companies, Universities
- Buying components
- Constructing the various components
- Developing an emergency strategy
- Planning and preparing the trip to Palestine
- Planning and preparing the work on site

Project implementation:

Day 1: Travel to Bethlehem: Introduction and information by EWB-Palestine, renting a car and project planning,

Day 2-4: In Hebron with the students from Palestine and Israel, preparing the setup and getting to know each other (maybe a trip to the Dead Sea?)

Day 5-8: Installing the system in Em-el-Khar. The students are welcome to stay in the villages (this will be a great experience). The people from the villages that will be responsible for the system in the future will help install the systems.

Day 9: Workshop on how to use and maintain the system

Day 10-11: Wrap-up and return to Bethlehem.

In the future, EWP-Palestine will be responsible for the supervision on-site. The responsible in the villages have to make an annual account of the system. The students from EWB-Palestine will visit the site at least twice a year. The Danish students can visit the site when they will be working on other projects.

We look forward to hearing from you. Should you have any questions you are more than welcome to contact me.

Best Regards
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