

**The Solar Backpack in Refugee Camps
Lebanon
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The Lebanese government has been extremely welcoming towards refugees, having the greatest ratio of refugees-to-nationals in the world (For three Lebanese nationals there is one refugee residing inside Lebanon). However, the educational system of Lebanon struggles to offer proper education to the rising number of refugees that live in Lebanon after escaping from unsafe places like Syria.

Over half of the 1.1 million registered Syrian refugees residing inside Lebanon are children, and 60% of these children are not able to go to school. Unfortunately, only 2% population of refugees attend school. Many of these refugee students face the arduous task of surviving in a place where they constantly struggle to cope up with the different curricula, language barriers, harassment, violence, and discrimination. These challenges cause many student refugees to drop out of school. Some reports estimate 290,000 refugee children missed 49.6 million school days in total in 2017.¹

In response to the existing refugee crisis in Lebanon make-shift schools play a vital role. These schools offer educational facilities for Syrian refugee children in informal tented settlements. So far seven schools and two vocational training centers are present and are serving more than 4500 refugee students². The schools address key challenges refugee children face in accessing 2 educational opportunities by 1) Delivering the Lebanese curriculum in English and Arabic language with teachers from the refugee community; 2) Establishing school campuses near to informal tented settlements; and 3) Ensuring child-friendly spaces necessary for child protection and quality learning environments through structural design specifications.

One of the major problems that students face in these schools is that when they come back to their designated 'home' they cannot study at night due to no power. These students often have to study in public areas such as under street lights or fuel stations. These places are often unsafe for young children at night. Hence the energy crisis in Lebanon has worsened the life of many refugee students.

Solarbrite is a social enterprise started by Professor Amal Kabalan. The goal of the enterprise is to offer young refugee students access to enough light to study within their camps at night. Solarbrite created a backpack called "Solar Backpack" which has a detachable battery pack placed inside its back pocket. This back pocket allows small solar panels to power the battery which operates a LED light. The goal of the product is to make it safer and easier for students to study in their camps using the LED flashlight powered by the solar-powered battery pack.

This proposal revolves around the last stage of the Solar Backpack project: implementing the usage of the Solar Backpacks in these make-shift schools. By collaborating with Professor Kabalan and the Center for Civic Engagement and Community Service (CCECS) at American University of Beirut (AUB) I plan to deploy these backpacks in Lebanon. These Solar Backpacks will be mainly distributed to the refugee students in the Ghatta schools situated in the Bekaa region in Lebanon. Using my knowledge as an electrical engineering student, I intend to run two workshops which will include hands-on activities that will teach these refugee students how to correctly make use of the Solar Backpack technology. In short, we plan to guide the students how to charge a solar-powered battery and how to connect a LED flashlight to it.

At the end of this project, I hope to successfully deliver the Solar Backpacks to one hundred refugee students and to make observation on the overall performance and practicality of these Solar Backpacks in

¹ "Alarming Spike in Number of Syrian Refugee Children out of School, Exposing Thousands to Child Marriage and Exploitation." Save the Children International. October 17, 2017.

<https://www.savethechildren.net/article/alarming-spike-number-syrian-refugee-children-out-school-exposing-thousands-child-marriage>.

² AUB - 2017 - AUB Alumnus Fouad Maksoud Creating Revolutionary Nano-Medicine Technology, website.aub.edu.lb/ccecs/Pages/Ghataproject.aspx

reality. These observations will aid us to make necessary adjustments to the Solar Backpacks which could allow us to distribute these bag packs to similar refugee sites.

The main goal of this project is to create awareness about renewable energy to young refugee students through informative workshops. According to Save the Children's Syria Director, Sonia Khush, "What children who have lived through war and experienced extreme violence tell us time and again is that they are desperate to get back to school and start learning again." We share a similar philosophy as Sonia Khush, and we aspire to inculcate scientific curiosity within the young minds of refugees who have a whole life ahead of them.

In conclusion, our project aims to ameliorate the Syrian refugee crisis in Lebanon through education. According to the seventh Secretary-General of the United Nations, Kofi Annan, "Education is a human right with immense power to transform. On its foundation rest the cornerstones of freedom, democracy and sustainable development". Our proposal advocates sustainable peace in a region struggling to cope up with energy and refugee crisis by fostering sustainable development.