After the meeting with the client on the 24th of January 2017, our team of engineers were able to gather important information regarding the specific needs of the client. The client said that they require a way to obtain more food in a harsh desert environment with a limited supply of water.

Due to the temperate and windy desert environment, the solution must be able to withstand dust storms and wide variations in temperature. The limited supply of water the refugees get on a somewhat regular basis facilitates a water efficient solution. In addition, the solution must be cost efficient because the solution must be obtainable for all residents in the refugee camp.

The client described the environment as one that has a wide variation in temperature. On average, it can get as hot as 35 to 40 degrees centigrade during the day. During the night, temperatures can go down to freezing levels. In addition to the extreme temperatures, harsh winds can be produced and create dust storms. These conditions can be detrimental to the production of crops and structural integrity of a long-term solution.

Water is brought in from a neighbouring city by truck, due to the way the water is being delivered the amount of water that can be brought to the refugees is limited. The already limited water supply becomes even less when all of the things it is used for such as washing, cooking and drinking, among other activities are taken into consideration. This does not help the fact that the production of crops requires water, which would negatively affect the size of the crops yielded.

Other issues include cost of materials, the availability and quality of building supplies and availability of tools. Cost of materials not only places limits on what can be made, but also, the attainability of the product to the refugee. The quality of the scrap can also affect what can be made to address the problem. The building materials’ quality can also affect the durability of the product, which can lead to constant maintenance or permanent damage to the product. Availability of tools will also affect the complexity of the product’s assembly, as more complex designs can lead to a need for more tools.

Due to the willingness of the refugees to work, we feel that the most viable way to produce the hydroponic system would be to ship the parts to the refugee camps and have them assemble it.

**Problem statement**

Syrian refugees need a way to get more food in a cheap, water efficient, durable and reasonably compact fashion.