Limited access to safe drinking water has always been a threat for people living in rural area. Millions of children in developing countries die every year due to lack of access to safe water and sanitation. There are variety of methods and technologies to purify water. Many organizations involved to solve this issue however unstable economic, social and political situation are the main obstacles for impressive progress in rural area of developing world. Attempt of this paper is to evaluate the feasibility of application of inexpensive, single-person use of solar water pasteurizers in tropical developing countries as a reliable and worth to invest technology for social entrepreneurs. They can easily meet the demand for clean water in rural area of developing countries. The potential users for this technology are mainly those live in villages or low-density populated area of developing countries, those who live on with less than $2 a day.

Solar Water Pasteurization

Poor people spend a lot of their income on fuel to boil their drinking water and they mostly not even know that there is no need to boil water up to 100°C; they can purify water by only heating it up to 65°C for 6 minutes or to a higher temperature for a shorter time [1]. Pasteurization is a reliable method discovered by Louis Pasteur back in nineteenth century, since then it has been using in a wide range of food and dairy industries.

Solar Cooker

Solar Box Cookers are the most common type of solar cookers. This technology is like traditional oven so water will be placed in insulated box. Box cooker can make from any kind of material like wood or plastic and then covered by transparent glass or plastic to permit solar rays inside the box and in the same time prevent trap the solar rays that have been converted to heat energy. For effective and higher temperature reflector panel also added in order to concentrate the sun rays toward the cooking pot.

AquaPak

is one-piece unit using sun light to heat up water to the pasteurization temperature. Basically a batch system which has its own storage to prevent recontamination of water. It has Water Pasteurization Indicator(WAPI).

AquaPak is a low-cost solar water pasteurizer which cost less than two dollars per unit to manufacture in third world countries. Each unit can produce up to 3 gallons (maximum) of water per day.

The bubble pack layer automatically maintains a thermal convection gap. Sunlight enters through the bubble pack, clear plastic layer, and water and then converts into heat when it comes in contact with the black plastic layer. The bubble pack serves as a thermal insulator, which allows water to be heated to a temperature sufficient for pasteurization.

• cross-section of the materials used in the AquaPak.

Conclusion

- The need for water free of biological pathogen for people living in rural part of developing countries is absolute.
- Improving water supply and sanitation helps to grow national economy and reduce poverty by reducing sickness and death.
- Heating water to pasteurization point in compare with boiling point reduce the energy required by at least 50% so it reduce the cost and also pollution caused by burning fossil fuel.
- By using Solar water pasteurizer technology people are able to spend this time for education and schooling also it will help them to improve their health as they do not need burn wood inside of their home to boil water.
- Between all appropriate water treatment technologies pasteurization/boiling has got the highest rank of removal performance in classification of household water treatment supply. On a scale of 0-9, pasteurization technique scored 9+. [3]

References