Application of Sustainable Energy Solutions for rural village development and rural public health improvement- A concept for remote villages of India

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Abstract (300 word limit)

"Safe drinking water and adequate sanitation are crucial for poverty reduction, crucial for sustainable development, and crucial for achieving any and every one of the Millennium Development Goals" – UN Secretary-General, Ban Ki-moon.

The present research investigates the application of solar energy for water purification and wastewater treatment, especially for arsenic-affected rural areas. The work essentially explores the performance of solar stills for the production of drinking water with variable input water quality and co-treatment of arsenic-enriched brine and sewage using phycoremediation method (see Figure. 1). The approach has a novelty as its implementation is independent of the electric power availability, skilled labour, and gives consistent performance over an extended period of time. Experiments conducted on a solar still based pilot system for the treatment of water in Kaudikasa village, India shows that the treated water meets WHO standards for drinking water. Solar energy is further harnessed in the form of an algal pond to co-treat solar still brine and sewage. The system is designed for the entire village and the cost of implementation of the system works out to be around USD 20,418.

Keywords: Arsenic treatment, solar still, rural water supply, public health.

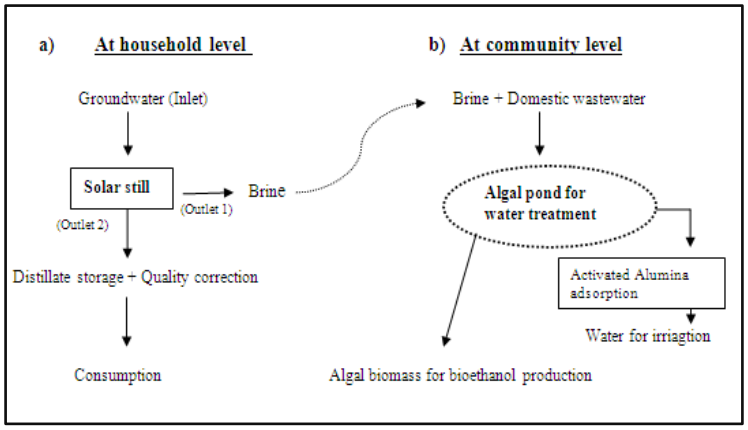


Figure 1: Scheme for drinking water and sanitation for an Arsenic-affected village.

Recent Publications :

1. Jasrotia S, Kansal A and Kishore VVN. (2014). Arsenic phyco-remediation by Cladophora algae and measurement of organic speciation and location of the active absorption site using electron microscopy. *Microchemical Journal*, 114: 197-202. **Elsevier**
2. Jasrotia S, Kansal A, and Kishore VVN. (2012). Application of Solar Energy for water supply and sanitation in Arsenic affected rural areas: a study for Kaudikasa village, India. *Jr of Cleaner Production*, 37:389-393. **Elsevier**
3. Jasrotia S, Kansal A, and Mehra A (2015). Performance of aquatic plant species for phytoremediation of arsenic-contaminated water. *Applied water Science*, **Springer.**
4. Jasrotia S (2016). Decentralized Solar Energy Assisted Water Supply System For Arsenic – Affected Rural Areas', in (ed.) *Collection of works of winners of the Ministry of Russian nationwide contest "New Idea*. Moscow: government.ru/en, pp. 183-188



Biography : Dr. Shivkshi Jasrotia, has a PhD from TERI University, New Delhi in the sector of Energy and Environment. She is currently associated with TERI, New Delhi as Associate Fellow for their Centre of Global Environemnt Reseach. She specializes removal like potent carcinogen Arsenic. Her research was considered innovative and novel for which she has also won the Innovation challenge for Best Innovative Project (Energy Development for rural upliftment & improvement in rural public health) in 10 nations meet of BRICS-EAEU International Forum, Moscow in 2015. Recently her innovative research was awarded status Laureate by Ministry of Energy Russia. Her reasearch has been published in esteemd journals of Elsevier and Springer.