

Rural Water Solutions



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Eastern India

- ❖ The eastern states of Orissa and Chhattisgarh is one of the least populated areas in India
- ❖ Located near the Mahandi River
- ❖ Consists of numerous poor tribal communities.
- ❖ Lack clean water for irrigation, drinking, and sanitation needs



❖ 40-80 in. or rainfall annually

❖ Average income per household \$12.50 monthly

❖ Relies mostly on water from shallow wells or rivers

<http://www.mapsofindia.com/maps/india/india-map-population.jpg>

Solar UV Disinfection System

- ❖ Uses ultra-violet (UV) to eliminate potentially deadly waterborne pathogens
- ❖ Kills 99% of all bacteria, pathogens, and germs
- ❖ Can provide clean water for approx. 2200 villagers

Economic Viability

- ❖ Initial estimated cost of \$500 including labor
- ❖ Annual upkeep \$144 annually
- ❖ Costing a village of 1000 6.9 cents per villager annually



http://singsolar.en.alibaba.com/productwater_purifier.html

Water Problems In Rural Areas

❖ *The World Health Organization states that every year more than 3.4 million people die as a result of water related diseases, making it the leading cause of disease and death around the world.*

❖ Waterborne diseases such as: E.coli, Malaria, Hepatitis A, Typhoid, Diarrhea, etc.

❖ Most developing countries do not have the assets to invest in big picture water infrastructure. However, investing in water education and numerous smaller projects that are locally operated could save lives as well as money.

Water Education and Awareness

❖ **Water education is extremely important and amplifies these small projects effectiveness immensely**

❖ Avoiding planting water intensive crops especially in arid areas

❖ Rainwater harvesting is used world wide. Effectively introducing techniques world wide will vastly increase local water stores.



<http://www.sci.sj.ac.lk/lms/wordpress/>

Niger, Nigeria

- ❖ Niger is located in the westernmost part of Nigeria
- ❖ **Niger has an estimated 2.5 billion cubic meters of underground renewable water**, but only 20 percent is currently exploited, according to the United Nations children's agency, Unicef.
- ❖ Niger is ranked as the World's poorest country by the UN



[http://www.wateraid.org/ng/~media/Images/Nigeria/Fature%20Nigeria%20highlighted%20in%20yellow.ashx](http://www.wateraid.org/ng/~media/Images/Nigeria/Feature%20Nigeria%20highlighted%20in%20yellow.ashx)

Accessibility

- ❖ On average women & girls spend 15 to 17 hours collecting water a week.
- ❖ Villages ranging from 50 to 500 people
- ❖ Most villages share just one source of water
- ❖ With the average income of just \$1 a day options are very limited.

Simple Hand Pumps & Education

- ❖ Simply with more access points retrieving water will require half the time for most villages.
- ❖ In Niger the same archaic agricultural practices have been used for 100's of years, they have not fully realized the potential of the Niger River.
- ❖ **Amplifiers** like updated irrigation techniques, rainwater harvesting, and simple hand made filters are key in reducing illnesses and deaths in Niger.

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