

# Solar Desalination

*A natural solution for drinking water, now practical*

Decline in drinking water quality is affecting millions in developing countries. Though many remediation technologies are available, for common people it's a distinct dream and many options lack appropriateness.

Sunlight is the most abundant natural resource in the world. Areas reeling under water stress receive 200-350 sunny days a year.

Renewably, steam is the purest form of water. Solar Desalination/ Distillation involves heating of raw water, producing steam and condensing steam into drinking water.

Dissolved Solids level in Solar Distilled water is less than 3 ppm and Bacteria free. The water is 100% safe, with no taste of hardness.



Solar Desalination is a compact and point of use treatment for chemical, physical and biological contaminants in drinking water

Solar Desalination is applicable in all areas with 'sunlight' and facing water contaminations from sea water, excess of iron, fluoride, nitrates, arsenic, calcium hardness etc. The temperature developed inside the still is over 85° Cel. During rainy days, the still can be altered for Rain Water collection if needed. Up to 90% of the input water is recovered as distilled water, ecologically sound and no energy costs.

Test outcome

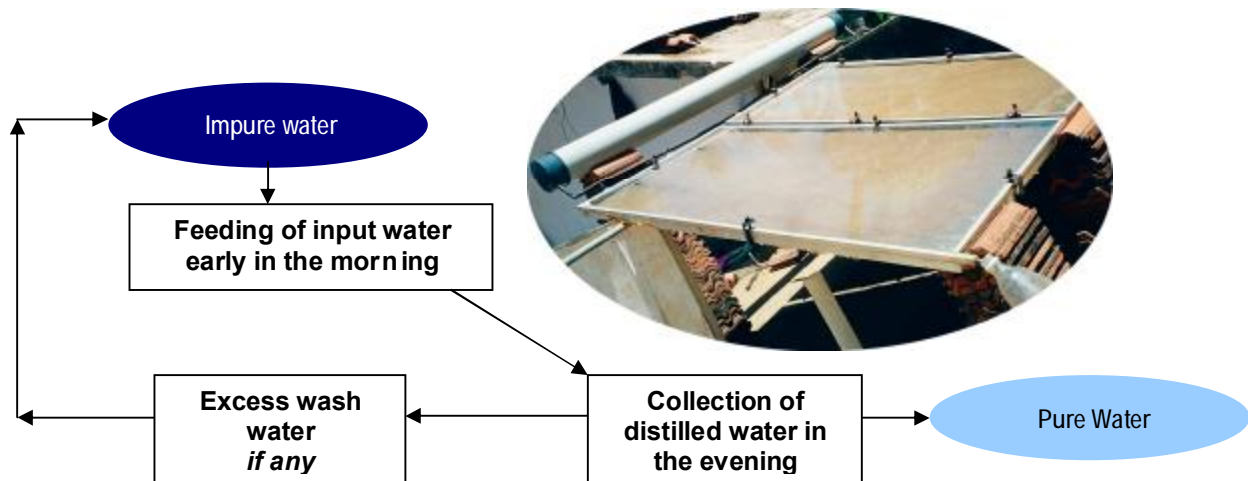
	Dissolved Solids level	Microbial load (E coli.)
Input water	500 ppm	125 X10 <sup>5</sup>
Output water	3 ppm	No growth

Each solar still is 120 cm long and 60 cm wide with a collector area of 0.7 Sq. m. FLAT PLATE SOLAR DISTILLATION still is capable of producing 2.5 - 3.5 liters of water per still per day, catering need for one person. Hence, 4 solar stills placed in an array can produce 10-14 liters of fresh water for whole family drinking and cooking demand.

Each solar still cost between Rs. 800-900 (US\$ 18-20) and can be fabricated with locally available materials mainly aluminum and glass (No photovoltaic cells are used). The excess salts deposited is self washed out and needs minimal supervision, except daily feeding of any poor quality water.

Solar stills are light weight, durable with no moving parts and can be easily placed/fixed on roof tops or on ground (thickness 3 cm only), where maximum sunlight falls. Input water can be fed using a hoist if needed.

Through participatory technology development process, PLANET Kerala has been innovating its applicability since 2004, towards producing drinking water at various coastal households.



PLANET Kerala is now offering technology facilitation to NGO's, Donors, Foundations and other agencies involved in addressing water issues in various locations. A tailor made technology transfer program is underway in accordance with the local water and geographical factors. This total package will also involve necessary skill development for local persons to replicate solar stills locally (ideal for SHGs or Micro Entrepreneurs). Partner center can thus gain this appropriate technology for addressing most water issues prevailing in respective operational areas.

Additionally, for addressing larger/community water demands, we have also evolved Rainwater injection process called "Backwashing" essentially a groundwater exchange process for incrementing surface water quality, and Phytoremediation -using plants to absorb excess contaminants in water.

#### Comparing with other water treatment options

- ⇒ Compact and light weight
- ⇒ Very low cost -only Rs. 300 (US\$ 7)/liter production capacity
- ⇒ Operating cost - ZERO
- ⇒ No movable parts and no consumables
- ⇒ Complete treatment of water using renewable energy
- ⇒ More than 90% feed water recovery
- ⇒ No fouling or scaling problem



Please write to us about water scenario in the intended areas and organizational background towards building a partnership.



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