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विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार का स्वायत्तशासी संस्थान
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# Modified Boiler

Innovator: Shri Subhash Ola, Alwar, Rajasthan

- The modified boiler has a mechanism to recycle used steam so that steam (at 130°C), generated by boiling water, returns to the boiler at a temperature of 90-100°C after transferring heat for the useful purpose.
- Due to the recycling of steam instead of allowing its condensation, fuel and water requirement has reduced drastically.

- These modified boilers have been installed in food processing industries (mawa making, jaggery making), textile, plywood, paper, leather and dye industries.
- Using this technology it is possible to save fuel and water consumption by up to 30 and 80 percent, respectively.

*Recycling used steam*

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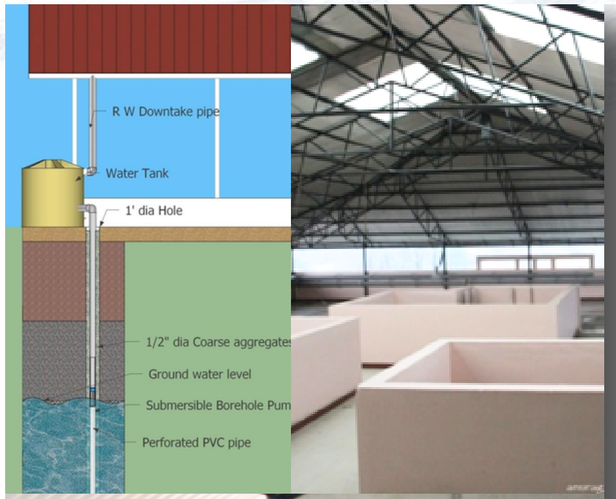
Ground water recharge

# Rain Water Syringe

Innovator: Shri K J Antoji, Cochin, Kerala




•Roof top rainwater is stored in a pressure tank. With the help of PVC pipes, it is injected to a depth below sea water level. The injected fresh water recharges and dilutes the groundwater. When required, the water can be pumped out from a recharged well.
•Compared to conventional groundwater recharge system (2.5 ft dia), it require small size bore well (1ft)
•Conventional systems are useful to recharge aquifers upto 60-65 ft, this can recharge deep aquifers as well
•Approximate cost of installation (300 ft deep borehole, 1000 lit storage tank) is Rs 400,000/-
•Over 200 rain water injecting systems have been installed in different areas of coastal Kerala.

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*Cooler having an inbuilt filter*

# Natural Water Cooler

Innovator: ShriArvindbhai Patel, Ahmedabad, Gujarat

- In this cooler, the water is cooled by passing through a copper pipe covered with a moist cotton cloth
- A small solar-powered DC fan mounted on the rooftop improves air circulation inside the cooler and thus the evaporation of water from the moist cotton cloth
- Also has an in-built filter for providing clean and hygienic water
- Can cool water by up to 9 degrees Celsius, achieving an evaporative efficiency of nearly 90% at optimum ambient conditions
- Indian Patent Granted (Patent No. 199939 dated December 20, 1999)
- Price: Rs. 51,000 (150 lit capacity)
- Over 620 units have been sold

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# Modified hand pump

Innovator: Shri Shwaymbhu Sharma, Udaipur, Rajasthan
Shri Chandan Agrawal, Delhi (idea)
Shri Madan Lal Kumawat, Sikar, Rajasthan

Issues addressed:

•Over drawing of water other than actual requirement- diameter of conventional pump outlet is usually 2" which leads to high discharge volume and therefore wastage of water also

•Water not available for animals-Although there is a lot of run-off, water is not retained over ground thus making it unavailable for wild and farm animals

•Uncomfortable position for drawing water and drinking at the same time, with a lot of water wastage

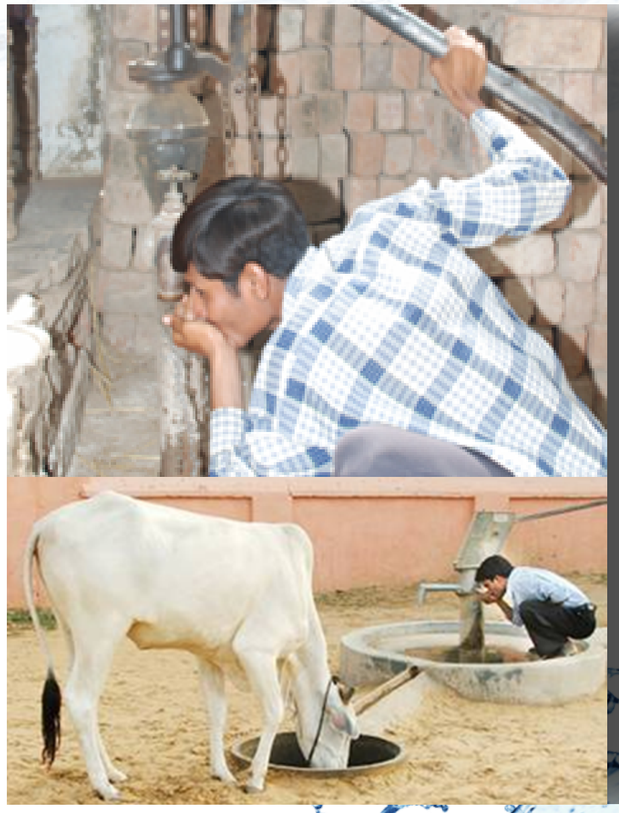
The hand pump

•Provision of about 1 liter water storage inside the head of the pump which can be drawn out through a tap

•Provision of about 25% water donation for the animal trough, which is collected from the runoff.

•Acquired under GTIAF

25% water donation



# Filtering water with traditional approaches

| **Community practice reported by** | **Practice** |
|---|---|
| Shri Laxmidhar Sethy,<br>Puri, Odisha | A circular and thick wooden plate made from *Jamun* (*Syzygium cumini* (L.) Skeels) is fitted at the base of water-bucket. Water is filled in the bucket and kept overnight. The water treated in this way is claimed to be having anti-diabetic values. |
| Shri Chandy Abraham, Kottayam, Kerala | One fistful of fresh leaves of *neem* and *tulsi* (Basil) *a*re added to water, which is left undisturbed for 4-5 hours. The water has mild fragrance and bitter taste but is free from impurities and thus is good for health. |
| Shri Indramani Sahu, Jagatsinghpur, Odisha | During summer, villagers of his area dig pits in river beds for getting drinking water. The water looks cloudy due to presence of clay and soil. A cup of curd is kept into pit. It prompts clay to settle down at bottom. |

# Filtering water with traditional approaches

| **Community practice reported by** | **Practice** |
|---|---|
| Master N Ajis Ahamed, Ramanathapuram, Tamil Nadu | Fruit of *Nirmali* (*Strychnos potatorum* L.) and drumstick are mixed with some salt and made into a paste, which is added to muddy water. The water gets cleaned up in a few minutes. The practice is also used in some parts of Gujarat, for removing heavy metal impurities like cadmium, mercury, uranium and other isotopes dissolved in water. |
| Shri Ashok Kumar<br>East Champaran, Bihar | Latex of *Dugdhika (Euphorbia hirta* L.) is used to treat impure water. |
| Ms G. Pavani and S K. Heena,<br>Guntur, Andhra Pradesh | Leaves of Neem, Khair and Peepal (*Azadirachta indica* A. Juss., *Acacia catechu* (L.) Willd. and *Ficus religiosa* L.) are ground into paste, which is mixed with 1% diluted Nitric acid and Sodium hydroxide. This mixture is kept under sunlight for some time. The sun dried mixture is stirred in impure water followed by passing it through alum and bleaching powder. |