

Grand challenge: Affordable Adequate Water for All

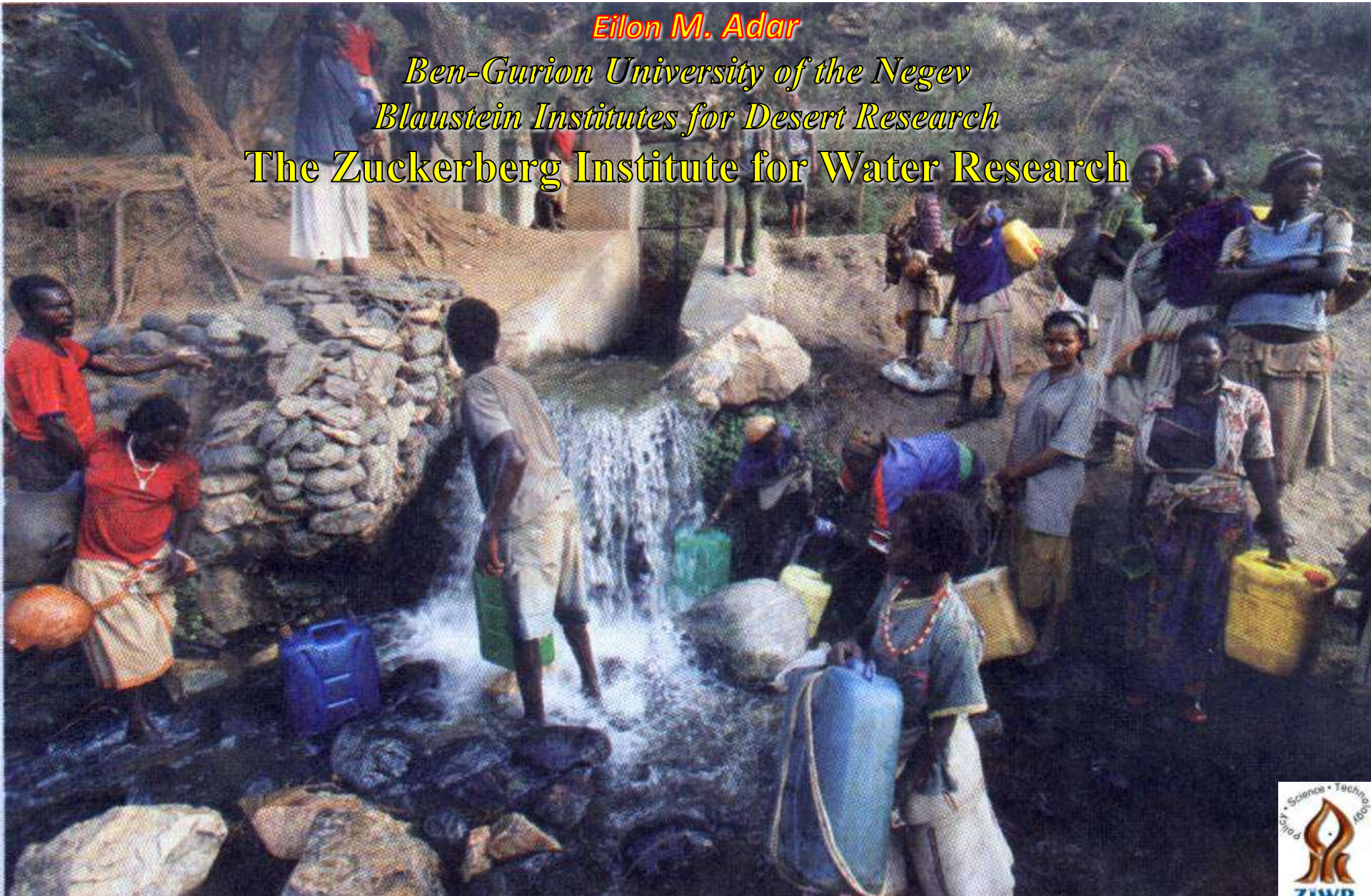
Water security, in terms of Quantity and Quality,
poses a problem for both the developed and developing world

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Water is a synonym for food !





Humanity has to produce more food with a lower availability of water

While water is diminishing, the demand for food is increasing.





Will the conventional policy of *Water Saving & Increasing Water-Use Efficiency* enable humanity to avoid water shortages and provide water security?

At most, it will only temporarily mitigate water scarcity!

One cannot sustain the water and food supply with a diminishing amount of water and a continuously growing population.

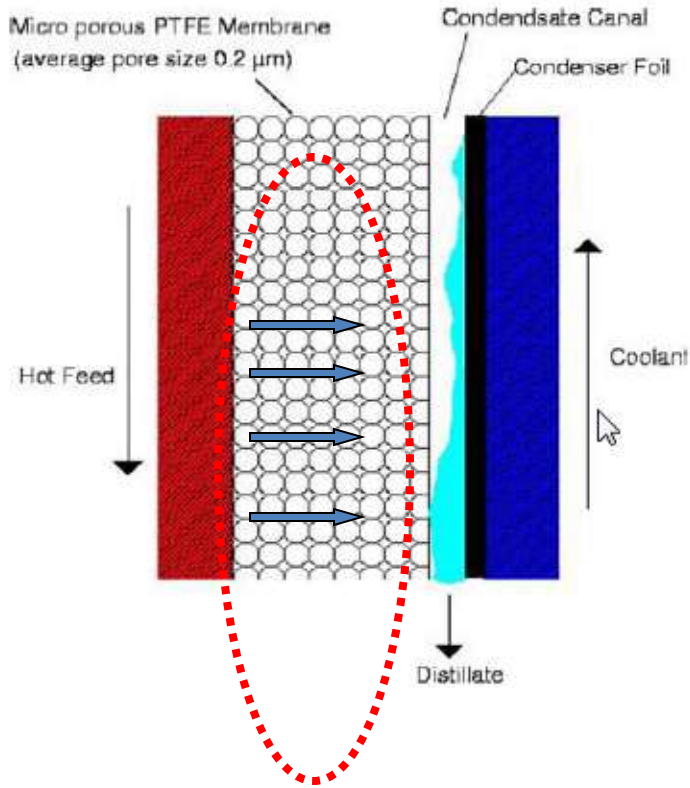
SHALL WE DESPAIR ???

Affordable water: decreasing the cost of water production
&
lowering the demand for energy



unpainted masterpieces -

The critical barrier:



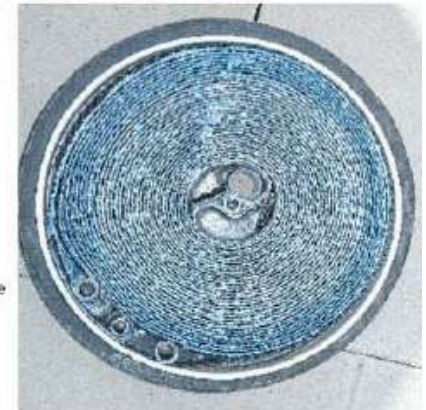
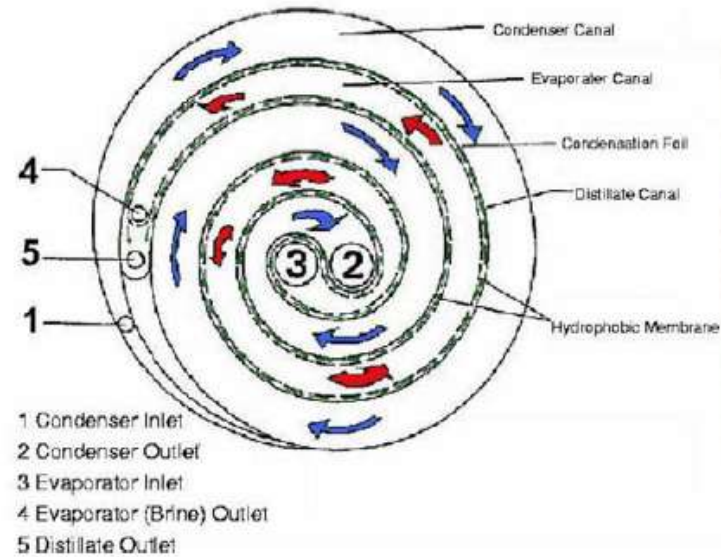
Construction of hydrophobic membranes for vapor distillation -- resisting bio-fouling & scaling.

- Heat gradient rather than pressure gradient.
- Vapor transfer rather than liquid.

Porous hydrophobic membrane with specific nano-morphology.

Avoiding precipitation of scaling by minerals.
Avoiding accumulation of Bio-Fouling.

J. Koschikowski et al. / Desalination 156 (2003) 295–304



Goals for the Next Generation of Desalination: Decreasing the cost!

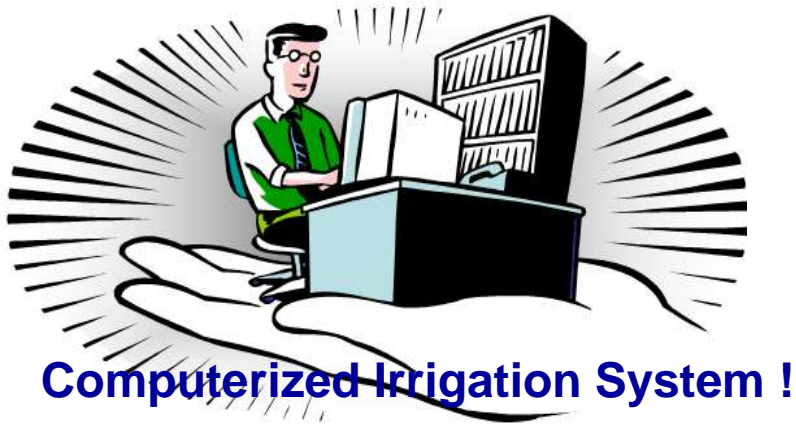
Solar Desalination System

1 M3 / water by RO \approx 3.75 KW/hr

**Solar heated vapor distillation -- decreases desalination cost by 50%!
Affordable water from various types of raw water: salty, brackish & contaminated groundwater and / or sea water.**

Advantages: relatively cheap water can be produced even by small plants located in rural communities in dryland regions.

Once achieved, the big barrier to broad dissemination is a lack of basic and technical education for operation & maintenance.



EDUCATION !!!





Unlike gold, water needs care & attention

