The Tube recharge

Rainwater storage at a cost of < $1 per cubic meter

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Context

Many of the 3 to 5 million hand dug wells in Africa dry up 1-3 months/year for reasons like

- Low yielding water layers
- Climate change, changing rain patterns
- Deforestation, compact soils,..

Infiltration increases with:

- Cultivation on contour, plants like vetiver, trees,..
- Small dams , sand dams
- 3R. Retention, Recharge, Reuse

A solution. 3R

Retention. Recharge. Reuse

A recharge option, Tube recharge

- Combined with family wells
- Nearby a well that dries up
- Only used in areas where part of the rainwater flows away
- Cost 10 US$ + labor

How it is made

- Make a pit 5 metre from a well
- Make a 6 cm hole of 3 - 6 mtrs. with a soil punch
- Mount a 3 mtr. PVC pipe with slots, fill with sand

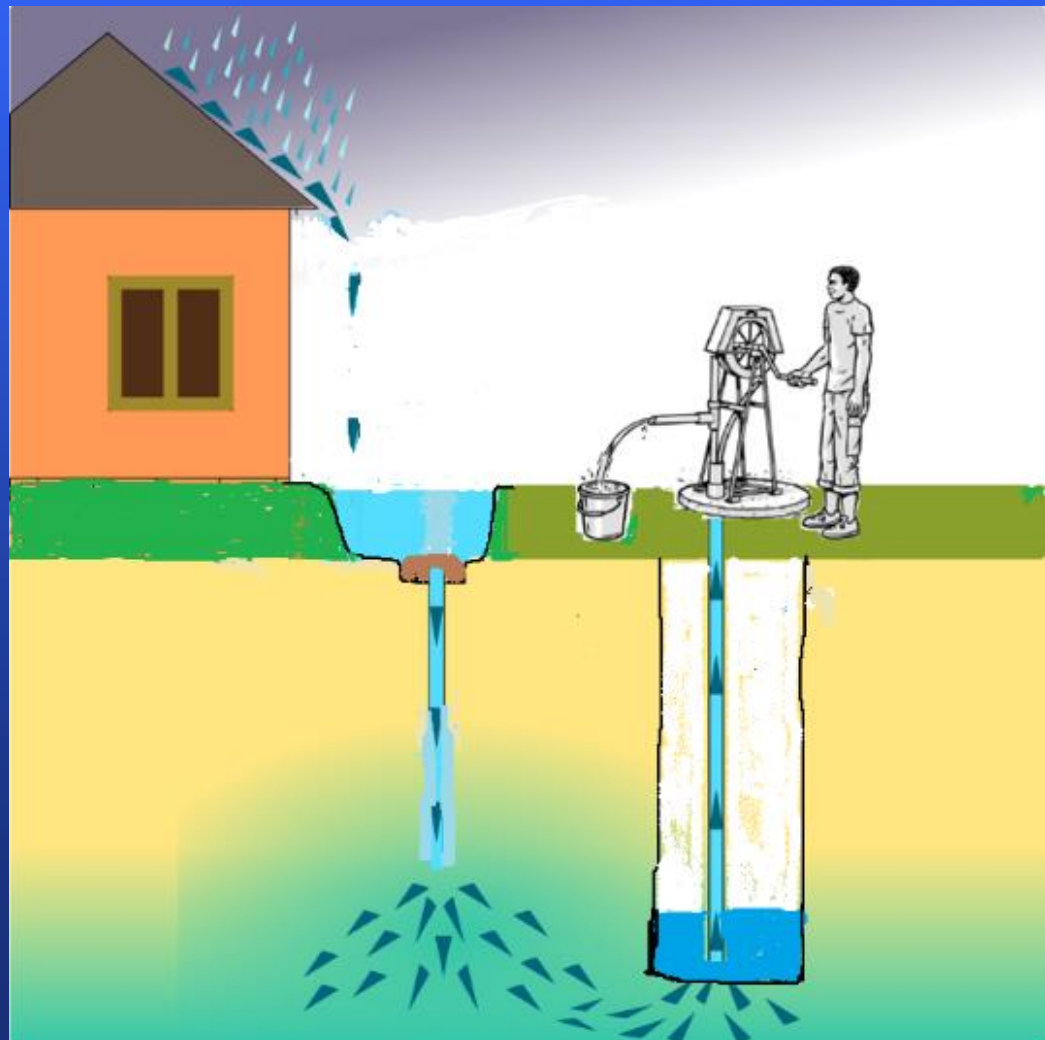
How it functions

- With each rain the pit fills up
- Water infiltrates via a cloth filter and sand
- In 1 to ? days the water reaches the first aquifer
- Part of the water stays around the well
-That water can be pumped up in the dry season

The vertical model

Water from the roof or ground flows into the pit

The small hole is 3 to 6 mtrs deep passing the top compact layer but does not enter into the aquifer



Experiences in Tanzania

- This well of 18 mtr deep dried up 2 months/yr.
- 8 years ago a Tube recharge was installed
- Now this well always has water

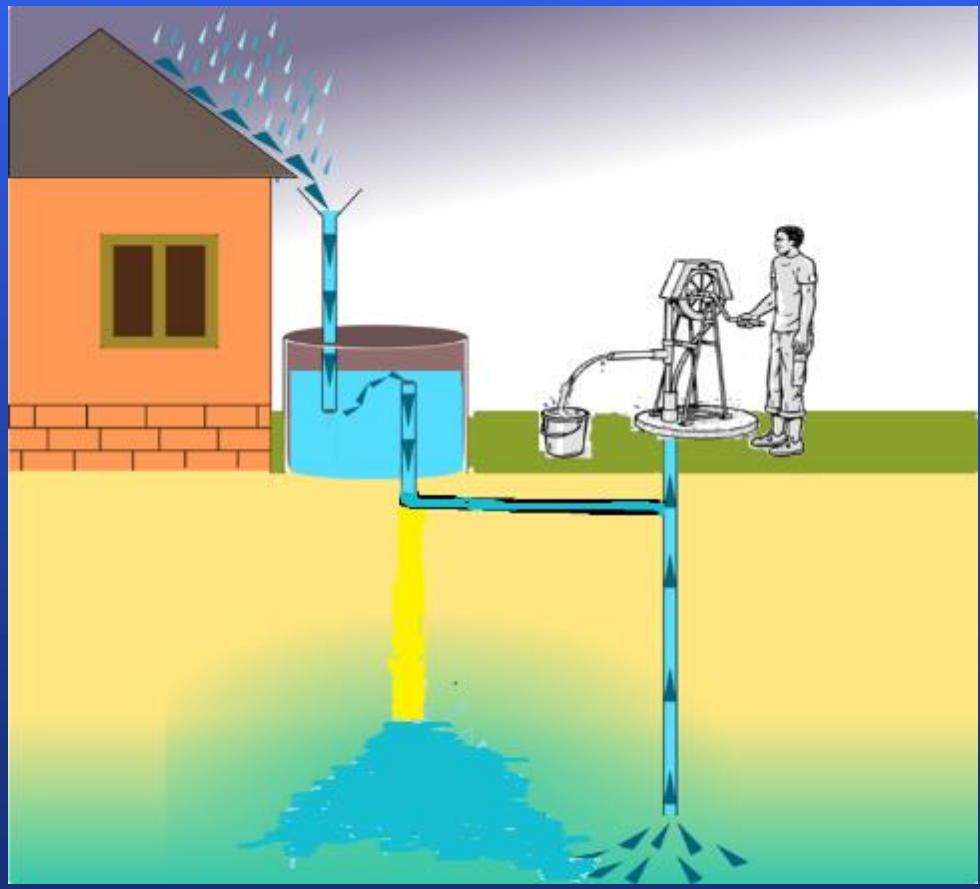
The horizontal model

Water from the roof or ground flows into a tank or a pit

A PVC pipe connects the pit with the well.

Only in areas whithout chemical contamination

Drinking? use a filter



Experiences

There now are 150 Tube recharge systems in Tanzania, Mozambique, Ghana, Nicaragua

In general good results

Technology does not (yet) spread itself.

More, critical mass needed.

Cost of water $ 0.5-1 /m3

- Hand dug well, Rope pump, recharge $ 250- 500
- Infiltration/year 100- 200 m3
- Water pumped / year 50 m3
- Volume over 10 years in well 500-1000 m3
- **Cost/ cubic metre** **$ 0.5 - 1**

This is 20 times cheaper than a ferro cement tank

Conclusions

- Where possible a Tube recharge is an extreme low cost storage option
- Wells that dry up could be improved
- Can be part of family systems but water for drinking should be treated. (boiling, chlorine, filter)

Suggestions

- More studies to see impact, cost, etc.
- Include this option in WASH trainings
- Make it a product for local well diggers

Info; www.smartcentregroup.com