SMART WaSH solutions in times of Corona

Part 2 SMARTechs

Simple, Marketbased, Affordable, Repairable Technologies

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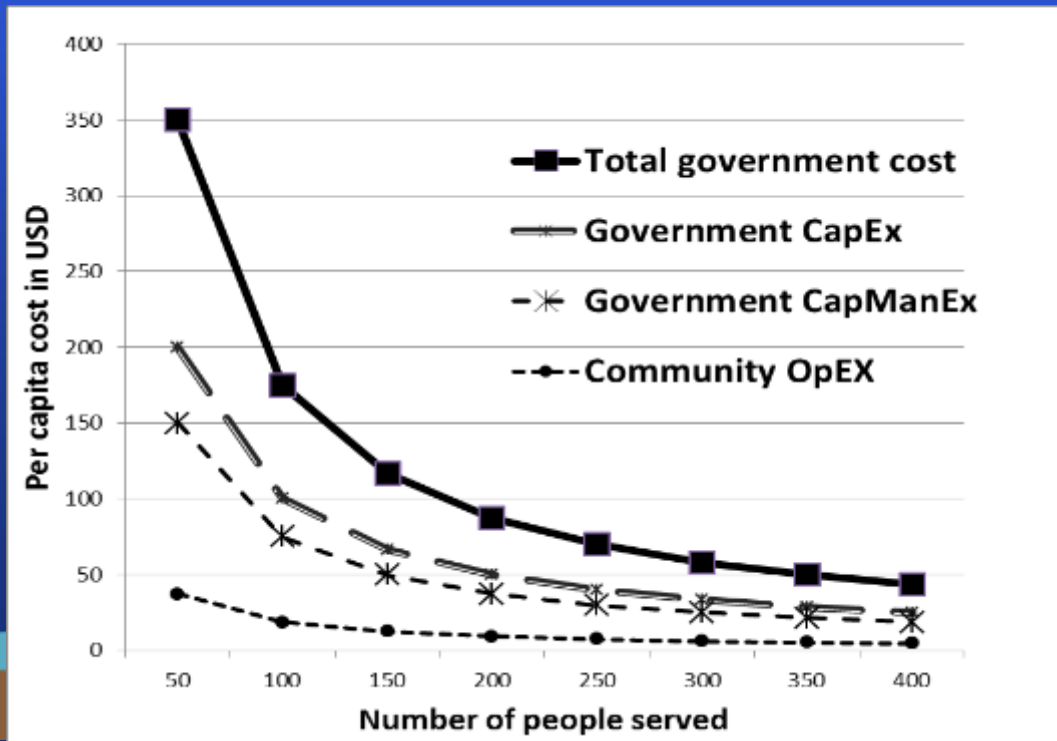
Challenges

- 70% of unserved rural, small commun.
- Cost/cap. for group of 100 people? $50- $400 with machine drilling & import pumps.



A solution? Local production

- Wells, drilling
- Pumps
- Storage/ rainwater harvesting
- Irrigation
- Household water treatment
- Sanitation
- Hygiene

Hand dug wells

- Small diameter wells. (1.2m 80% less than 0.9 m)
- Fresh air with well ventilator

Well reducer rings

Reducing the top diameter of a well to install a well cover and a pump

Underlining

Deepening a Hand dug well from top down

No danger of walls collapsing

Tube bailer

A way to make hand dug wells deeper from the top
No need to go in the well
No danger of collapsing

Manual drilling, SHIPO method

Combination of sludging, percussion, jetting

Wells to 50 meters deep .

Cost $500-$1500 including pump

Manual drilling, Mzuzu method

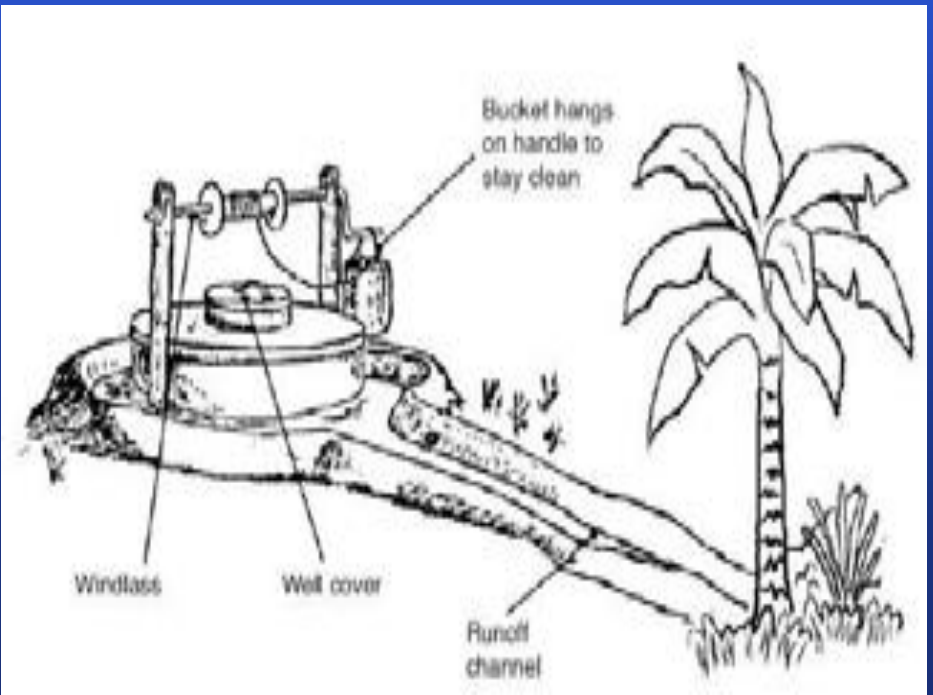
Combination of core and spiral auger, percussion, bailing

Wells to 25 meters deep .

Cost $150 - $500

Lifting devices
Windlass

Avoid the bucket touching the ground
Close well



Pumps, Rope pump Model 1

For dug and tube wells 5 to 35 m deep

Cost $90-$130 off workshop

Pumps. Rope pump Model 2, 3

For dug and tube wells 5 to 35 m deep

Cost $40-$100

Rope pump
Model 4

For tube wells 5 to 35 m deep
Cost $40-$80

EMAS pump

Can pump up to 20 m high
For open and tube wells 5 to 35 m deep
Cost $40- $80 off workshop

Treadle pump, Moneymaker

Suction pump, max depth 7 metre

Mainly for irrigation

Cost; $80- $130

Solar pumps. Future, BLDC pump

Future pumps is suction pump. Cost Ca $ 700
Mainly for irrigation
BLDC pump submersible pump, H =11 m
Cost; $ 150- $250

Wire-brick cement tanks

Materials: bricks, wire, cement
Volumes: 1 to 50 cubic metres
Cost: $20 - $30 per cubic metre, excl. labor

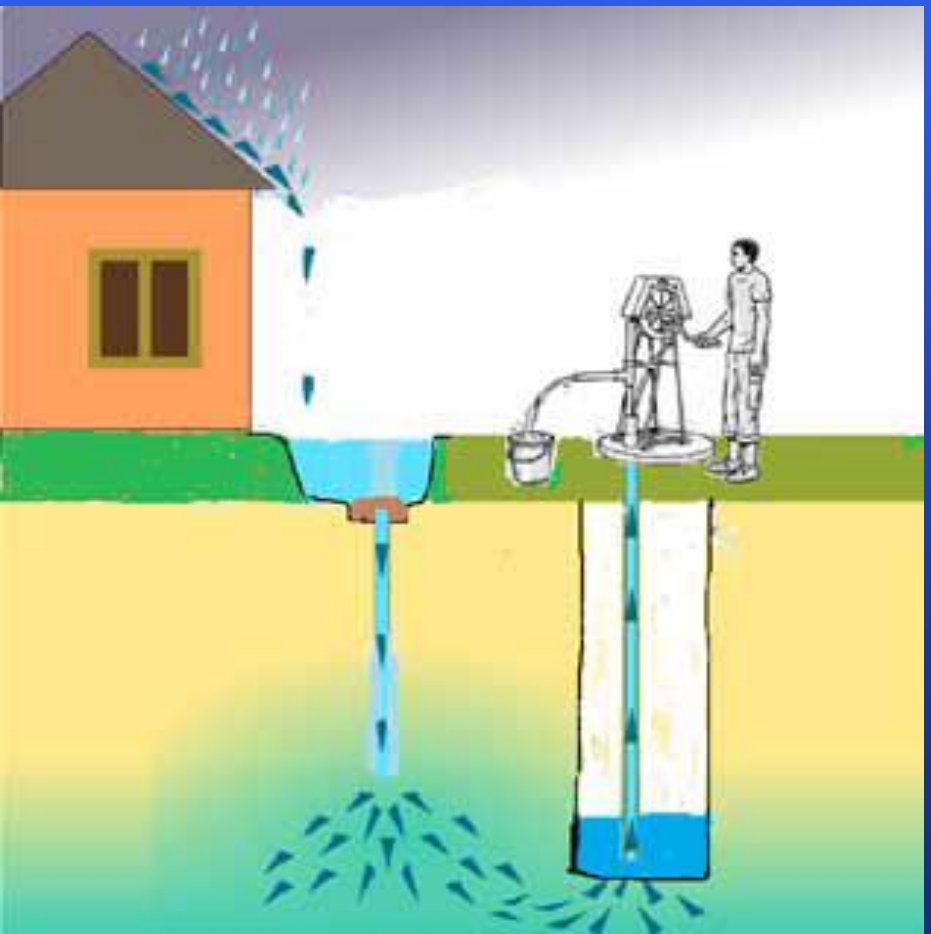
Rainwater harvesting. Ghana gutter

Made of corrugated sheets

Cost, $2- $3 / metre

Rainwater storage in the ground
Tube recharge, indirect

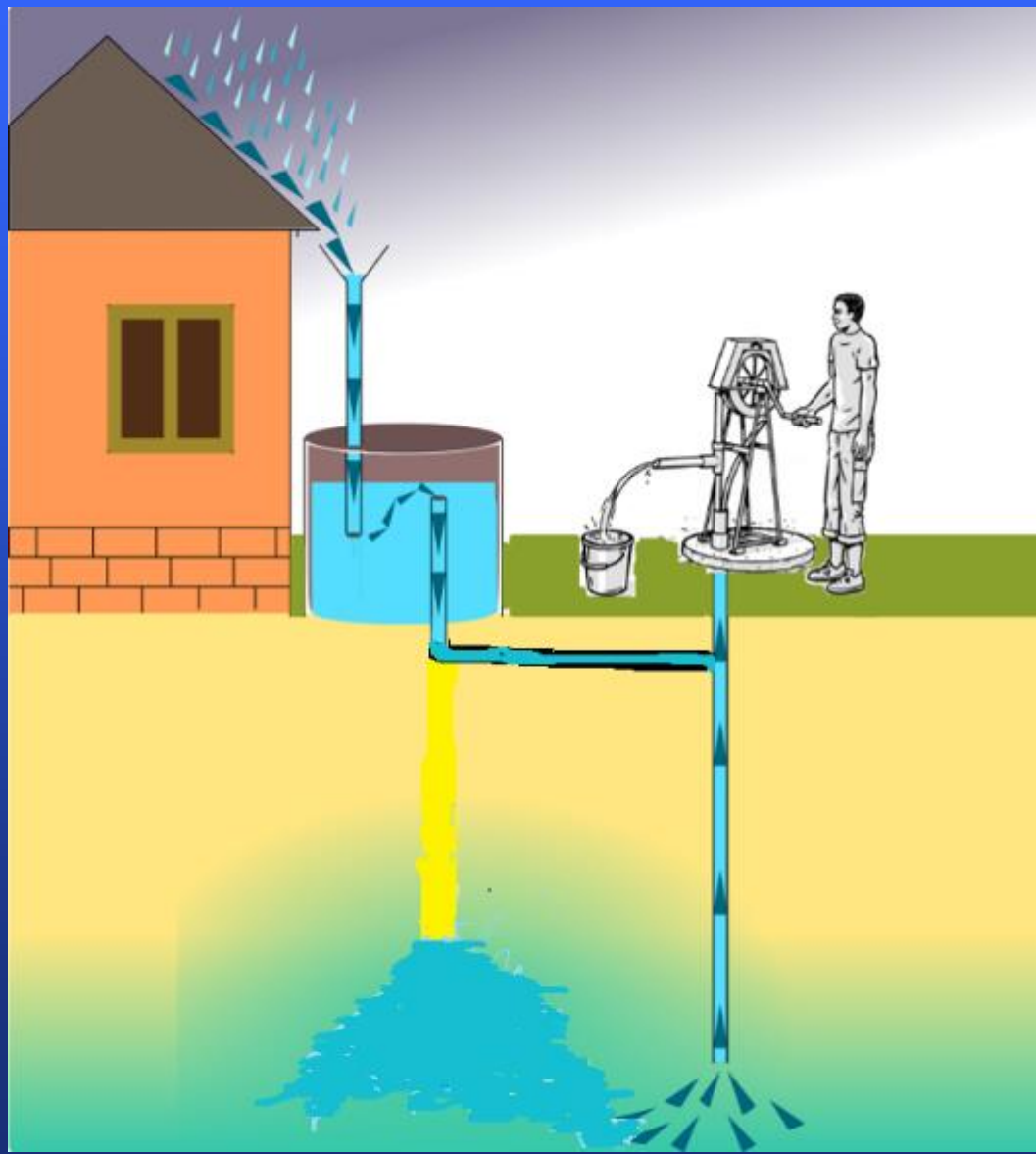
Water from roof or ground run of infiltrates near wells
Avoids that wells go dry



Tube recharge. Direct

Water from roof or ground goes directly in the well.
Can store 50 to 200 cubic mts/year

Cost Materials: $10



Household Water Treatment

50% of water from boreholes, wells is unsafe.

- HWT intermediate solution. $2/pp/yr
- Filters most consistent in use
- Challenges: Awareness. Supply chains effective affordable filters. Payment options

Table top filter, produced in Malawi

Removes 99% bacteria, protozoa
Filter capacity: 30 to 50 litres per day
Cost: Ca $20

Sanitation

Corbelled latrines
Zero cement, only bricks

Sanitation. Latrine slabs

SaTopan seat
Plastic bowl with a valve
Flush with 0.5 litre water
Cost plastic part; Ca $5

Hygiene. Tippy Tap, Wash bucket

Produced with local materials

Make liquid soap out of soap bar

Hygiene. Dip Tap

Family can make it

Wash hands with 0.25 litre of water

Cost; $ 0

Hygiene. Making soap

Potash made of banana leaves, tamarinde
Oil (sesamy, Jatropha, other)
Water

Hygiene. Making liquid soap

With a soap bar of 100 gram
you can make 2 litres of liquid soap
by diluting small pieces of soap in hot water

Lessons? Simple is not easy

Example, rope umps Ghana

- 80% defect after 1 yr.
- Errors in construction
- Errors in implementation,
  $ for maintenance

Conclusions

- Need to invest in 3 Ts. Training, T…., T….
- Large scale (Marshall plan?) for capacity building.
- Short term, SMART Centres, WET Centres
- Long term, Include knowledge in vocational training

Thank you

Information

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