

Deep Bed Farming & SMART water technologies

Local and proven solutions in Africa to adapt to climate change, increase food production and reach SDG's for Poverty, Gender, Water and Work

Challenges in Sub-Saharan Africa (SSA)

- Reduced food production due to Climate change
- 300 million people in rural SSA lack "Basic service". They are "left behind" due to high cost
- Maintenance of rural communal water pumps. Many are not functioning due to lack of funds

A solution can be; rain water harvesting (DBF) & Innovative locally produced technologies (SMARTechs)

Deep Bed Farming (DBF)

Storing rainwater in the ground is essential to adapt to climate change. One promising option is DBF which includes breaking "hardpan", a human induced impermeable ground layer. Once this layer is broken, all rain can percolate. Then with regenerative agriculture, DBF can double yields of rain-fed crops like maize. Over 25,000 farmers in Malawi apply DBF which now also is promoted by Government and SIWI. The many small scale farmers can become the "watershed managers". DBF recharges shallow groundwater over time and reduces risk of depletion. Low cost farm wells are possible if there are shallow groundwater layers.

SMARTechs

Stands for Simple, Market-based, Affordable, Repairable Technologies. Examples include manual drilled tube wells to 40 m deep, locally produced pumps (EMAS, rope, Solar pumps), underground tanks where wells are too expensive, household water filters to make water safe to drink. In areas with >200 mm rain/yr. an improved water source at <30 minutes from home ("basic service") is possible with SMARTechs at a cost of \$25/person. Over 10mln. people in Africa already have "basic service" with these options.

Combining DBF & SMARTechs = 6 SDGs

"Basic service" is possible by subsidising Farm wells. An example is Zambia where 500 farm families received a subsidized manual drilled wells with 1 condition; generate income. Results after 6 years;

- *A well costing \$1000 provides "basic service" for 40 people = \$25pp - lower than communal wells.*
- *Over 90% of the rope pumps are functioning- much higher than communal pumps*
- *Subsidised wells create demand for self-supply. 150 families paid a well/pump themselves*

So:

- **DBF** enables (small) farmers increase food production without fertilizer (and recharge water tables)
- **SMARTechs** provide water in the dry season for domestic & productive use, (food). Using the Zambia approach can provide SDG6.1 in 50% of SSA with. 1 time investment 150 x \$25 = **\$3.75 bln.**
- **DBF & SMARTechs** impact SDGs for Climate but also for Poverty, Food, Gender, Water and Work Governments, NGOs could subsidise those lacking "basic service". Others may use micro credits

Key to scale up is investing in the 3 Ts:- Training. Training. Training.



DBF increases yields. Left 2 ton./ha. Right 6 ton./ha

Drilling wells with locally produced tools

PP, back ground papers; www.tiyeni.org and www.smartcentregroup.com