Scaling self-supply

An approach to reach SDG6.1 in rural Africa at a cost of $25/person, and also contribute to SDGs for Poverty, Food, Gender and Climate

all systems connect
INTERNATIONAL SYMPOSIUM 2023

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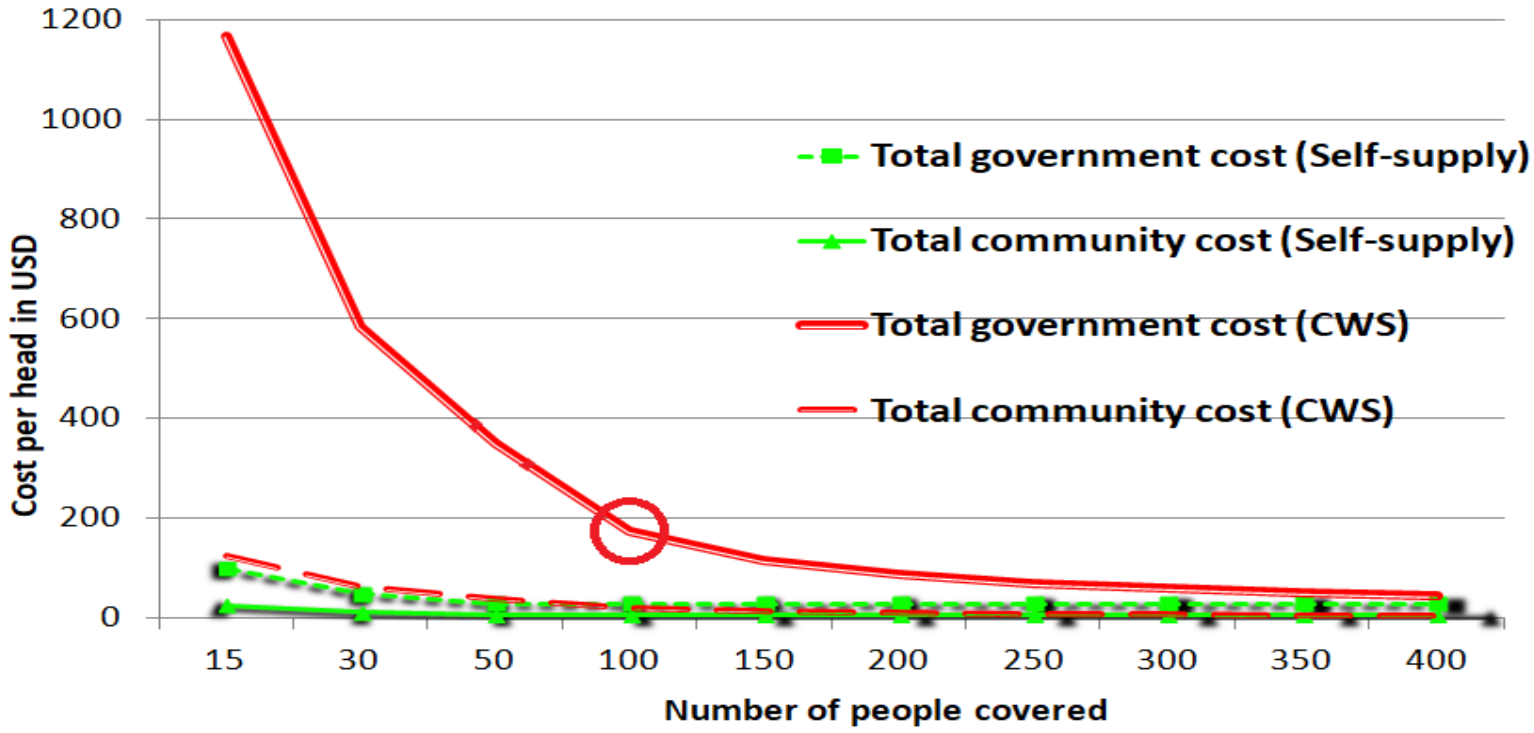
Training the local private sector in Simple, Market based, Affordable and Repairable Technologies

300 mln. people in rural Sub-Saharan Africa lack “basic service”

SDG6.1 indicator “basic service”= improved source <30 min. round trip

Most live in areas with less than 50 people per square km. where “Basic service” with conventional technologies would cost $50 - $150 per person



Book Self-supply. Sally Sutton. WSP/UNICEF/SKAT 2015

Most rural communal water supply systems consist of a Machine drilled borehole & imported pump

Investment cost (CapEx), $2000 - $8000 = subsidized by Governments, NGOs

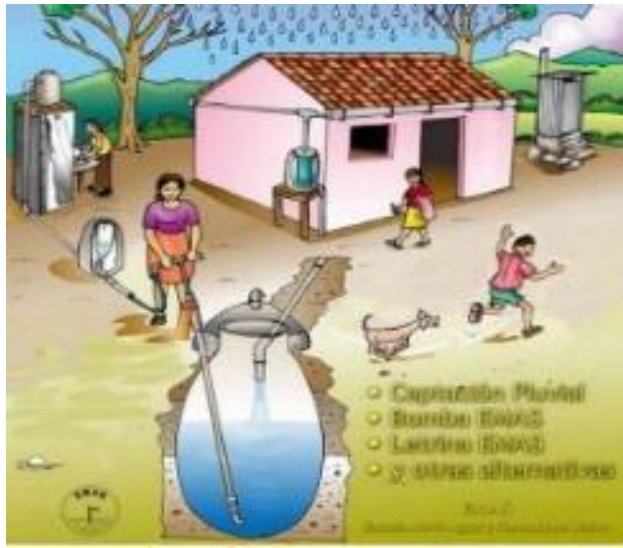
Such system used by 250 people; average cost/person **$25**

The same technology for 50 people; average cost/ person **$125**

Options that reduce cost (CapEx) to $25/person

- Upgrading dug wells (close wells with a cover + low-cost pump)
- Drill new small wells (10 to 60 m deep)
- Use locally produced, low-cost pumps (EMAS, Treadle, Rope pump)
- Use underground storage tanks where drilling is expensive

Condition; Minimum rainfall >200 mm/year



Proposition

To provide “basic service” for 300 million people in rural Africa it is more cost-effective to subsidize self-supply /small farm wells made with local technology than to subsidize larger communal wells made with imported technology.

Self-supply = part of “The SMART approach”

Simple, Market-based, Affordable, Repairable Technologies. Focus on:

1. **Innovation;** affordable technologies, local production
2. **Training;** coach the private sector, guarantee quality; Simple is not easy!!!
3. **Support Self-supply;** targeted subsidies for those without “basic service”.

IRC evaluated the SMART approach in 2022 (potential for SDG6 + other SDGs)

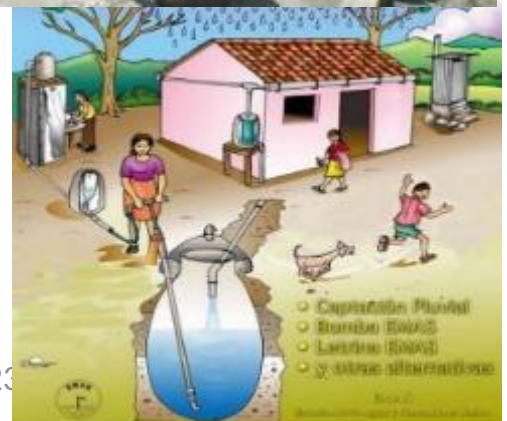
Many (new) technologies are fit for self-supply

- **Well drilling**: EMAS, SHIPO, Rotary jetting — Cost $10 - $40/metre.
- **Pumps**: EMAS, Treadle, Rope, Solar pumps. — Cost $60 - $500
- **Storage**: Underground tanks, Tube recharge, Deep Bed Farming — Cost $0.1- $20/$m^3$
- **Treatment:** Household Water Filters — 30 - 50 Ltr./day — Cost $20 - $40







Examples Hand drilled wells, Rope pump

Zambia. Jacana NGO

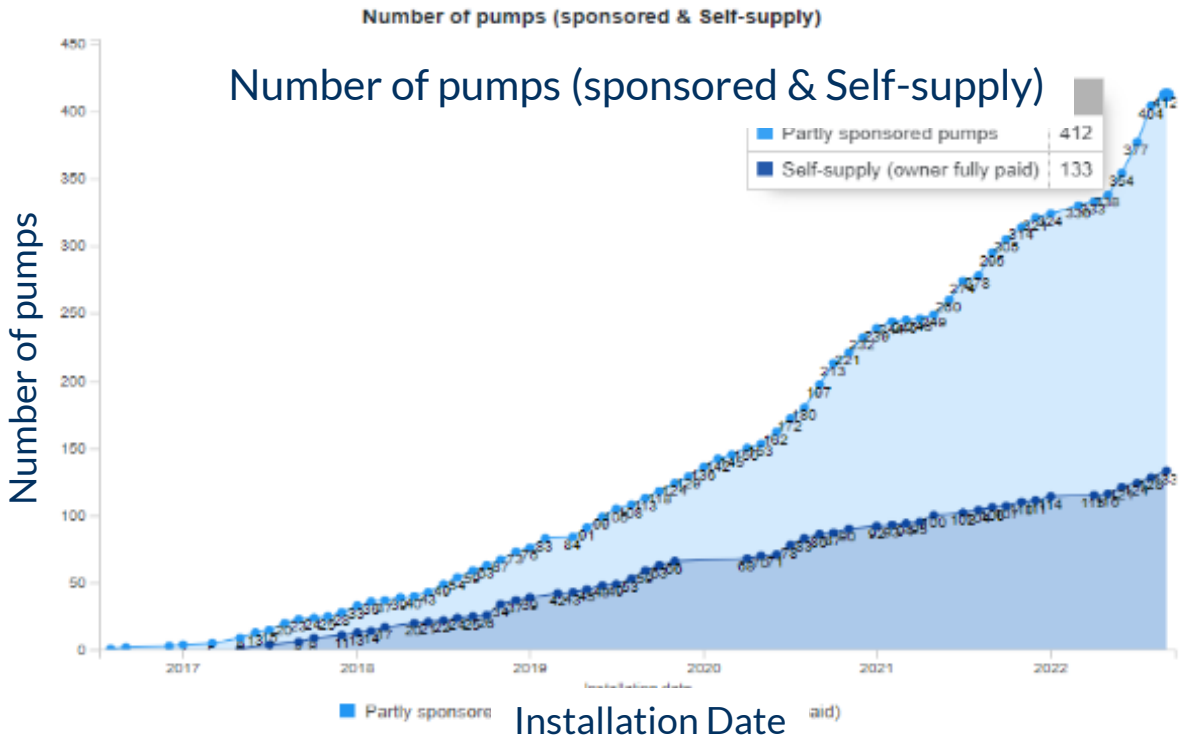
- 460 subsidized wells. Condition=income
- 1 well serves 40 people, (IRC eval. 2022)
- 92% pumps functioning!
- created demand, 130 wells full self-supply

Tanzania. SHIPO, NGO

- >15.000 rope pumps, 60% self-supply

Nicaragua. SNV, Dutch Aid

- 50.000 rope pumps for farmers
- Income 20 yrs. $100 mln. with $2 mln. aid for training, marketing



mWater Dashboard, Jacana SMART Centre (2022)

Example; EMAS & MoneyMaker pump

Bolivia. EMAS, NGO

- EMAS wells/pump to 60 m deep; Cost 20 m. $200- $300
- 70.000 systems in Bolivia, 3000 in Sierra Leone
- 70% paid by families

Kenya. Kick start, NGO

- 3 MoneyMaker pump models, Cost $90- $190
- 70.000 sold Kenya, 300.000 in 15 other countries
- 50 % donated NGOs, 50 % full self-supply.
- Irrigation dry season, income $700/yr.

1. Key factors for success

A. 5 Ps for marketing

1. **Product;** Effective, Attractive, User friendly, market-based.
2. **Price**; A range of affordable options
3. **Place**; Products available nearby, a supply chain,
4. **Promotion**; Product marketing, SMEs. Social marketing/awareness, NGOs
5. **People;** The best marketeer is the neighbour.

B. Long term follow up coaching quality

C. Creation of critical mass 5 - 20%

Supporting farm wells. 5 SDGs for the price of SDG6.1 ($25/ cap.)

SDG 6.1.	**Water.**	Wells of $1000 serve 40 people
SDG 1.	**Income.**	MoneyMaker increases income $700/yr
SDG 2.	**Food.**	Well = water in dry season = irrigation, livestock, fish,.
SDG 5.	**Gender.**	A well near premises, saves time for women, more safety
SDG13.	**Climate.**	Increase resilience. Store rain in the wet season → water I the dry season.

Concerns self-supply

1. Water shallow wells safe to drink?
2. Millions of wells, groundwater depletion?

Solutions

1. A $25 household water filter
2. - Hand pumps do not deplete groundwater
   - Many small wells better than few large wells
   - Combine wells + rain water harvesting
     ej. Deep Bed Farming (Tiyeni)
   - Small farmers - “water catchment managers”

Conclusions

1. Supporting self-supply/farm wells = strong tool to reach SDG6.1
2. Cost to reach SDG6.1 with this model (**$25 /person) = 2 to 6 times less than the conventional approach**
3. **Rain water harvesting + Farm wells + Agri skills = Rural development; potential to reach 6 SDGs**

Recommendations

1. Reach SDG6.1 in SSA? Transformation from;
   - Imported technologies - to also locally produced technologies
   - Water for domestic use only - to also water for productive use
   - Subsidizing communal wells - to also subsidize household/ farm wells. Use examples from Zambia, Tanzania,..
2. Create **rural development hubs, Invest in 3Ts. Training, T…. T….**
3. WASH and Agri sector should cooperate to reach SDGs

Cost basic service for 300 million and who pays?

Cost: 300 million people @ $25/cap = $7.5 billion

Who pays?

- Outcome payers. Those who want to reach SDG6.1, to leave no one behind. Also those interested in poverty reduction, food security, gender, employment, climate adaptation
- Carbon credit funds.
- Funds for climate resilience,..

SMART Centres in 10 countries

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Background papers
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SMART Centre Zambia
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References

- Assessment of the Simple, Market-based, Affordable and Repairable Technologies (SMART) approach for Water and Sanitation, IRC WASH, 2022 (link)
- RWSN Field Note: History and status of the rope pump in Nicaragua (link)
- Book: Self-supply: filling the gaps in public water supply provision, S.Sutton, J.Butterworth (link)

Papers:

- Regarding Groundwater and Drinking Water Access through A Human Rights Lens: Self-Supply as A Norm, Jenny Gronwall, Kerstin Danert (link)
- Monitoring Groundwater Use as a Domestic Water Source by Urban Households: Analysis of Data from Lagos State, Nigeria and Sub-Saharan Africa with Implications for Policy and Practice, Kerstin Danert, Adrian Healy (link)
- Groundwater, Self-Supply and Poor Urban Dwellers: A Review with Case Studies; IIED: London, UK, 2010. Grönwall, J.; Mulenga, M.; McGranahan (link)