All systems go
Africa

Subsidized self-supply:

A promising service delivery model for Africa

The example of Zambia

Henk Holtslag. Netherlands

henkholtslag49@gmail.com

Yussif Abdul -Rahaman. Ghana

www.pumpingislifewash.org

The SMART Centre Group

IRC Supporting water sanitation and hygiene services for life

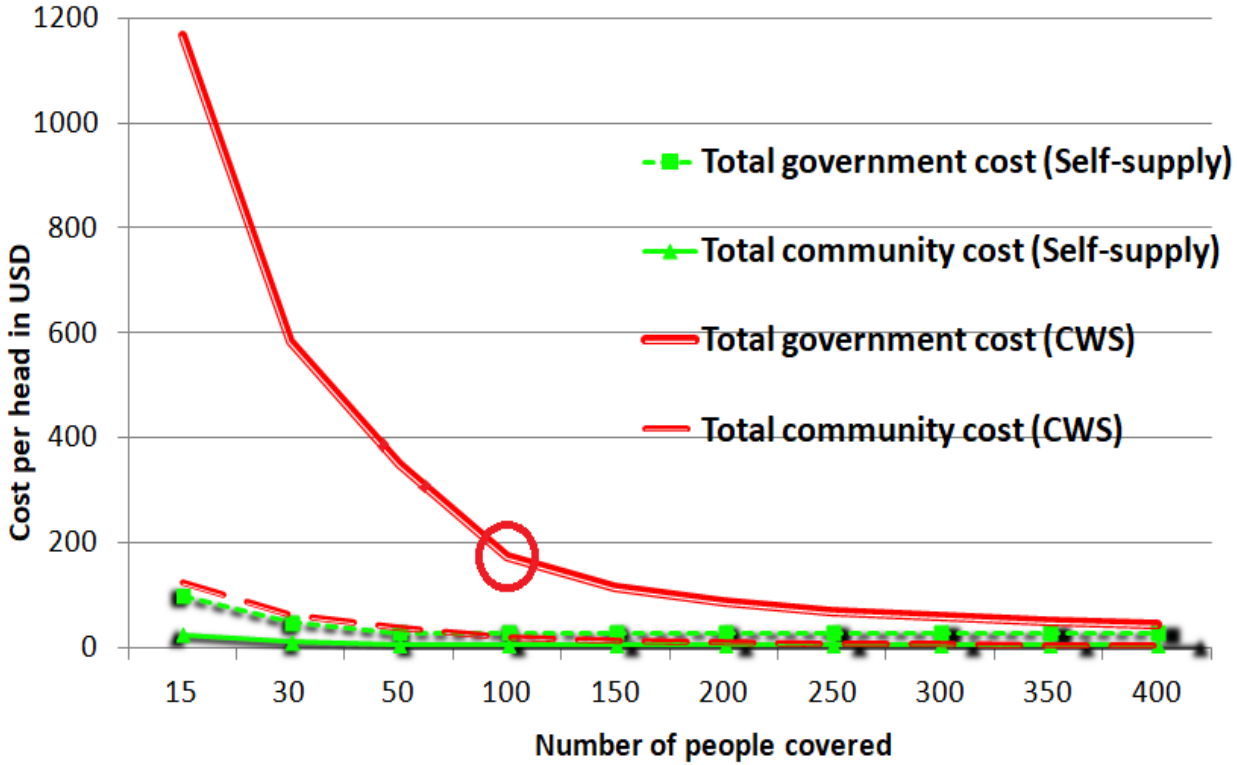
unicef

Background

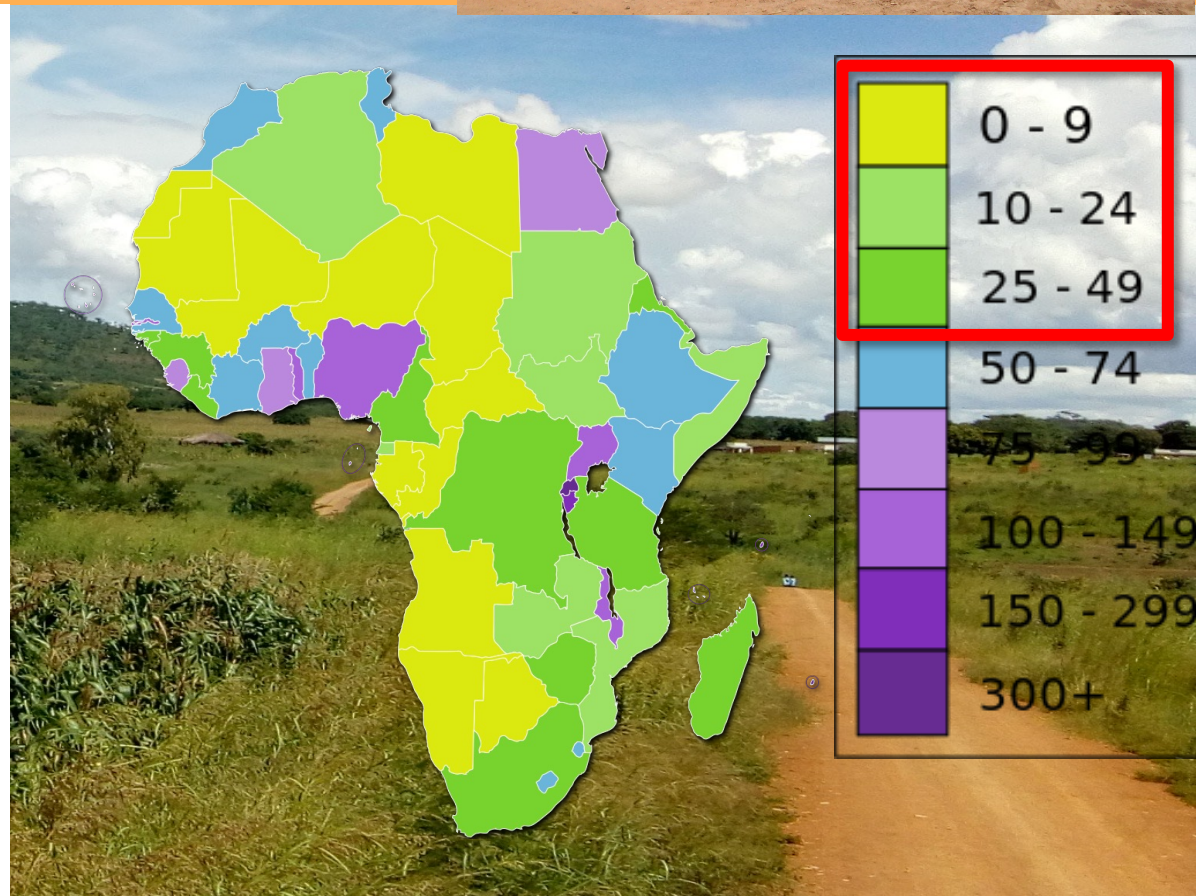
How to reach SDG6.1 in small rural communities in Africa?
(improved water source less than 30 min walk from home)

High-cost machine drilled borehole & import pump

Capex: $2500 - $7500. 250 people / pump = $10 - $30/capita
Same technology for 50 people; Capex = $50 - $150/capita



Source: Sally Sutton, WSP/UNICEF/SKAT 2015



Goal presentation; Share an example how SDG6.1 in remote rural areas is reached with subsidized self-supply / household wells

Proposition; To reach SDG6.1 in rural Sub Saharan Africa it is more cost-effective to subsidize household wells than communal wells

Challenge - Maintenance of communal pumps

Functioning *because*

- Privately owned
- Productive use, income
- Local affordable spares

Not-functioning

- Community owned
- Domestic use only
- Imported spares

A solution; Subsidize self-supply/ household wells

Stimulate families to co-invest in their well

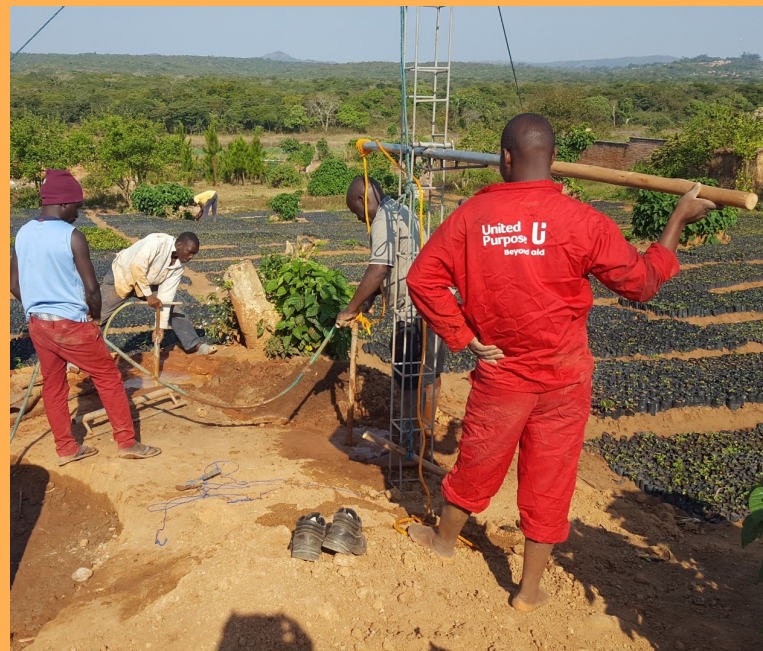
Hand dug wells

- In areas with shallow aquifer, low permeability
- Ca. 5 million wells in Africa (Sutton 2021)

Manual drilled wells EMAS

- Small diameter casing 50 mm, pump 30 mm. To 60 m deep. $10 - $20/metre, including pump

- Cost well 20 m. $200 - $400
- 70.000 wells Latin America, Sierra L.
- 70% self-supply



Other drilling options

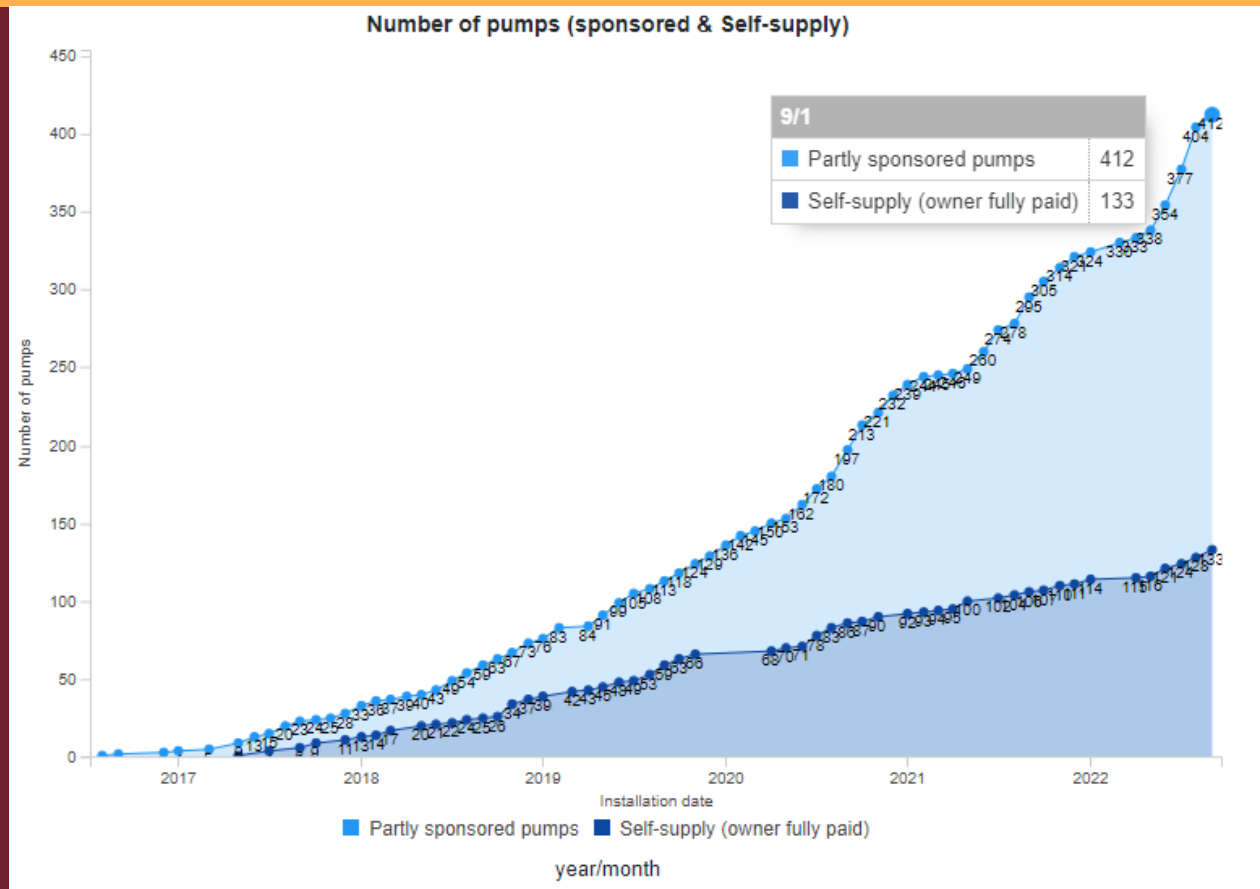
- Mzuzu. To 25 metre. Cost 20 m. well- $100 - $500
- Shipo. To 45 metre. Cost 20 m. well- $400 - $1000 (4.000 wells East Africa)
- Rotary jetting: To 80 metre. Cost 20 m. well- $400 - $1000 (>150.000 wells Nigeria)

Locally produced pumps

- EMAS pump. Pump head 35 m Cost $30 - $50 (can pump to 20 m up)
- Rope pump. Pump head 35 m Cost $50 - $120 (130.000 pumps worldwide)
- ZL solar pumps. Pump head 30 m Cost $150- $500

Example Zambia. Jacana SMART Centre

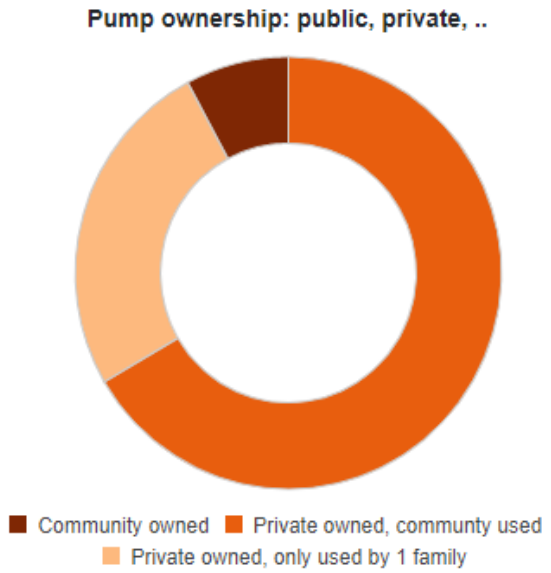
- 540 wells in 5 years (SHIPO drilled well & Rope or solar pump, 20 - 35m deep)
- Cost $800 - $1200. Installed at 1 family, partly subsidized.
  Condition; pump needs to generate income
- 410 subsidized wells created market for 130 self-supply wells (→ 100% family paid)

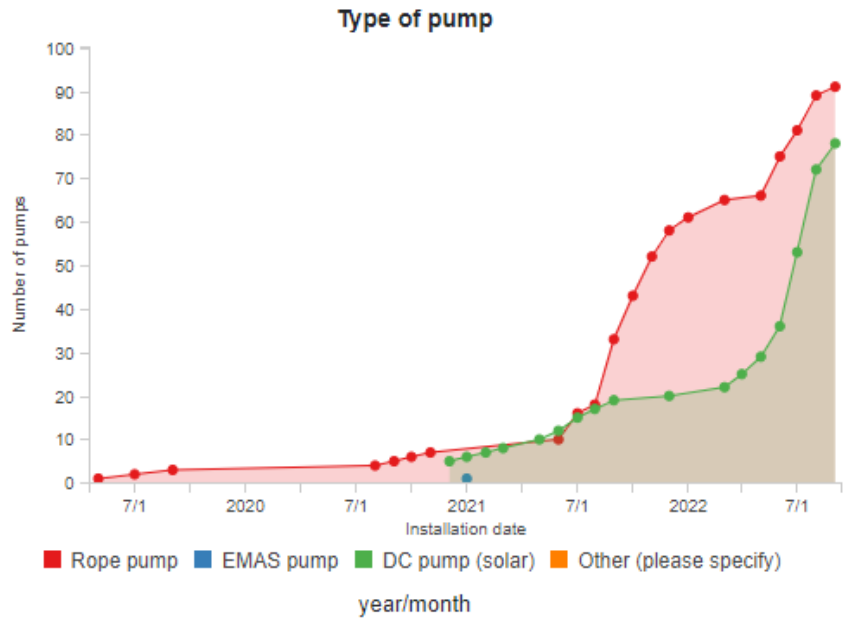


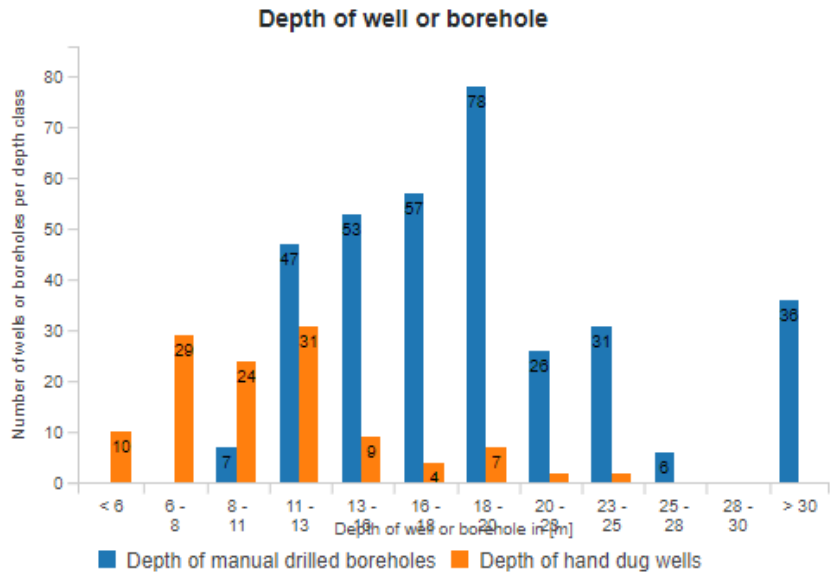
Experience Zambia

- Families with a well share with average 50 people
- Average Capex $20/cap (donated). Same as machine drilled well large communities
- No headache about maintenance!!
  > 95% of pumps functioning (due to convenience & income)

- Much demand for (new) low-cost solar pumps for open wells and boreholes







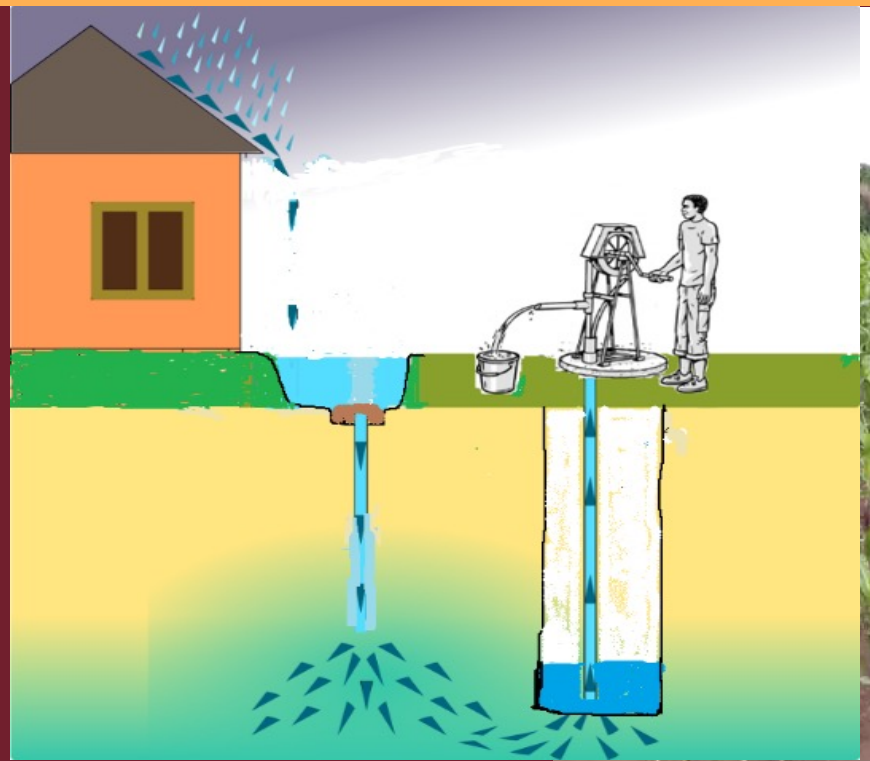
Learning points; Subsidized self-supply

- **Family-owned pumps serve small communities**.
  400 wells serve 20.000 people with SDG6.1 (improved water source <10 minutes from home)
- **Sustainable maintenance**
  Families maintain pump, > 95% pumps are functioning
- **Food and income.**
  Household wells increase food security & income ($ 225/yr/family. RWSN 2022)
- **Time saving and safety for women and girls**
- **Employment**
  Well drilling, pump production = employment private sector. Irrigation = work for farm families
- **Subsidized wells created market for full self-supply**
  Some families now invest 100% themselves.

Concerns with household wells

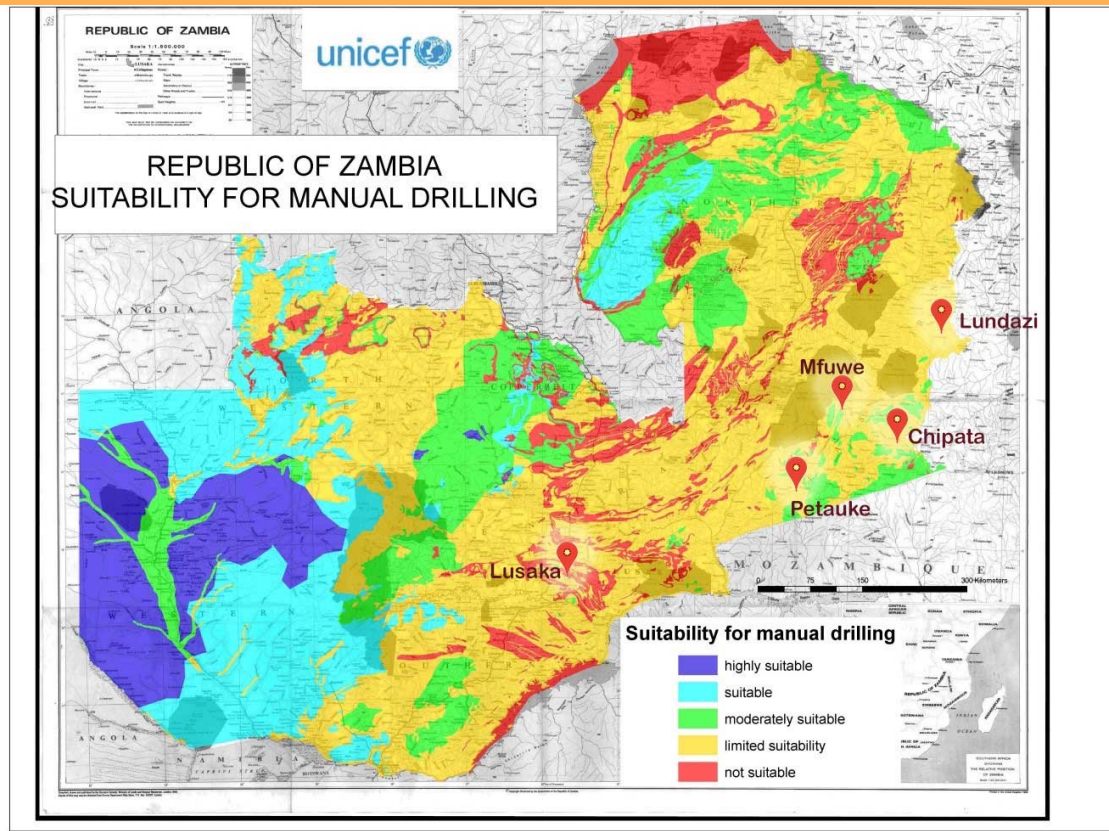
1. Water quality; who will test all wells?
2. Depletion of groundwater

Ref. 1. Household well? ; Treat water; chlorine or water filter
Chemicals, Fluor,..? ; Store rainwater & use a filter
Ref. 2. Many small wells less risk for depletion than few big wells
Stimulate families to recharge groundwater, Tube recharge,
Deep bed farming. (www.tiyeni.org)



Conclusions; Subsidized self-supply / household wells

- **Potential to reach SDG6.1 for the unserved in rural areas**
  in many cases with the same subsidy ($20/cap.) as subsidized communal supply
- **Also impact on SDGs 1, 2 and 8** (Poverty, Food, Employment,..)
- **Example Zambia can apply in 50% of Sub-Saharan Africa**,(areas without rocks)
- **Subsidized wells create market for full self-supply.** (Subsidies for unserved)



Take away

- Rural development? Only if farmers have a well. All farms in USA had wells! 45 mln pumps
- With increased income families climb water ladder. Hand pump - Solar pump- ..
- With 1000 ltr/day a family can get out of poverty
- Low-cost wells? Key is low-cost wells & pumps
- Knowledge on low cost? Practica, EMAS, MetaMeta/ SMART Centres, Village drill,..

Actions to scale up

- Enabling environment: payment systems, regulation,... Subsidy for unserved
- The 3 Ts; Training, T……., T…….

SMART Centres train in
Simple, Market-based, Affordable, Repairable, Transferable technologies in 10 countries

Subsidized self-supply & low-cost tech. = SMART approach. Evaluated by IRC. 2022
MetaMeta / SMART Centre Group www.smartcentregroup.com
SMART Centre Zambia www.smartcentrezambia.com

The SMART Centre Group