SESSION DETAILS	
Session Title*	**Scaling self-supply in Africa.** A promising model to reach SDG6.1 in rural areas and contribute to SDGs for Poverty, Food, Gender and Climate
Session Organisers*	Reinier Veldman. Coordinator MetaMeta / SMART Centre Group, rveldman@metameta.nl Henk Holtslag Henkholtslag49@gmail.com
Session Contributors	Presenters: - Barbara van Koppen (IWMI) - Colin Andrews (Tiyeni) - Male farmer from Zambia (through video) - Henk Holtslag (MetaMeta / SMART Centre Group) Moderator - Lemessa Mekonta (IRC Ethiopia) Facilitator - Aline Saraiva (RWSN) Panel: - Presenters - Tamene Hailu (EWTI, Ethiopia)
Topic	☐Health ☒Climate resilience ☐Finance ☒Social justice ☐Systems leadership

Session Objectives

The objectives of this session include;

1. Informing participants about examples of supported self-supply from different countries
2. Informing how combining WASH and agriculture are essential connecting systems
3. Discussing how subsidizing farm wells can help to reach the SDG6.1 and other SDGs in rural areas in Sub-Saharan Africa (SSA) including bottlenecks inhibiting scaling up

Describe Your Session's Connection to Systems Change / Strengthening

Introduction

This session will discuss the statement that SDG6.1 in rural areas in SSA can be reached with a system change from:

a) importing technologies - to also producing technologies locally
b) water for domestic use only - to also water for productive uses such as irrigation
c) subsidizing communal water supply - to also subsidizing self-supply, such as farm wells

To explain and enlarge upon these statements see the back ground information below.

Key factors for success of the examples mentioned below were NGOs who created a critical mass with subsidies and invested in building local capacity, in long term training/coaching to provide SMARTechs, "technologies that were developed as if people matter", options that comply with the 5 Ps for marketing being:

1. **Product;** Options are Effective, Attractive and User friendly.
2. **Price**; A range of affordable options
3. **Place**; Products should be available nearby, so a local supply chain,
4. **Promotion**; Companies do the product marketing, Governments and NGOs should do the social marketing and the creation of awareness
5. **People**. The best marketeer is the neighbour.

More about the 5 Ps, see the book "Marketing safe water systems" by U. Heierli

Background information

Some 300 million people in rural Sub-Saharan Africa do not yet have "basic service", an improved water source within a 30 minutes return trip. They are the target group for SDG6.1 and often are small holder farmers who live in areas with less than 50 people per square km. The investment cost (CapEx) to serve them with the conventional approach including machine drilled boreholes and imported handpumps or piped systems will cost over $100/ per person. (Sutton, UNICEF, 2015).
The high cost is a reason that people in rural areas are left behind.
One way to provide this group with a "basic serve" is by scaling self-supply, so stimulating families to (co) invest in their own water supply. Self-supply is part of the SMART approach which combines Simple, Market-Based, Affordable, Repairable Technologies (SMARTechs) with training the local private sector. SMARTechs are a range of cost-effective options to upgrade hand dug wells, drill new wells manually, pump up water with pedal, hand or solar pumps, rainwater harvesting and underground storage tanks and point-of-use treatment with household water filters.
SMARTechs can be produced or assembled in any country in Africa and can provide "basic service" at a cost (CapEx) of around $25/person in areas with more than 200mm rainfall per year.
With a water source at premises small farmers can irrigate in the dry season, generate income and have water for domestic use. Water from farm/irrigation wells can be made safe to drink with a $25

household water filter. The full details of the potential of self-supply are also described in the book "Self-supply" (Sutton & Butterworth, 2022).

The SMART approach was evaluated by IRC (report) with general conclusions that:

1. It can assist in reaching the SDG6.1 target group in rural areas where other delivery models are too expensive
2. It contributes also to other SDGs like Poverty, Food, Gender and Climate.

Examples of the approach

Deep Bed Farming (DBF). Malawi

A key action of the SMART approach is rainwater harvesting. The local and UK-based organisation Tiyeni is promoting rainwater harvesting with Deep Bed Farming, an option to infiltrate most or all water that falls on the land. If combined with a full range of climate-smart agricultural practices, it doubles yields of rain fed crops like Maize but also recharges shallow groundwater layers in the long term. Over 80% of all farmers in Malawi (and SSA) are small holder farmers with plots of 0.5 to 2 Ha. If they apply DBF, they automatically become key "water catchment managers". Over 25,000 small farmers currently apply DBF and it may scale up to 1 million farmers in the future since this method is now promoted by many of the Malawi government agricultural field officers. There is also a cooperation with SIWI, which is involved in pilot studies in DBF leading to a Zambezi river basin catchment-wide programme.

Money maker pump. Kenya

The Kenya based organisation KickStart International promotes 3 models of MoneyMaker pumps. These pedal pumps can be used to depths of max. 7 m deep, cost $80 to $190 and can irrigate 0.2 to 2 acres. In Kenya some 70.000 pumps were sold and some 300.000 in other countries. Some 50% is sold directly via shops to farmers **so 100 % self-supply**. The other 50% is sold to NGOs or governments who give them for a lower prize or for free to small farmers, so **supported self-supply**. By selling cash crops in the dry season the average increase family incomes with these pumps is $700/year.

Manual drilled wells and rope pumps. Zambia and Tanzania

Well drillers trained by the Zambian organisation Jacana installed 460 manually drilled tube wells and locally produced rope pump at premises of families. 90% of the cost of these wells ($1000) was subsidized (supported self-supply). A condition for a family to get the subsidy is a plan to generate income with the water. Results are that families with a well, **share** water for free with an average of 40 other people, so family-owned wells serve small communities. The subsidy is $25/person.

Over 90% of these pumps are functioning. This high percentage is explained by the clear ownership, convenience and extra income created. Maintenance of the pumps is easy and affordable due to the local production of pumps and spares. Another effect of this **supported self-supply** is the creation of a market for **full self-supply**. Already over 130 families have paid the full cost of wells and pumps.

There was a similar development in Tanzania. There the SHIPO SMART Centre installed about 700 rope pumps on manual drilled wells in small communities and at schools with a 90% subsidy. These examples created a market for 100% self-supply and by 2022 there were more than 15,000 rope pumps installed of which an estimated 70% is self-supply so paid for by families. Many of the 100 well drillers and pump producers trained by SHIPO became independent small well drilling or pump producing companies resulting in a sustainable supply chain of affordable WASH technologies (IRC, 2022).

The rope pump. Nicaragua

Around 1990 local companies were trained to produce this pump and by 2010 over 70.000 pumps were installed. With the increase of rural electricity many families replaced the rope pump with an electric pump (climbing the water ladder). Most of these pumps are paid for by families/farmers themselves. An extensive study indicated that families who replaced the rope and bucket on their wells by a rope pump increased family income by an average of $225 /year (Alberts, 2003). The total increased incomes of all farmers with a rope pump over 20 years was over $100 million. This development started with the investment of $2 million development aid for training and coaching of pump producers (RWSN, 2022; Briemberg, 2022).

Concerns with self-supply

Scaling up self-supply and increase the number of farm wells can raise questions like;

- Is water from shallow wells safe to drink?
- Will groundwater not be depleted if many farmers make wells like what happened in India?.

Regarding quality, 3 litres / person/ day can be made safe to drink with Household Water Treatment (HWT) options like boiling, chlorine or a $25 household water filter.

Regarding depletion of groundwater. With hand, pedal or small solar pumps there is in general no risk of depleting groundwater. Pumping from many small wells has less impact on groundwater levels than pumping from a few large wells. The problems in India were mainly caused by large irrigation pumps and heavy subsidy on electricity for the pumps. This is different in Africa. Many areas have 500 mm rain / year or more so on 1 Ha of land there will be 5000 Cubic meters of rain water/year. With rain water harvesting options like Deep Bed Farming 10 to 20% of that volume can recharge into shallow aquifers so there will be 500 to 1000 Cubic meter of water available for domestic use and irrigation of gardens and small plots. Only 5% of the area in SSA equipped for irrigation uses groundwater (UNESCO, 2022). Some 61% of SSA is covered by aquifers of the “local shallow” type, which can locally be overexploited but have no risk of depletion (World Bank, 2023). In short, there is much potential in Africa but of course it is necessary to monitor ground water levels.

Who is going to pay the provision of basic service for “the yet unserved”?

The large part of the yet unserved in rural Africa, the people without basic service, are poor and cannot pay for a well or pump. By applying the SMART approach, basic service is possible with a subsidy of $25/person. That is the same subsidy that people received who already have “safely managed” or “basic service” with communal water supply systems. The CapEx of the systems for those who already have “safely managed” or basic service was subsidized (paid for) by Governments or NGOs. So, from the viewpoint of Human rights and/or Social justice, the yet unserved, the left behind in rural areas, have the same right to such subsidy as the people who already have basic service. To provide basic service to the 300 million people in SSA would cost around $8 bln. (300M @ $25/person). That is much less than currently calculated by the WHO or other organisations.

Funds could (and should) come from parties interested in reaching the left behind. Other funding sources could be Carbon credits and or Climate funds.

Session Summary

This session connects WASH with Agriculture.

It includes practical examples and lessons learnt, among others from an IRC evaluation of the SMART approach that includes “supported self-supply” as an successful scaling model to reach SDG6.1 in rural areas in Sub-Saharan Africa.

By applying smaller wells, locally produced pumps and Family Based Management the cost to provide basic service to the SDG6.1 target group in SSA with this model is 2-6 times lower than reaching the same target group with conventional WASH delivery models. *By combining low cost farm wells with rainwater harvesting options like Deep Bed Farming, this model also contributes to SDGs for Poverty, Food and Climate.*

Run of Show

Time (minutes)	Title / Part	Lead person (e.g., Presenter / Contributor/ Moderator, etc)	Additional Persons	Other notes
0 – 5	Introduction	Lemessa Mekonta		
5 – 15	Connecting the agricultural and WASH sectors in self-supply and community-based water tenure	Barbara van Koppen (IWMI)		
15 –25	Smallholders as Watershed Managers (case Malawi)	Colin Andrew (Tiyeni)		
25 – 30	Video Zambia	Jacana SMART Centre, Zambia	Video Stockholm + Farmer case Example of a female and male farmer using water for food and domestic use	
30 – 45	Scaling Self-supply. An approach to reach water and food related SDGs in SSA.	Henk Holtslag (MetaMeta / SMART Centre Group)	Including clip from KickStart experience	
45 – 75	Panel discussion	Lemessa Mekonta		