

6 Practical ideas for SDG6 and related SDGs

Some 2.1 billion people worldwide do not have safe drinking water due to failing piped systems or other reasons. Even water from improved water sources is often not safe or becomes re-contaminated in transport or unsafe storage at home. Of the 660 million people without an improved water source, 80% live in rural areas (UNICEF 2019). Most rural water points consist of a borehole and imported hand pump and supply an average of 250 people. For smaller communities the cost/person increases and with limited funds the question is, *“how to leave no one behind? How to reach the yet unserved in the small, remote and poor communities?”* There are no silver bullets but with lower cost technologies and new approaches, sustainable access to water is possible for a large part of the SDG6 target group with a donor support of \$2 to \$30/person.

Based on 25 years field experiences we present practical ideas that can assist in **reaching the SDG6 in rural and peri urban areas and also have impact on water related goals like SDG1 (Poverty), SDG 2 (Food), SDG 3 (Health) and SDG 8 (Employment)**. Some ideas:

1. Household Water Treatment.

A very, if not most cost-effective option to safe water is treatment at the Point of Use like boiling, chlorine or filters. Of these options the most effective are household water filters because of proven consistent use. The challenge is to build up commercial supply chains of effective, attractive and affordable filters. For a subsidy of \$2/person, safe water with water filters seems possible by investing in large scale awareness campaigns, building supply chains, organize payment systems and.. support for the poorest.

2. Family Based Management

In rural Africa there are over 1 million hand pumps with Community Based Management Over 35% of these pumps are not functioning, often because of a lack of ownership and funds for repairs. If a pump is installed at the house of a family, it can have Family Based Management and will generally be maintained because the family has the convenience of water nearby and eventual income from use for life stock, small-scale irrigation etc.

3. Innovation in technology, SMARTechs.

If cost of wells and pumps reduce by 50%, two times more people can have water with the same funds. A range of technologies that drastically reduce cost are SMARTechs (Simple, Market-based, Affordable, Repairable, Technologies). Examples are manual well drilling with augering, bailing or jetting to 60 m deep, hand pumps like EMAS or Rope pumps, Tube recharge to avoid dry wells, etc.. Most SMARTechs can be produced locally so knowledge and spares are available. SMARTechs also make water systems possible for families who can pay for it, the so called self-supply.

4. Scale up self-supply / farm wells.

Most farms in Europe and USA had (and have) a well for domestic use, cattle watering etc. and so could develop. In the USA over 45 million hand pumps were sold. The same logic goes for Africa. With a water source, farm families can have life stock, produce food for themselves and sell surplus. With a combination of SMARTechs and approaches like “well clubs”, cost of wells including a pump of 10 - 60 m deep are \$100 to \$1000. Regulation is needed to avoid over-abstraction of groundwater and water for drinking should be treated. Experiences show that families with a well share with an average of 50 other people so “family owned becomes community served” and so reach part of the SDG6 target group. Family wells also have positive impact on SDG 1, 2, 3, and 8.

5. Focus on the 3 Ts,

Key for all these actions are the 3 Ts (Training, Training, Training). Informing policy-makers in new options or communities in management. Training system designers and technicians in production, of entrepreneurs in business skills and marketing, etc.. SMART Centres can start, but innovations should be included in national vocational education.

6. Equal subsidies.

People who already have access to an improved and nearby water source got a subsidy for infrastructure (CAPEX) of some \$25/capita in rural areas to \$50/capita in urban areas. The remaining 660 million unserved have a ‘right’ to a similar subsidy. One option to fund the unserved in rural areas is to use profits from urban water supply (cross subsidy).



1. Household Water Treatment

The most cost-effective option for safe water is treatment at the household level with boiling, chlorine or filters (WHO 2018). Chlorine does not eliminate *Cryptosporidium*, and has less consistent use than filters. If filters are used consistently they reduce waterborne diseases by 61% (Cochrane 2015).

Good quality filters include Sawyer, Aqua Clara, Tulip and NAZAVA ranging in cost from \$18 - \$35. The last 3 filter models are now also produced / assembled in Africa.

2. Family Based Management

An example of Family Based Management is Mrs. Teresa in Bilibiza, Northern Mozambique. She owns a Rope pump on a hand drilled well of 20 meters deep. The cost of this system was \$ 800.

She sells water to some 40 families at \$ 0.02 dollar / bucket. This gives her a salary and money for repairs. After 2 years Mrs. Teresa had money to buy a 2nd well and pump. She paid 50% of the investment cost (\$ 400) and the other 50% was subsidy of an NGO.



3. Innovative technologies, SMARTechs.

Wells (boreholes) are the expensive part of a water system. In an estimated 60% of the rural areas in Africa it is possible to drill with manual drilling like Rotary jetting, SHIPO, Mzuzu or EMAS at a cost of \$60 to \$1000 per well. Locally produced EMAS or Rope pumps cost \$40 to \$120 so 70 - 80% less than imported hand pumps. Other SMARTechs include solar pumps, Tube recharge to avoid dry wells, Wire cement tanks, etc. See SMARTechs catalogue on the website.

4 Scale up self-supply/ farm wells

With new technologies it is possible to expand the number of self-supply/ family wells. Over 40% of African families are small farmers. If they would have their own water supply, they could double food production and increase family incomes with \$ 50-500/yr. Scaling self-supply needs examples. An example is Tanzania where subsidized Rope pumps for communities created the market for 6000 family Rope pumps. By supporting (subsidizing) self-supply in small rural communities, a part of the SDG6 target group could be reached. Point of use treatment like filters can ensure water quality.



5 Focus on the 3 Ts: Training, T..., T.....

To reach SDG6 over 3 million water practitioners are needed (IWA 2016). Training is needed in technical aspects like system design, production and non-technical aspects like business skills and marketing to build up commercial supply chains. There are lessons learned (Simple is not easy), so South-South exchange of experiences is needed in both failures and success. SMART Centres can give this type of training but to really scale up, knowledge on SMARTechs should be included in national vocational education systems.

6 Equal subsidies

Maybe a human right should be that, in cases of subsidies, every person has the right to the same subsidy. In general people who now have an improved water source were subsidized with \$25/person in rural areas to \$50 in urban areas for the investment in a well and pump. Do the remaining 660 million unserved not also have a 'right' to a similar subsidy? Families can be stimulated to invest in their own well and an a donor NGO can support with a pump. With somewhat higher tariffs in urban areas, water supply in rural areas could be supported.

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