

Rope pumps & other Smart Techs for MUS and Self-supply

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Proposition

To reduce poverty, it is more cost-effective to fund Self-supply than Communal water supply

Smart Donors invest in Self supply because:

- **Communal supply as usual will not reach all**
In sub S. Africa unserved increased with 66mln since 1990!!
- **Increasing population, less aid**
- **Families willing to invest**
- **Reduces the headache of maintenance**
- **It “automaticly” becomes communal supply**
- **Leads to productive use, more income,
communal supply does not**

Presumed problems with Self-supply

- More expensive than communal
- Water quality
- Lowering of water levels
- Competition with water companies in peri urban areas

Self-supply water ladder

1. Well & windlass
2. Low cost handpump (Rope.p, EMAS,..)
3. Well cover, seal
4. Better handpump
5. Engine or Solar pump

With increased incomes piped supply could be funded.

Everything better than rope & bucket



Rope pumps Model 1 & 2

Communal use



Model 3

Economy model



Model 4

Mounted on poles



Just a pump improves water quality by 60%

(A. Gorter. Nicaragua)



Model 3

Used at Family level



Combined with Tube recharge.

To avoid drying up of the well



Upgrading scoop holes



Upgrading hand-dug wells

Cover + pump = Improved water source

3 – 5 ? Million
open wells
in Africa



Fits on 2m dug wells and 2" boreholes



Powered by Pedal, Horse, Engine, Wind



Motor Rope pump



Potential of Rope pumps

- 1 Where water levels are 35 mtr. or less
(ca 70% of rural population)
- 2 Domestic use, peri urban
- 3 Food security
50% of poor are small farmers
They can double food production with
Inputs, market and **Affordable irrigation***

* Paul Polak, founder of IDE

The 5000 \$ Rope pump

Carwash

3000 Tsh/car
10 cars /day
X 5 years



Animals, Irrigation



Irrigation + selling water to 10 neighbours

Farmer John in Zambia Pays back loan in 1 year



Numbers now

- 70.000 Nicaragua
- 10.000 Ethiopia
- 4000 Tanzania
- 3000 Ghana
- ...



Numbers in future?

- Scaling up fast in Tanzania, Malawi, Uganda,....
- Tender for 50.000 pumps in Ethiopia
Rope pumps in National policy for Self supply...



Case Nicaragua

70.000

- National standard
- Covers 40% or rural supply
- Reduced cost by 70% compared to import pumps
- 70% used for Self supply
- Sustainable, FIETS criteria
- Goes on without NGOs, only local private sector



Case Ghana

3000 installed

- Started in 2005
Worldbank
funds
- 80% defect
after 1 year
- Errors
- Devil is in detail



Lessons

- **Introduce as Self supply, later small communities**
- **Maximum 150 users / pump**
- **Good introduction requires long term training**
Expensive to repair image, after wrong start
- **Up scale needs first a critical mass 5 -10%**
- **Market in peri urban areas, ej. Tanzania**
- **Distribution by Local Private sector,.. not NGOs!**
Profit based sustainability
- **Simple is not easy**

Other low cost options

- Wells
- Pumps
- Storage
- Ground water recharge
- Irrigation
- Treatment (drinking water)
- Sanitation
- Hygiëne

Wells Underlining

Options to avoid collapsing of wells



Well tube

Option to make hand dug wells deeper

Using a PVC pipe and a Tube bailer



Manual drilling

- Rota sludge to 40 m deep
- SHIPO to 60 m deep
- EMAS to 80 m deep
- Cost \$ 200 - 1200 incl. casing, hand pump



Jetting



PUMPS

EMAS

- Pressure pump
- 5 - 40 meters deep
- 30.000 in South America
- Cost: 150 – 400 US\$,
Incl, drilling and pump



Treadle pump

- Suction pump, for irrigation
- 1.5 million Asia and Africa
- Cost \$ 15 – 100
- Generates income \$100 - 400 / year



Storage

Wire cement tank

- Bricks, bamboo
- 1 bag of cement / m³
- Volumes
1 – 50 m³
- Other options
Emas tank
Bop tanks Plastic



Groundwater recharge

Tube recharge

- Made by families
- Cap. - 500m³/season
- Cost \$ 10
- Other options
Vetiver, Spate
irrigation



Irrigation

KB drip, Easy drip



- 0.01 - 2 Ha
- Cost 15- 20US\$/100m²





Sanitation

- Urine as fertiliser, x the phosphate of feces
- Family food prod.
- Cost; 2/3 bag of cement



Urine = Money

Urine/ feces
80US\$ year



Self-supply?

Always treatment at household

Boiling, Chlorine, Filters



Table top filter Safi model

- Local containers
- Imported filter element
- With smart pipe
double filter cap. 2 ltr/hr
- Cost: 12 – 18 US\$



Economic impact Self- supply

Rope pump Nicaragua

Cost **US\$ 8 mln** aid, Training, promotions etc

Benefit **US\$ 100 mln** increased income in 12 yrs

Family with a pump earn 220 \$/ yr more than families without a pump. (Invest. 5000 fam. Icidri/ICCO)

Ideas to scale up

1 Awareness

Inform families, Water treatment = money.
Inform NGOs, others on new options, lessons,..

2 Supply chains

Offer a range of options, so people can choose
Train private sector in production, quality
marketing, management, certification,.

3 Payment options

Loans for those who can not pay in one time.
Gifts distort market, so only in special cases.

3 Ts of action

1 Training

2 T..

3 T..

WASH training centres

- Demonstration; new low cost options
- Training: Production, O&M, marketing, ..



Ex. SHIPO SMART Centre Tanzania. After 7 years

- 20 workshops trained
- 4000 Rope pumps, boreholes
- Cost reduction for water 40\$ to 15\$/cap



Rope pump producer Morogoro

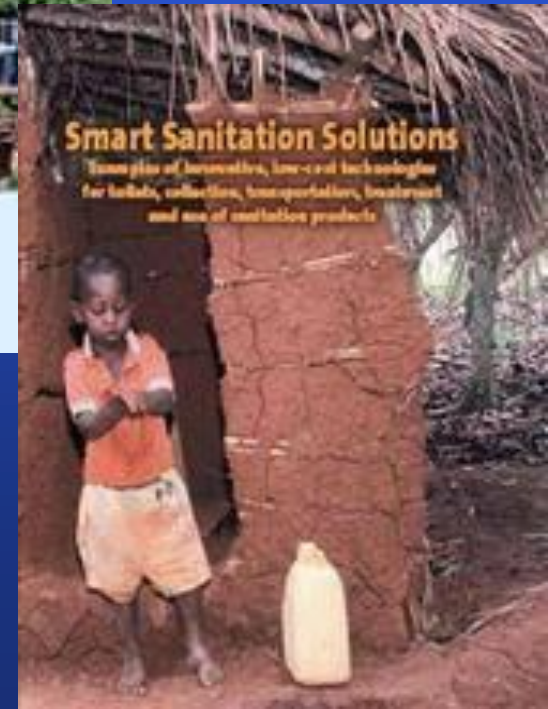


Information

Smart series on

- Water
- Sanitation
- Water harvesting
- Hygiëne
- Disinfection
- Financing

www.NWP.nl



Self-supply as a key to reach the poverty MDG



Information

Pumps

www.ropepumps.org

Scale up safe water

www.300in6.org

Smart Centre

www.shipo-tz.org

www.connectinternational.nl