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 “automatically” 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
- 4,000 Tanzania
- 3,000 Ghana
- ...

[Image of people using a water pump]
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

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

3000 installed
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
- Hygiène
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, \times 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
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