

***Low cost drilling in the Sudan
- from a NGO perspective***

**National Workshop on
Cost Effective Boreholes in Sudan,
Khartoum**

November 18-19, 2009



**INTERNATIONAL
AID SERVICES**

'Creating a positive reaction'

www.ias.nu

Low cost drilling in the Sudan - from a NGO perspective

Who drills the boreholes in the Sudan?

- The Government
- Private contractors (Sudanese and foreign)
- International NGOs
- National NGOs

Low cost drilling in the Sudan - from a NGO perspective

Some estimates....

- Most boreholes are drilled in rocky formation
- Most boreholes are drilled by international NGOs
- There is a need for at least another 40,000 boreholes to be drilled in the Sudan to meet the millenium goal.
- The cost for a 50 meter deep boreholes varies from 4,000 to 20,000 USD.
- 20-25% of all drilled boreholes are non-successful
- Most boreholes have a depth between 40 and 60 metres
- Most boreholes are equipped with India Mark 2 handpumps
- Since 2004, more than 100 PAT low costs drilling rigs have been delivered to the Sudan



Low cost drilling in the Sudan - from a NGO perspective

Contributing factors to borehole costs

1. Capital costs such as costs for drilling rig/compressor, support vehicles and other drilling equipment.
2. Material and consumable costs such as cement, gravel packs, fuel, lubricants and maintenance,
3. Labour costs
4. Overheads and administration



Low cost drilling in the Sudan - from a NGO perspective

Other factors not related to direct drilling costs but essential to make a drilling project complete

1. Geophysical surveys
2. Testpumping and installation of handpump
3. Water analyses
4. Community training
5. Training of pump technicians
6. Cattle troughs
7. Washing places
8. Stand still costs due to in-accessibility or broken equipment
9. Follow up



Low cost drilling in the Sudan - from a NGO perspective

Estimated costs for a typical borehole

60 metres, 10 metres overburden, 50 meters rock, IM2 Handpump,

Based on 25 successful boreholes per year

	Small rig (4,5")	Big rig (6-8")
Depriciation of drilling equipment	1,000	3,000
Casing, 60 meters	600	1,200
Fuel and and other supplies	1,500	3,000
IM2 Handpump incl. cement etc	1,200	1,200
Salaries, camp costs	2,000	3,000
Administration, overhead, 30%	1,900	3,400
Total costs:	8,200	14,800



Low cost drilling in the Sudan - from a NGO perspective

Estimated additional cost

Geophysical survey	200
Water analyses	100
Testpumping,	200
Community development, 7 days per community	1,500
Training of hand pump mechanics	300
Administration, overhead 20%	460
Total costs:	2,760
Cost, all inclusive, for small rig:	10,950



Low cost drilling in the Sudan - from a INGO perspective

What can make a borehole cheaper?

1. Drilling of 4,5 - 5" boreholes when handpumps shall be installed.
2. Use of PVC casing in boreholes not deeper than 100 metres.
3. For drilling in Basement or Crystalline rock, only install casing through overburden and a couple of metres into the solid rock instead of lining to the bottom of the hole.
4. Coordinate the use of the existing drilling units in various locations to avoid long and costly transports.
5. Coordinate geophysical surveys and water analyses with other stakeholders on ground.
6. Coordinate in-country stock of fast moving spareparts for the most commonly used equipment.

