



The WaterPyramid, Community Water Factory & Water Shop

Ecological management in practice

Mexico City,
March, 20th 2006
Martijn Nitzsche



The WaterPyramid

- **Introduction**
- Set-up of project
- Water products
- Finance & organization
- Conclusions
- Discussion



Introduction

- Who am I
- The WaterPyramid concept
- Time frame of pilot project in The Gambia



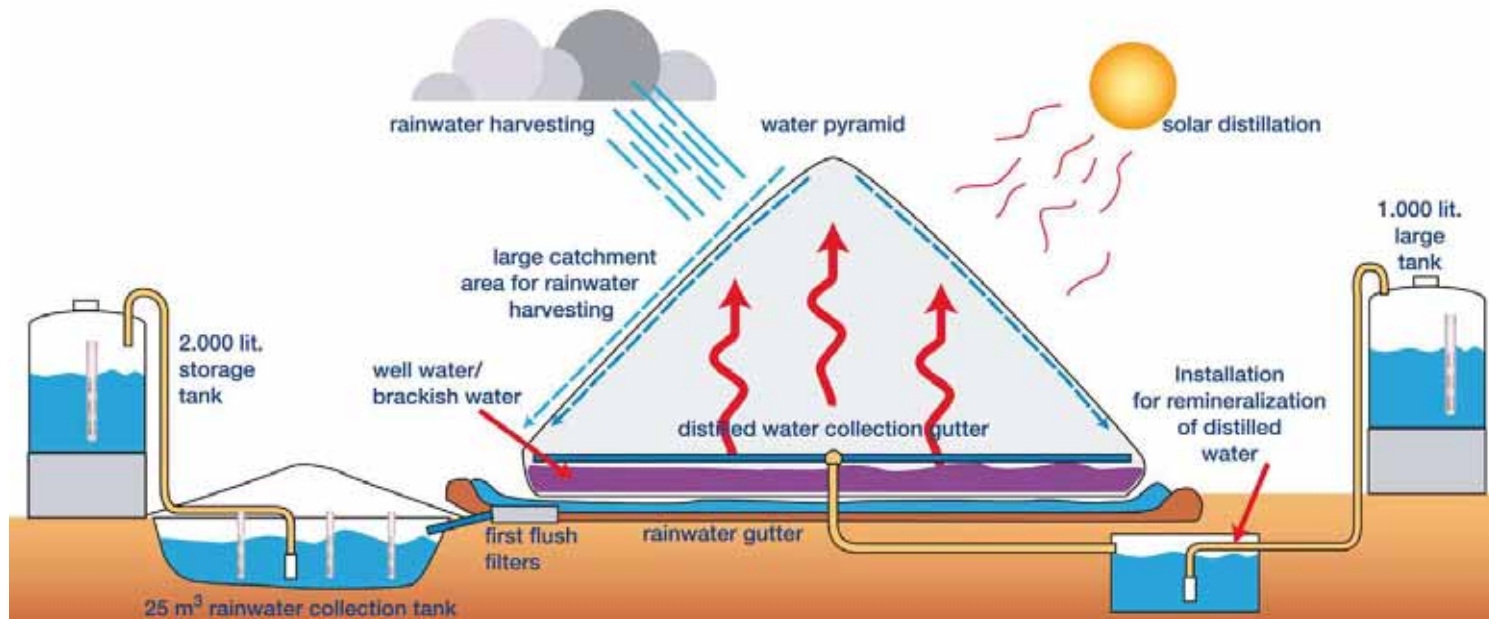
The WaterPyramid concept

- *Drawing*
- *Requirements*
- *Main advantages*



WaterPyramid: hybrid concept

WaterPyramid: The Hybrid Water Factory Large-scale Solar Distillation and Rainwater Harvesting





Requirements for WaterPyramid?

- 1. Source water must be salt-, brackish-, arsenic, i.e. heavily polluted
- 2. Flat space
- 3. Sun



Advantages WaterPyramid ?

- 1. Stand-alone local water plant
- 2. Produce high quality water
- 3. Simple to install and operate
- 4. Local workforce for O & M
- 5. Stimulates local economic activity



Time frame project in The Gambia

- *set up WaterPyramid in June 2005*
- *Continuous production of drinking water from then on without major interruptions*



Parties involved

1. Local Village Development Committee
2. Local NGO: CCF- The Gambia for advise
3. Local technical support Gamsolar
4. Better Future, NL, for capacity building
5. Evides, NL, utilities for water testing
6. AquaEst, NL, for silver disinfection system
7. Aqua Aero WaterSystems, NL, proj. man etc.



The practice: start digging & leveling





Then: roll out of foil structure





WaterPyramid & fan



Aqua-Aero WaterSystems,
the Netherlands



WaterPyramid installed



Aqua-Aero WaterSystems,
the Netherlands



Rain Water Harvesting Tank



Aqua-Aero WaterSystems,
the Netherlands



WaterPyramid during the rainseason



Aqua-Aero WaterSystems,
the Netherlands



Rain Water Harvesting, silver disinfection

Turning rain water into.....drinking water





Effectiveness of silver disinfection

Contaminated drinking water treated with Ceritek purification balls
E-coli in cfu/100ml





Take care of regular cleaning...





Solar power for fan & water cooler



Aqua-Aero WaterSystems,
the Netherlands



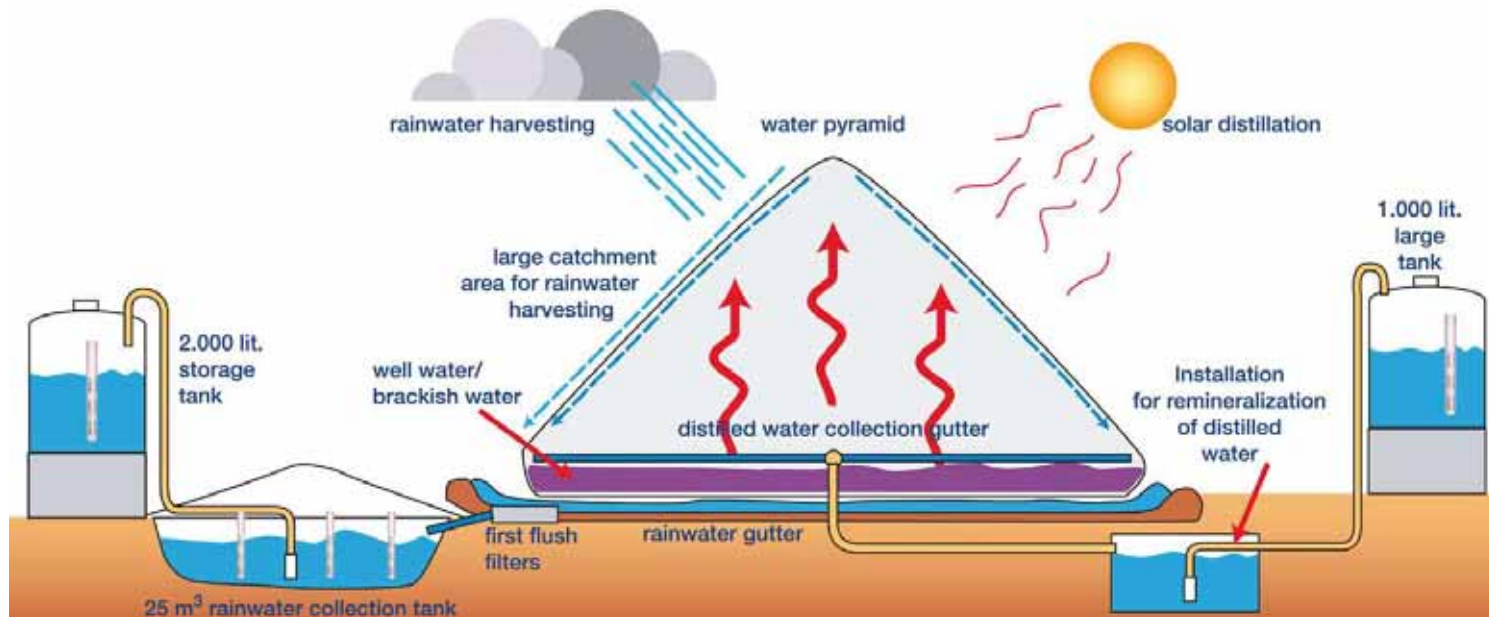
Water Products

- Introduction
- Set-up of project
- **Water Products**
- Finance & organization
- Conclusions
- Discussion



WaterPyramid: hybrid concept

WaterPyramid: The Hybrid Water Factory Large-scale Solar Distillation and Rainwater Harvesting



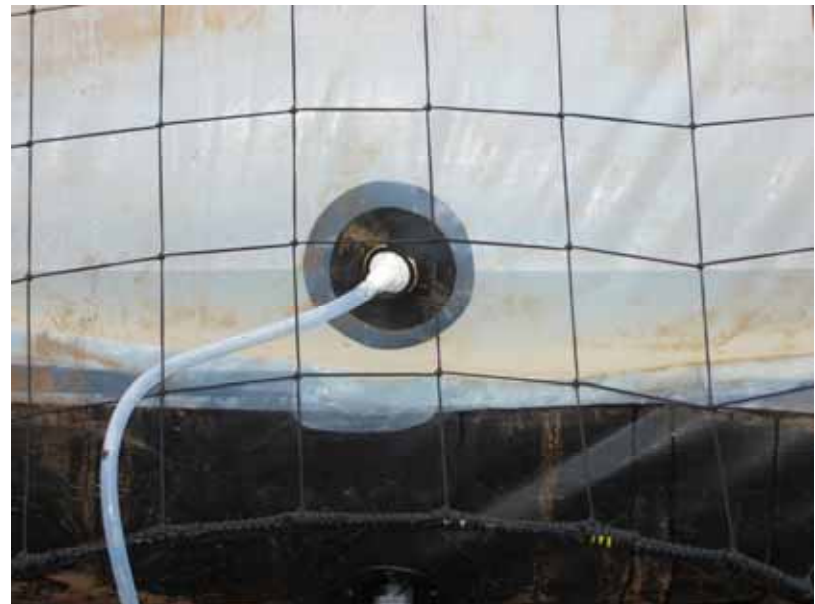


Two types of water are produced

Rain water



Distilled water





Water quality compared to other water sources

	WP- distillate	Demi water (pharma cy)	WP- rainwater	Tap water (Lamin)	Mineral water, shop	Local well
TdS (ppm)	1	12	13	34	36	1169
EC (muS)	0	6	6	17	18	606

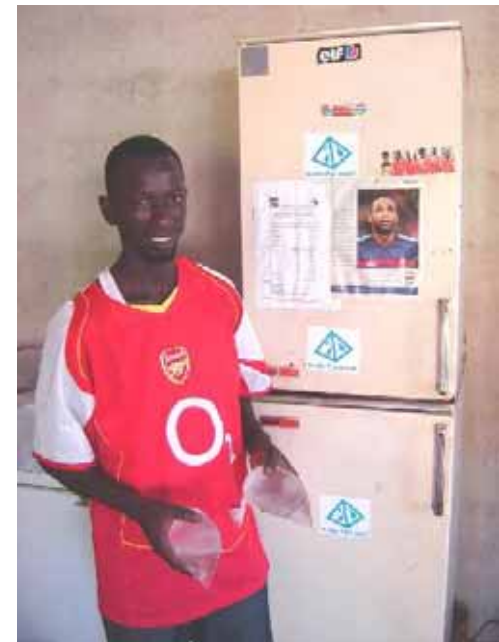


The taste of the water is
good!





Different qualities, different customers



Aqua-Aero WaterSystems,
the Netherlands



Pricing water products

Pricing fixed after approval VDC

- jerry cans: 0,75 euro ct/l
- water bags, cold: 3 euro ct/l
- ice cream, frozen: 30 euro ct/l
- 1 l. distilled, in bottles: 300 euro ct/l

- 20 l. washing/cooking tiles: free



Can local workers operate the WP factory?

we hired:

- 2 water managers
- 1 night watchmen





Capacity building....

- ..70 percent of the water project appears to be **non** technical....





How about the financial sustainability of the WP factory?

- After 6 month of fulltime production break-even point is reached.
- But... income dependant on season: cold period ...-> less income

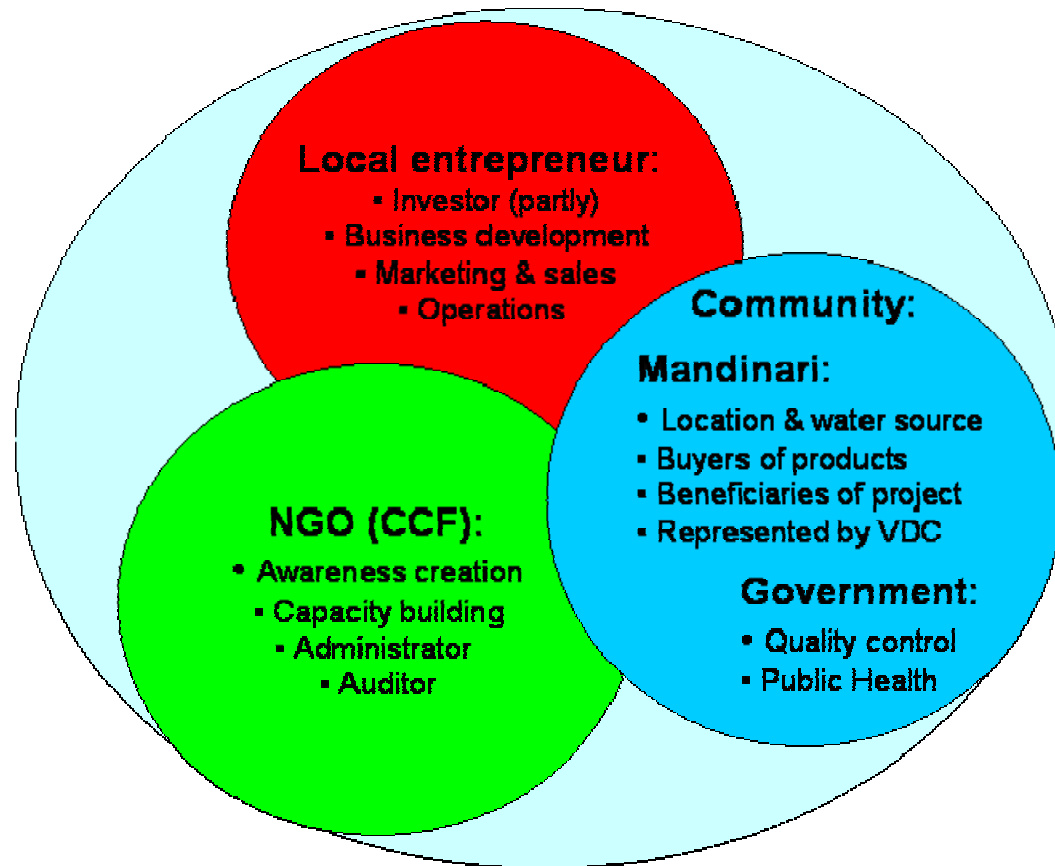


Operational costs in the Gambia?

- O&M costs on month basis:
 - about 150 €/month
- Jerry can price:
 - 0,07 €10 Liter
- Break-even situation reached if..
 - 60 jerry cans are sold per



Future Organization : Public-Private Partnership





Conclusions for WaterPyramid and RWH

1. WaterPyramid: an ecologically friendly solution combining rain & solar
2. O&M are easily executed
3. The quality of the drinking water is excellent
4. PPP ownership of the factory
5. Local entrepreneurs for commercialization
6. All parties (& environment) must **benefit** from it



Thank you for your
attention!

www.waterpyramid.nl



Facts: Rainwater Harvesting

- Production rate: annual rainfall * 85 percent
- For Gambia: 1500 liter/m²/season
- The water is tested to be of high quality
- Quality is guaranteed due to permanent cleaning, filtering and Aquaest silver bazooka's in tank systems
- Taste of water is very good
- People are willing to pay for this water



Facts: Solar Distillation

- WP is good solution for producing extremely clean (ultra pure..) drinking water
- Production rate: 2-4 liter/m²/day water dependant on season
- Very low power consumption: (80 watt during 3 hours) is needed to keep the WP inflated