

BIOGAS

THE POWER OF MANURE

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Fred Muia (Kenya)

Kampala – 4th November 2012



AGENDA

1. Presentation of Helge Underland and Fred Muia
2. Presentation of Help to Self-help in Africa
3. Biogas – the power of manure
 - What is biogas?
 - Benefits of biogas
 - How to design a biogas digester
 - Willy Kauni our Biogas-technician
4. MrMuasa at youtube: [The biogas project, part 2](#)
5. Group-discussions: How can we use this into our program and work for development?

Helge Underland

- Mechanical engineer from Norway. 55 years
- Construction supervisor
 - Working with sanitation, water and sewer
 - Specialized on government buildings
 - Politically engaged since 1985
- Biogas construction in Africa
 - Started in 2006
 - Help from The Norwegian university of Life Sciences
 - Professor Li from China



Fred Muia

- Principle at Katulani Secondary School in Kitui
- President in Help to Self-help in Africa NGO
- Project leader of the Environmental project in Katulani



HELP TO SELFHELP IN AFRICA

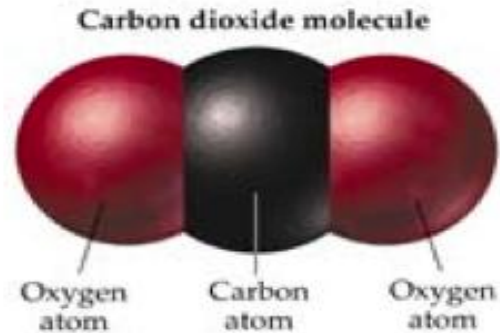
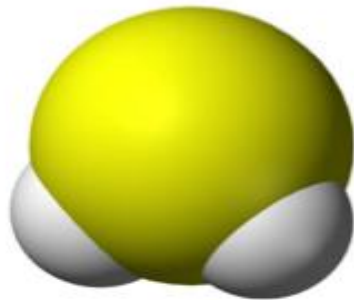
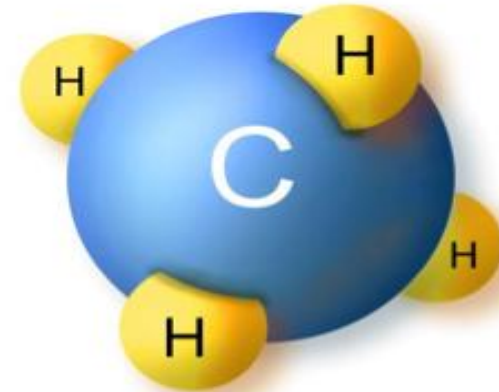
- Norwegian NGO started in 2006
- Family NGO with a board of tree members
- We work without governmental support
- Main purposes
 - Build environmental plants in secondary schools
 - Help people to start sustainable business
 - Biogas entrepreneur
 - Pig-handler
 - Safari company
 - Music group
 - Buying local products to support business
 - Our principle is 1/3 – support, 1/3 – loan, 1/3 – own capital



What is biogas?

- CH_4 50 - 70 %
- CO_2 25 - 50 %
- H_2S 0 - 1 %
- Traces of H_2 , N_2 and some others

- Needs to contain more than 50 % methane to burn

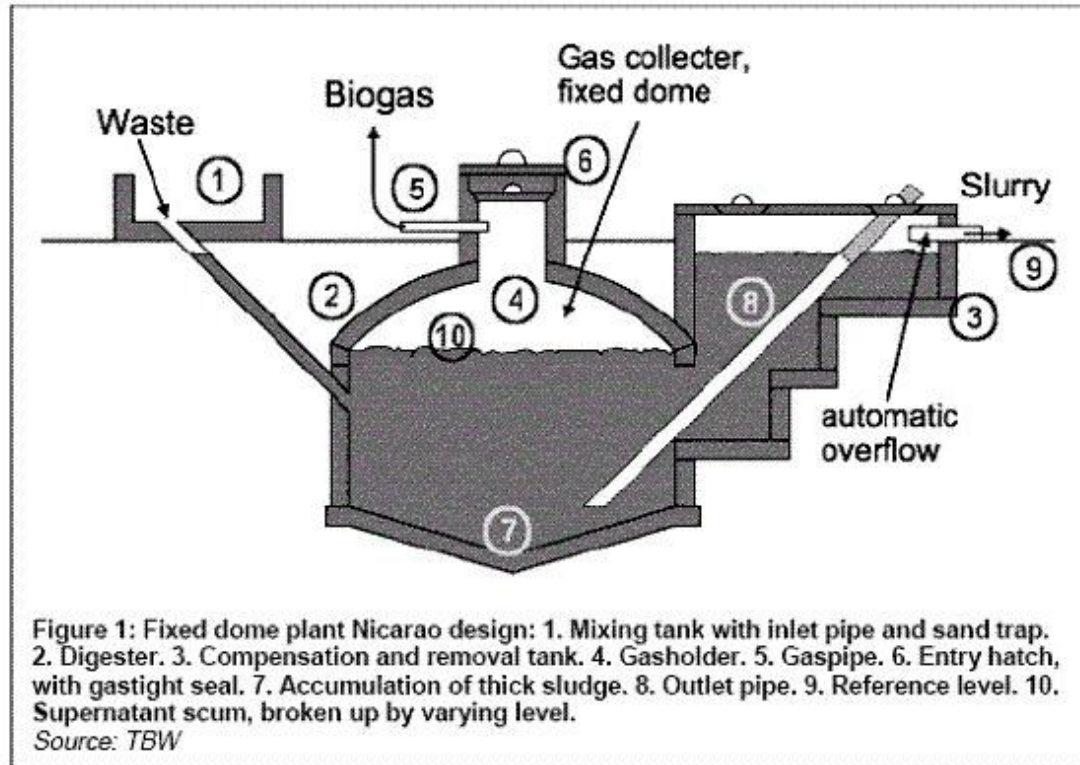




Biogas

The power of manure





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Biogas

The power of manure



Help to Selfhelp in Africa

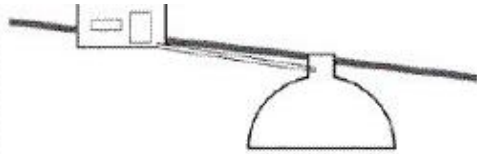


Figure 27: Piping system with straight slope from kitchen to digester. No water trap required as condensation water drains into the digester
Source: TBW



Figure 28: Wherever condensation water cannot drain back into the digester, a water trap becomes necessary
Source: TBW

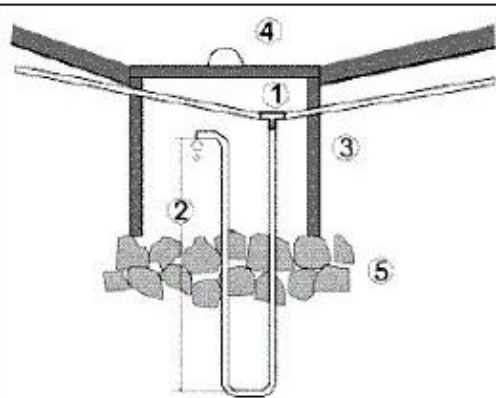


Figure 29: Automatic water trap: (1) T-joint in the piping system, (2) water column, equal to max.

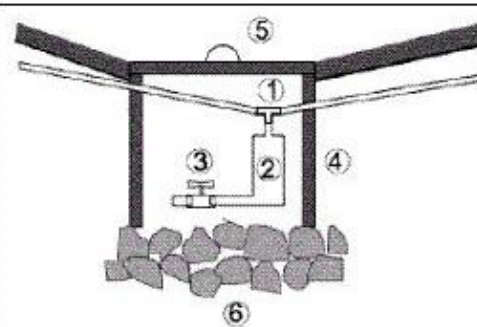


Figure 30: Manual water trap: (1) T-joint, (2) buffer storage for condensated water, (3) manual tap, (4) casing, (5) concrete lid, (6) drainage
Source: TBW

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CHECK LIST FOR BUILDING BIOGAS PLANT

1. Planning (site visit, energy demand, biomass supply)
2. Location and elaborate plan
3. Technical drawings
4. Preparation of material/personnel requirements list
5. Materiel/personnel assignment planning
6. Commissioning
7. Filling the plant
8. Training the user

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Why do we use pigs in Katulani?



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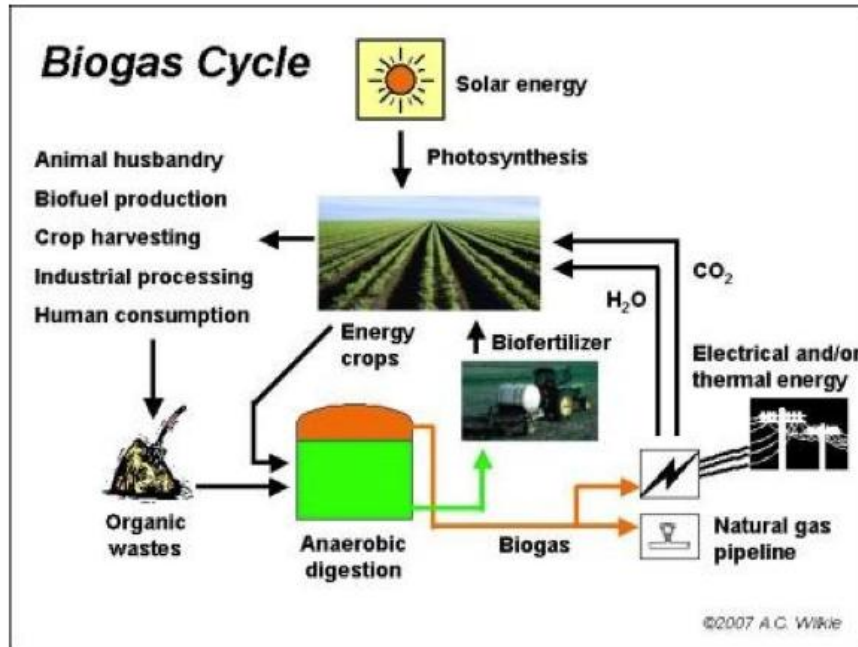
Help to Selfhelp in Africa



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The biogas cycle



May also be used as vehicle fuel, but then you need to upgrade the gas first.

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BENEFITS OF USING BIOGAS





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Willy Kauni

We gave him the training. Now he has build 80 biogas plants in Kenya and have two employees.



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