Solar food processing in Eastern Africa – a summary

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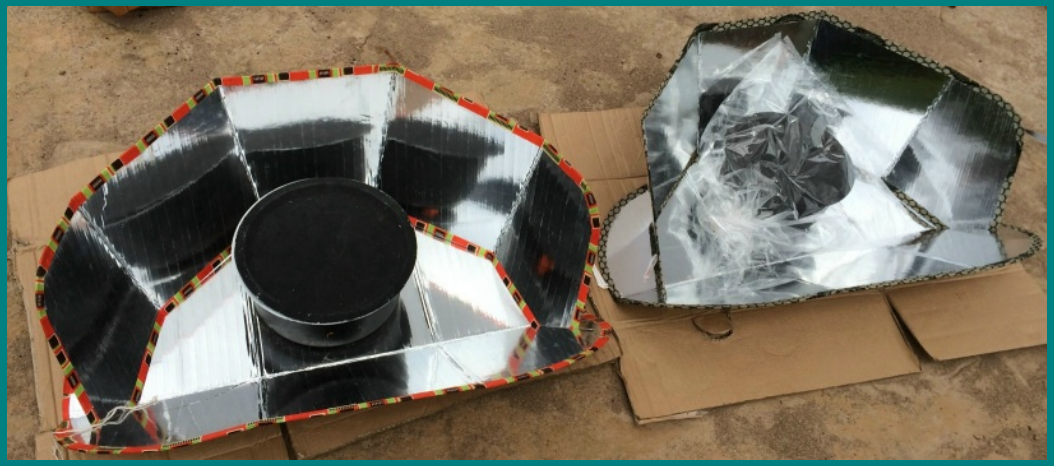
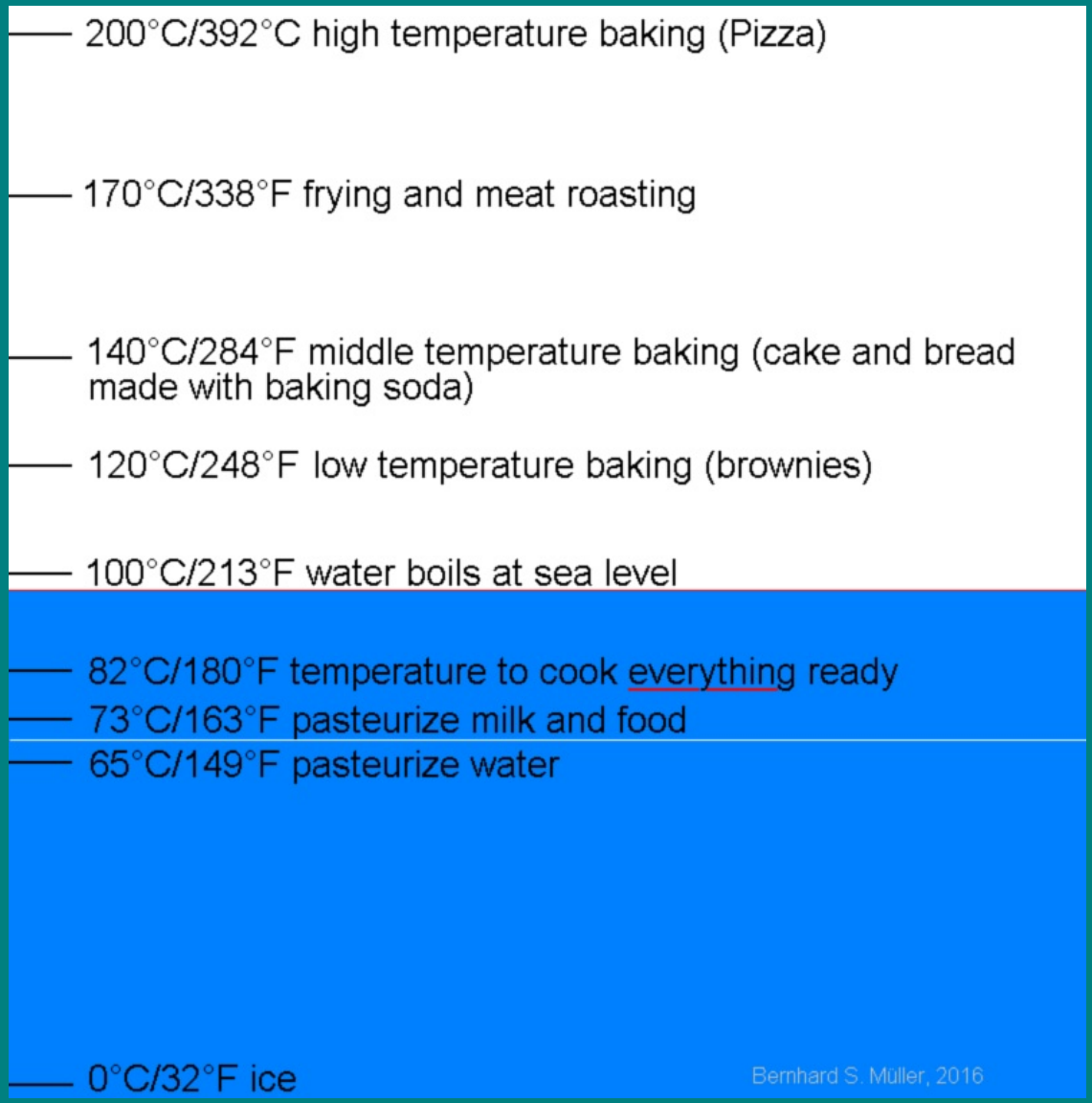
How is this presentation structured?

- What is a solar cooker?
- Who are the antagonists
- Why are solar cookers not accepted?
- Why is the dissemination difficult in rural areas?
- History of solar cooking in East Africa
- An excerpt of existing projects
- What if the sun does not shine?
- A morbid future?
- Bonus topic: Charcoal



What is a solar cooker?



Who are the antagonists?

- World Food Programme
- WorldVision
- GACC-sponsored "clean" cookstoves programmes
- Lack of education
- Lack of knowledge
- Lack of training
- Religious issues

Picture right: Faustine Odaba presents solar cookers and fireless cookers to men and children in a town in Uganda. It was not allowed to Muslim women to attend the show.

Why are solar cookers not accepted?

- Little or bad marketing
- Not enough explanations and trainings
- Wrong arguments
- Weak performance
- Too small amounts of food
- Long periods of rain or storm
- Missing reference to fireless cookers
- Too expensive
- Not matching with the traditions
- There is no more light in the home

Why is the dissemination difficult in rural areas?

- Too long distances
- Language problems
- Analphabetism
- Existing preferences of wood or charcoal

History of solar cooking in East Africa

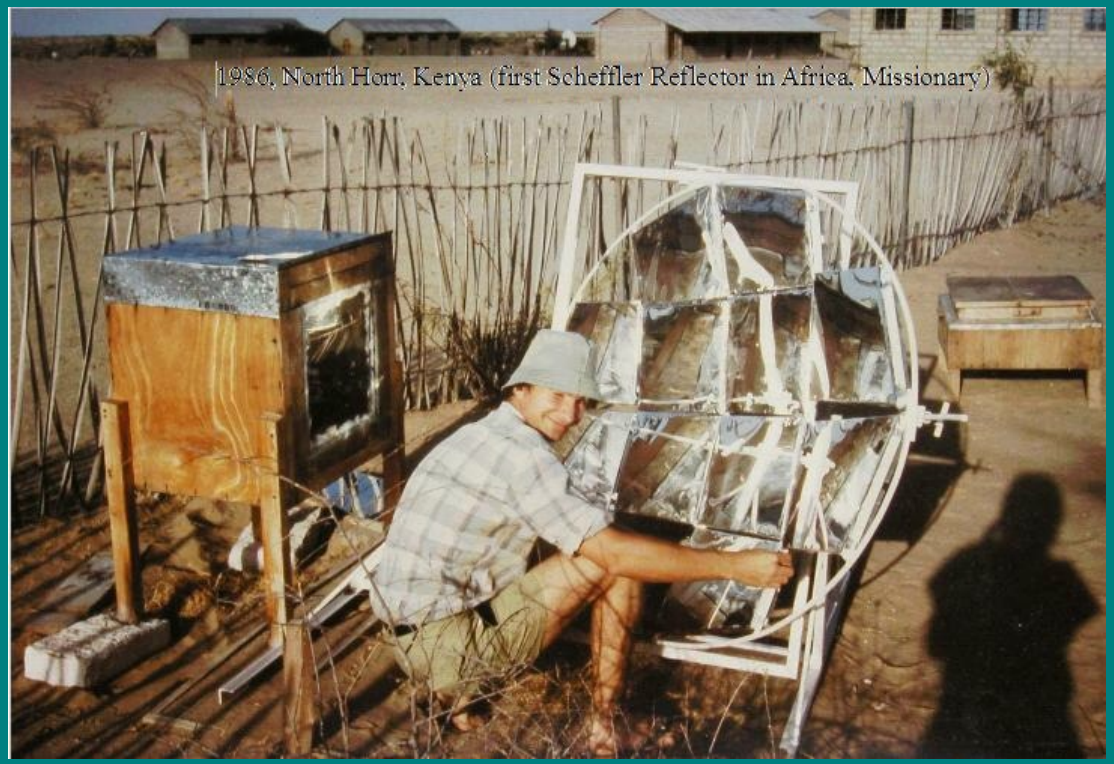
- Early 1980s: Wolfgang Scheffler introduces box cookers
- Late 1980s: Wolfgang Scheffler introduces large reflectors
- Early 1990s: Werner Merz inaugurates solar box cookers in cooperation with TWR (Trans World Radio)
  Peace Corps volonteer Barbara Ross
  educates Gaudenziah Nabwile and
  Faustine Odaba about box cookers
- 1992 SCI workshop about solar cooking in Nairobi, led by SCI's Clark Shimeall in cooperation with TWR
- 1990s: SCI-EA distributes 10thousands of solar cookers
- Early 2010s: Many small NGOs, SCI closes Nairobi HQ
- Presently: hundreds of projects, mainly in villages.

History of solar cooking in East Africa

The TWR box cooker of Werner Merz is still in use widely

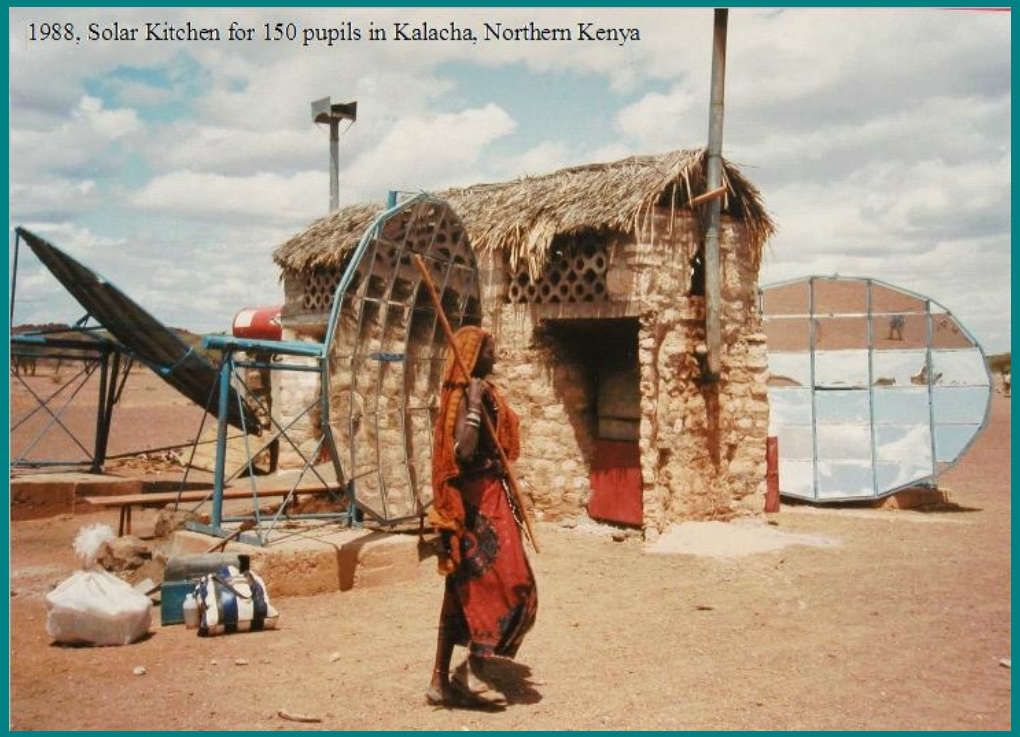
History of solar cooking in East Africa

The Austrian scientist Wolfgang Scheffler installs his first reflector for baking purposes (1986)



History of solar cooking in East Africa

In 1988, Wolfgang Scheffler installs large reflectors to prepare food for 150 pupils.

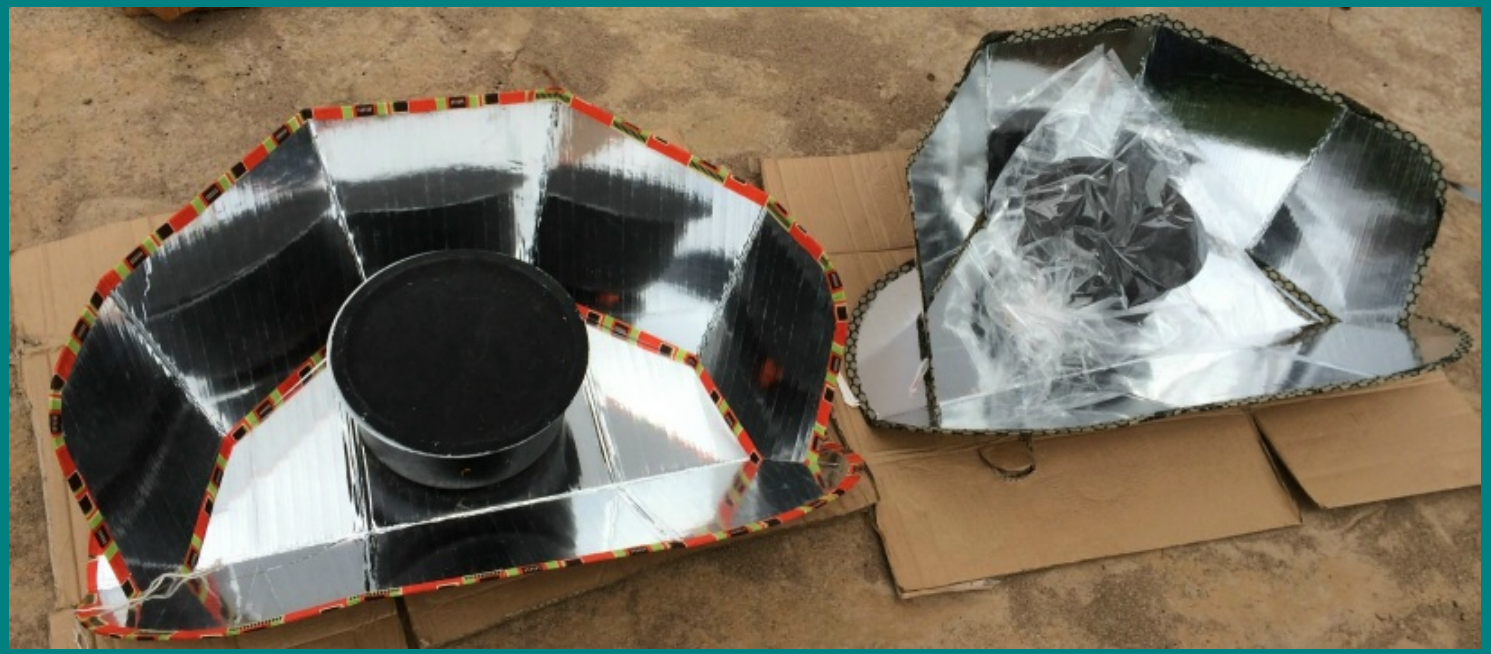


History of solar cooking in East Africa

Since the 1990s, the SK-14 of EG-Solar has been introduced in East Africa. It is distributed centrally from Jinja, Uganda. This cooker has a diameter of 1.40 meters. The segments are made of polished and ceramic-sealed aluminum.

History of solar cooking in East Africa

The CooKit, based on the ideas of Roger Bernard from France and further developed by SCI staff members Barbara Kerr, Jay Campbell and Ed Pejack became a success story. It is still widely in use all over East Africa.



Existing projects

CooKits and Haines solar cookers are distributed in Kenya by NAREWAMA (Faustine Odaba), SUREsolar (John Amayo) and F.O.T.O. (Dinah Chienjo). In Uganda, they are distributed by Giving Hope Foundation and EcoStartUp.

Existing projects

The Rotarian Roger Haines from San Diego started a large project to distribute his "foam" cooker. Since WorldVision refused to back the dissemination, it's initial price of $16 climbed to about $20 including pot and heat traps made of Polycarbonate.

Existing projects

The tin smith Esther Nattabi of Awamu Biomass Energy Ltd., Kampala, Uganda, bakes cake with the CooKit.

Esther Nattabi is a very good presenter of solar cookers, fireless cookers and gasifiers.

If you need somebody for your projects in Uganda for just a few days, you can "rent" her from www.awamu.ug (winner of the SEED award 2014).

Existing projects

Solar beeswax melters are widely in use. The glass cover has been taken off for a better photo.

Existing projects

Solar cooker presentations are made throughout Kenya. The photo shows Faustine Odaba (right) and Bernhard Müller at the HQ of CTC International in Maai Mahiu. The cookers (from left to right: LightOven III, HotPot, CooKit and Haines Solar Cooker. The lady on the left is Ruby Ruth, the communication manager of CTC.

Existing projects

Solar food dryers have been implemented by Bernhard Müller all over East Africa. It is not necessary to explain them a lot. They are easy to understand and everybody wants them to reduce post harvest losses. They can be disseminated without funds. The photo shows drying of pumpkin in Jinja, Uganda.

Existing projects

The picture shows the NAREWAMA food dryer for panel cookers. The cooker is a LightOven III.

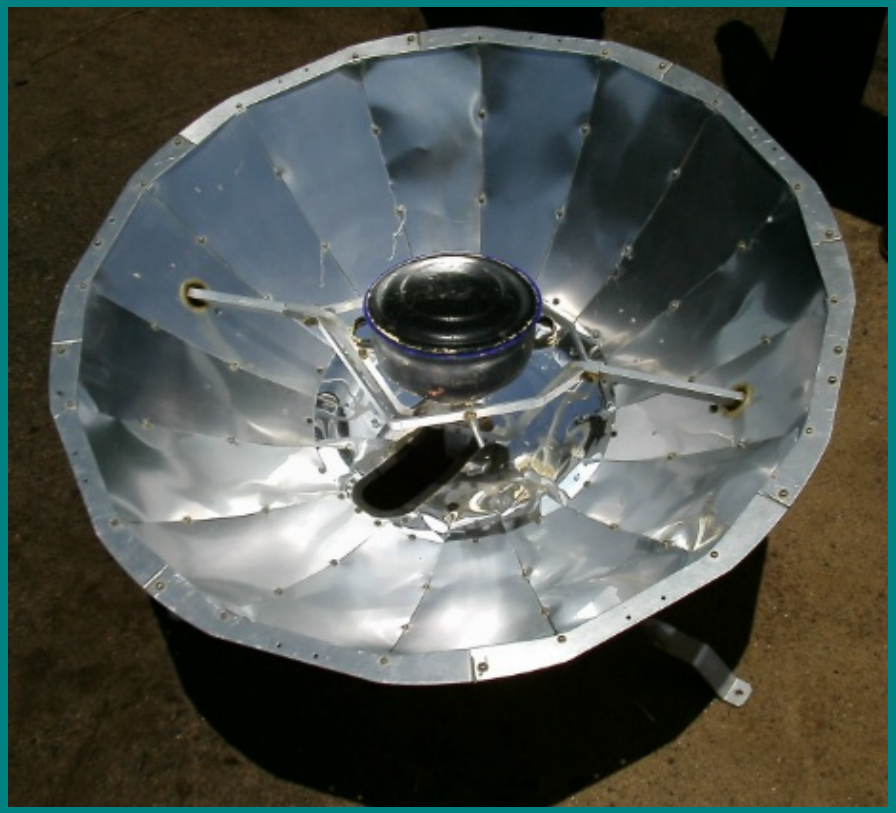
Existing projects

The Sun Rocket (left) is a small evacuated vacuum tube. It is a good device to pasteurize or boil water. In the meanwhile, food is prepared in the CooKit. More water is heated in the Jar-in-Jar heat trap simultaneously.

The photo was taken at Giving Hope Foundation, Kampala, Uganda.

Existing projects

Yasuko Torii of Solar Cookers Japan introduced the parabolic cooker "Karupika" of Motoharu Takizawa all over East Africa, mostly in Tanzania. This cooker has a diameter of 80 cm. The photo was shot at a project in Eldoret, Kenya.



Existing projects

The cheap parabolic cooker from Qingdao Lingding, China, can be seen from time to time all over the world. The author found a few in Uganda, Kenya and Tanzania.

The quality is extremely low. This cooker is highly vulnerable to wind attacks. The low reflectivity coefficient is compensated by the size: it measures 150 cm diameter.

Existing projects

Slowly, vacuum evacuated tubes are introduced for solar cooking purposes. This one is a SK-TF of Alex Kee, Johor Bahru, Malaysia. It is used without any reflectors for water pasteurization and boiling.

Existing projects

This solar dryer is distributed by JEEP Folkecenter, a Danish sponsored NGO in Kampala, Uganda. They also got larger dryers for drying of biomass and charcoal dust briquettes.

Existing projects

A small model of a PV driven solar dryer has been made at KVTC (Kyamulibwa Vocational Training Centre), Kyamulibwa, Uganda. The solar cookers are (from left to right): Sharon Clausson's Copenhagen, Roger Haines' Foam cooker and a CooKit.

What if the sun does not shine?

At the final workshop "Documentation of the Pilot Programme Solar Cooker Field Test in South Africa", Nov. 4th 2003, in GTZ, Eschborn, Germany, Dr. Rolf Posorski of the GTZ-department Environment and Infrastructure, Energy, Transport and Eco-efficiency stated:

"Field tests have proven that where people have solar cookers, they use them at least once a day 38 % of the time. These results and extensive market studies confirm a substantial latent market demand for solar cookers."

These results can be improved.

What if the sun does not shine?

The headline expresses the question number one. All of the solar cooker protagonists hear it every time they present solar cookers.

Or: What if the men come home from work after sunset and demand warm food?

With fireless cookers this can be solved easily. Cook the food in a solar cooker for one to five minutes in the afternoon and insert the pot in the fireless cooker. It continues to cook ready for several hours. Even beans, potatoes and meat!

What if the sun does not shine?

The NGO Friends of the Old (FOTO), Kisumu, Kenya, produces fireless cookers with a women initiative

Information on solar cookers and dryers

Nearly every solar cookers promoting NGO in East Africa supports fireless cookers.

Excellent combined information on solar cookers, dryers and fireless cookers – especially designed for Africa – can be found in the Internet:

1. Engineers without borders, French version:
http://www.isf-cameroun.org/sites/default/files/cuiseurs_fr_BD.pdf

2. Engineers without borders, English version:
http://publications.cta.int/media/publications/downloads/1802_PDF.pdf

3. SCInet Wiki: http://solarcooking.wikia.com

4. Practical Action: http://www.practicalaction.org

What if I need light in my home?

Solar cookers, fireless cookers and most of the so-called „clean“ cookstoves are responsible for a lack of light in the homes.

If required, it is recommended that the solar cooker promoting NGOs are offering solar lamps as well.

WamaSolar (Kenya) and EcoStartUp (Uganda) are wholesalers of the high quality VILLAGEBOOM solar lamps.

Please contact the author for more information.

A morbid future?

- Without increasing efforts to disseminate solar cookers, devastating results can be worried about.
- The deforestation must be reversed. This can be accomplished only, if solar cookers replace wood fires or cooking with charcoal.
- Without birth control, all efforts are not of long duration.

Solar cookers are reducing

- Poverty
- Child labor
- Inequalities and discrimination
- Houshold air pollution
- CO and CO_2 emissions

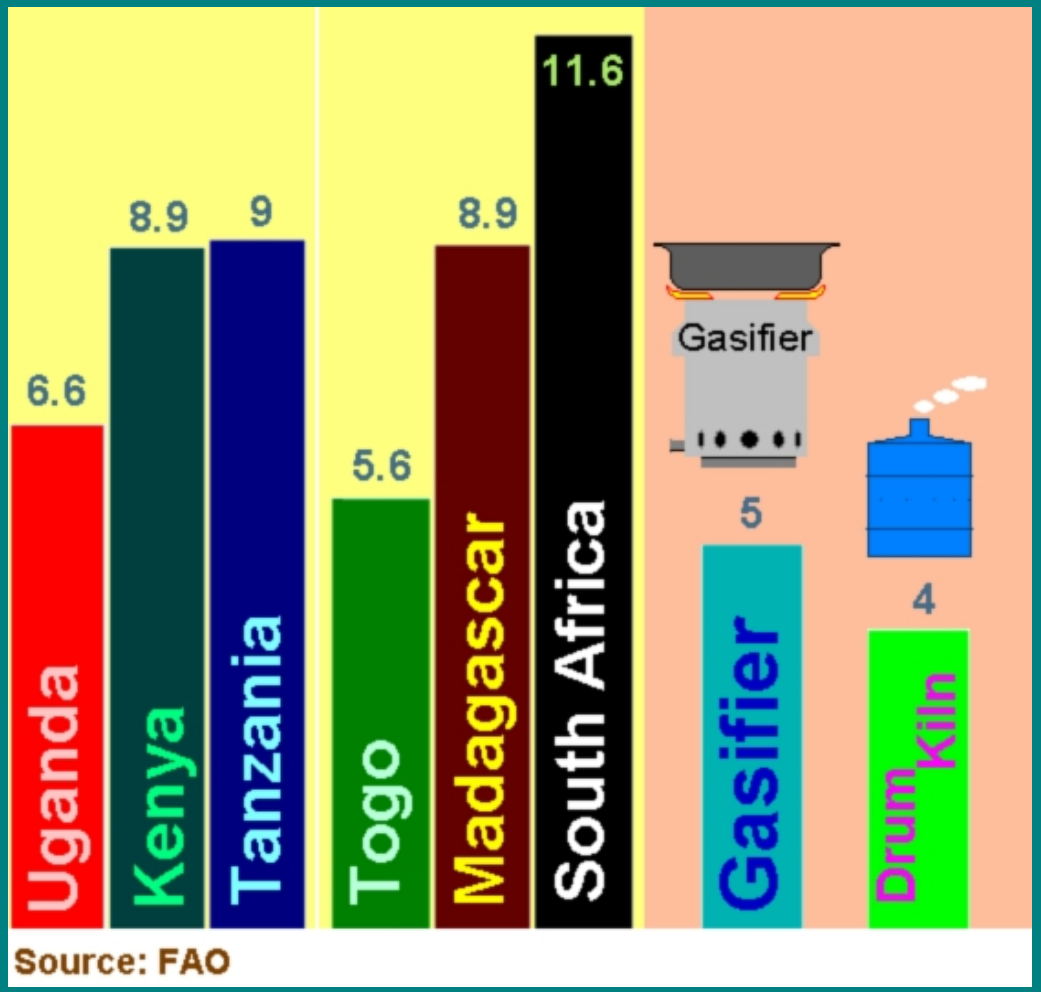
Bonus topic: Charcoal

- Charcoal production creates child labor
- Charcoal production boosts deforestation
- Charcoal production and trade create more corruption
- Charcoal fires emit high amounts of CO
- At an average, 6.6 kg of wood needs to be destroyed to receive just 1 kg charcoal

Bonus topic: Charcoal

Some selected carbonization ratios explain the madness.

Uganda represents the African average. In Tanzania, 9 kg of wood is destroyed to produce 1 kg of charcoal.



Bonus topic: Charcoal

Micro gasifiers could diminish the charcoal calamity.

Unfortunately, they are subject to very long and intensive in-structions.