



Energy access and green transition collaboratively demonstrated in urban and rural areas in Africa

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Who we are...



28 partners



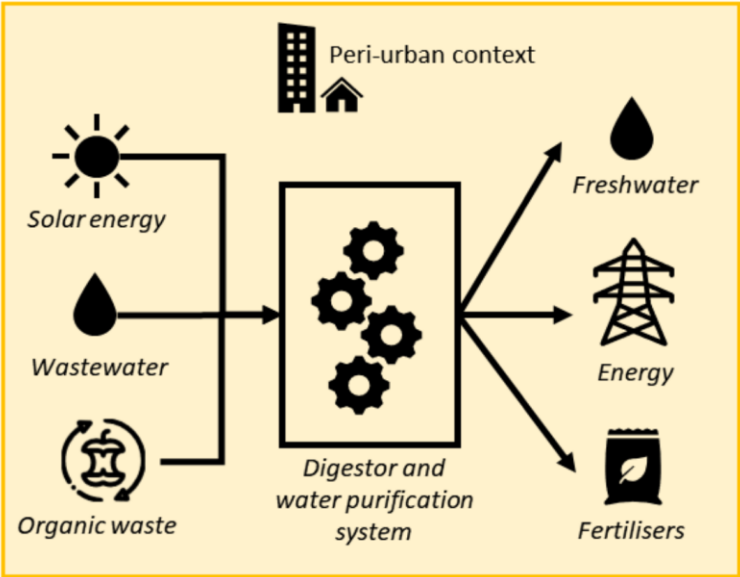
12 M.€ budget



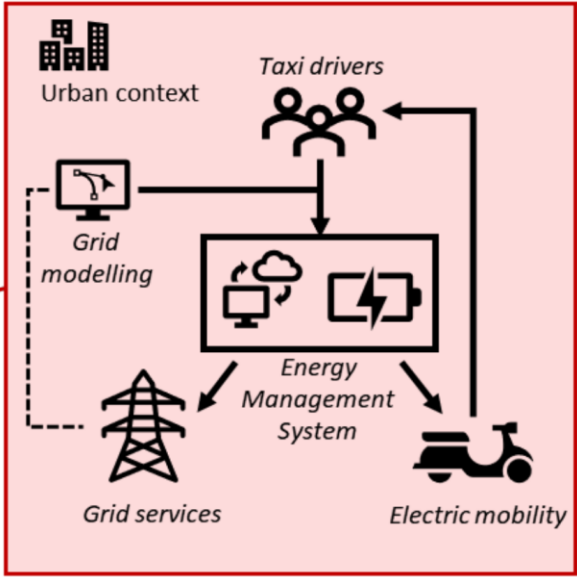
Nov. 2021 – Nov. 2025

Develop appropriate and easily replicated methodologies for energy access technologies

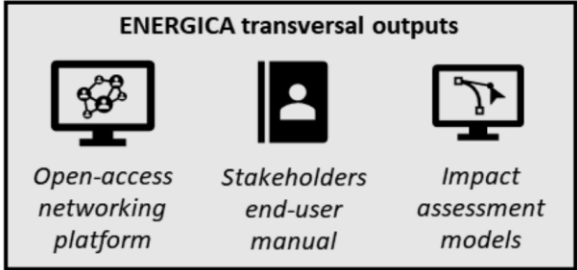
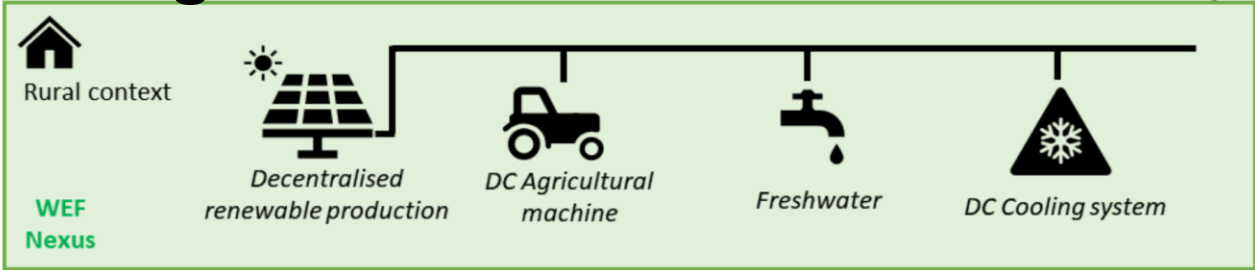
Sierra Leone



Kenya



Madagascar



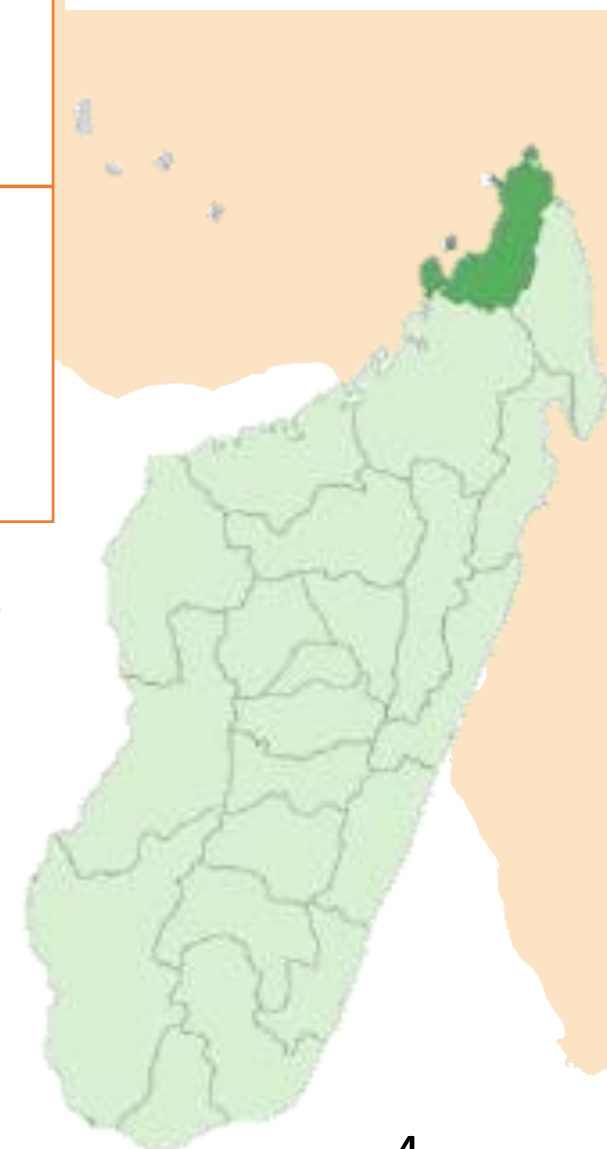
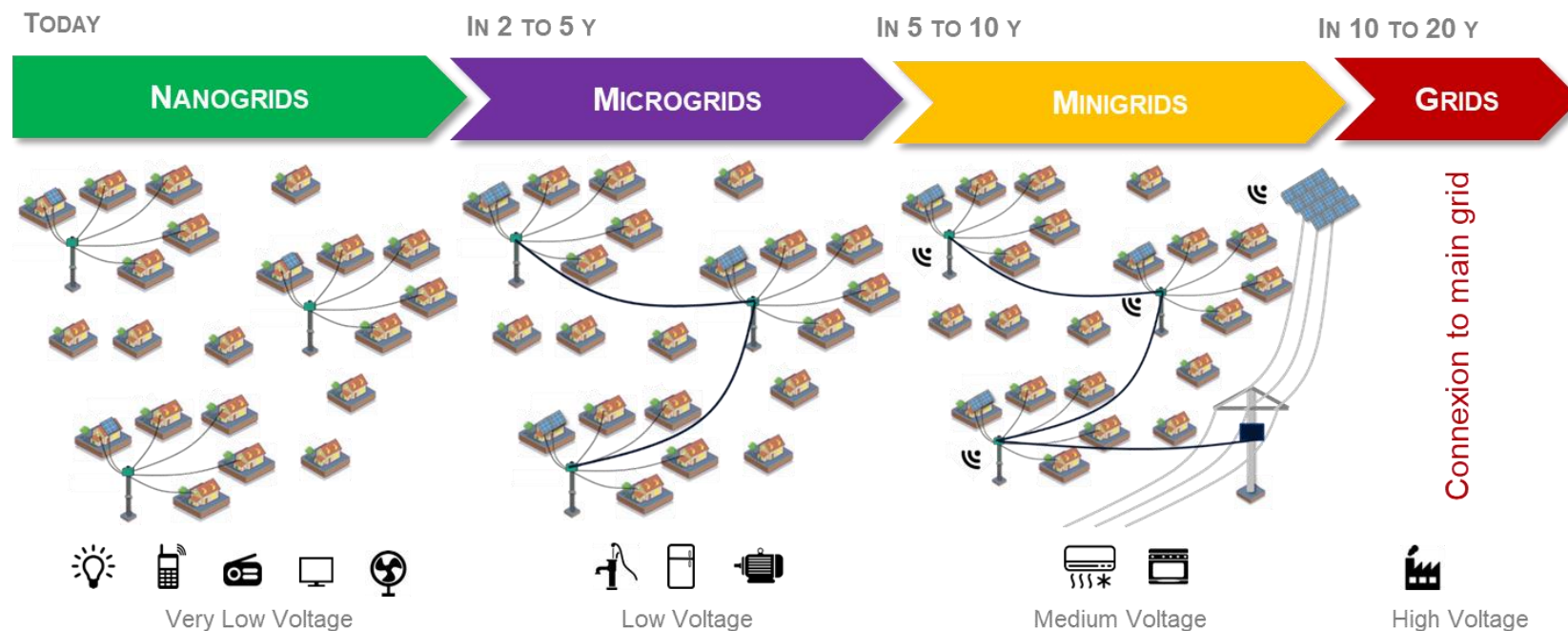
Context

- 5% electrification rate in rural areas (17% overall)
- Low population density of 43.4 people/km². Grid extension not a feasible option
- Low income, especially in rural areas

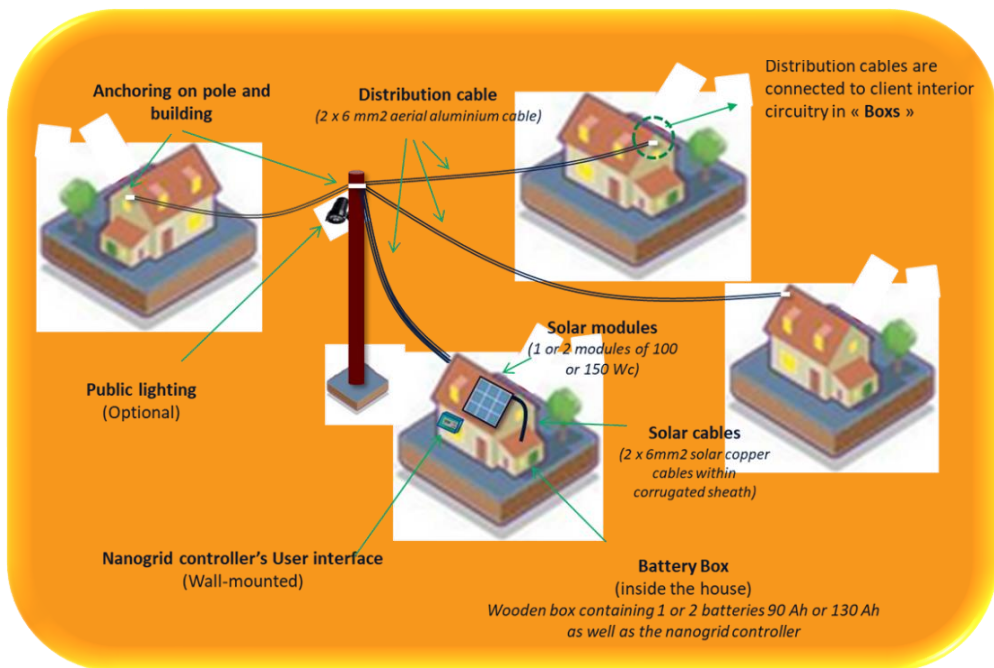
Solution

Productive nanogrids development

- Solar-powered DC nanogrids (powering 4-6 households x ca. 100-200 households)
- Agri-machinery (DC rice-hullers), cooling devices, and water pumping connected
- Water-Energy-Food nexus
- Training of local youths to become future entrepreneurs.

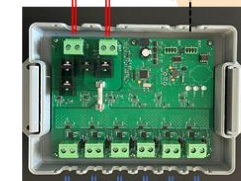


ENERGICA Productive nanogrids in Madagascar



SolarElectric cable
2x6 mm² Cu

< 15 m



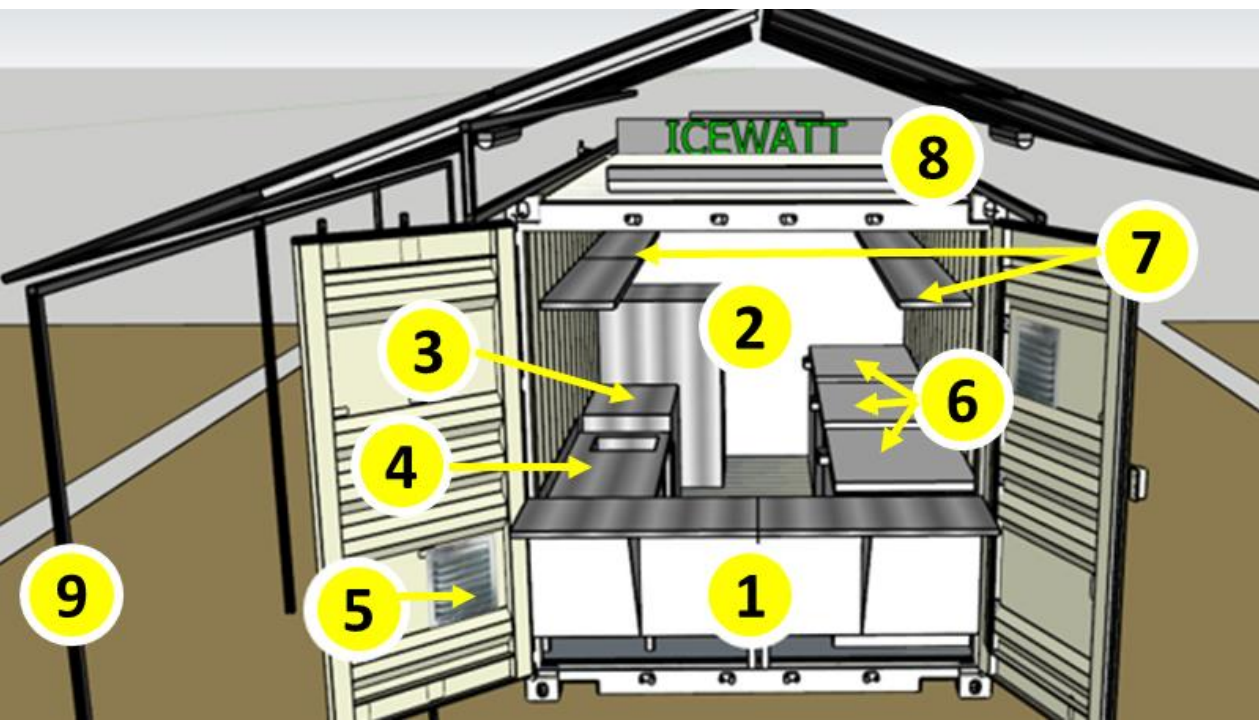
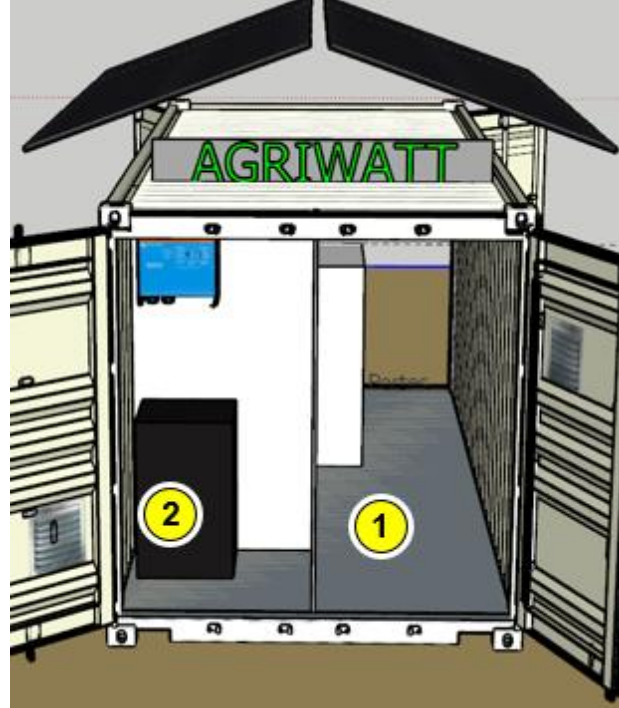
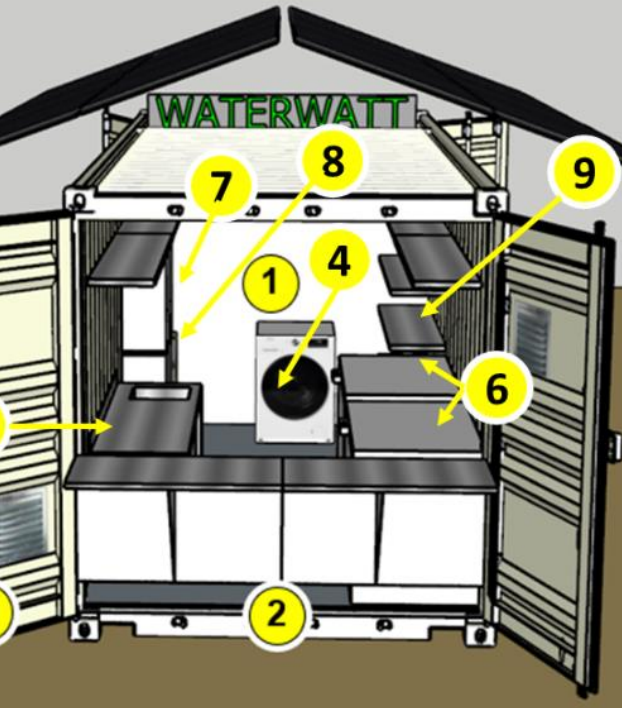
Aerial Electric cable
2x6 mm² Alu

< 25 m

To clients n°.. 1 2 3 4 5 6
Up to 10 A each
12 or 24 Vdc



FEE FOR DEVICE		FEE FOR SERVICE	
Device	Initial fee (in \$)	Service	Daily fee (in \$/day)
3W	10 \$	10 Wp 50 Wh/day	0,15 \$/d
4W	~ 10 \$	18 Wp 90 Wh/day	0,23 \$/d
USB 5W	~ 10 \$	30 Wp 150 Wh/day	0,30 \$/d
8W	~ 15 \$	42 Wp 210 Wh/day	0,45 \$/d
PL 12W	~ 30 \$	66 Wp 330 Wh/day	0,60 \$/d
15W	~ 100 \$	100 Wp 500 Wh/day	0,91 \$/d
60W	~ 850 \$	125 Wp 1250 Wh/day	1,50 \$/d

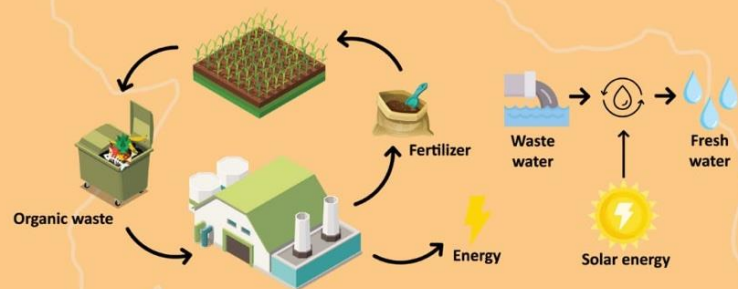


CONTAINERS

Context

- Only 28 percent of health facilities have **access to reliable** electricity in sub-Saharan Africa
- Food security is intimately tied to access to **fertilizer**
- Long-term sustainability of agricultural production relies on replenishment of soil organic content to maintain fertility

CONCEPT



SIERRA LEONE - FREETOWN

Biodigester and water purification system

SIERRA LEONE

FACTSHEET



+20% capacity in waste treatment capacity



Water purification capacity per day : 200L-300L



More than 100 jobs created in local waste transformer company

+40% CO₂ emission reduction of technologies implemented

Figure 4: Sierra Leone demonstrators

Lines of research

- Biomass **ash** can be used micronutrient additive when producing methane by anaerobic digestion of food waste
- Immobilization of **photocatalytic** materials active under natural sunlight for water and wastewater purification



Context

- High number of outages.
- High use of motorcycles: boda bodas are the primary mode of transport for trips under 5 kilometers
- Government has prioritized the improvement of the electricity sector

Solution

- Service of **swappable batteries** and swapping stations for electric motorcycle fleet
- Energy consumption forecasting and **grid modelling**
- The deployment of IoT sensors and **smart meters**
- Development of tools to provide **real-time grid status** visualization
- 15 main motorcycle hubs in urban and sub-urban areas of Nairobi







THANK YOU!

Happy to exchange on the project



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