

“Renewable Energy and sustainable development projects in developing countries – impact of Higher Education”

Innovative Ideas of Photovoltaic Energy
Distribution to Fill Energy Access Gaps
identified during Master Studies Research

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I. Country profile



Mozambique



Provinces

- 11 (10 + 1)

Districts

- 128 (121 grid energy)

Area

- 799.380 sq kilometers

Latitude

- 10° 27' S and 26° 52' S

Longitude

- 30° 12' E and 40° 51' E

Total Population

- 25.454 million people

Population in
Rural Area

- More than 80% of Total
Population

Country counts with 26% of Population using Grid and 14% Renewables) 60 % of the population lack access to Grid electricity.

2. “Germany Opens Up for the World: Studying in Germany is a great opportunity to learn for reality!” – Prof. António Armindo Monjane

Source of my Inspiration: Prof. António Armindo Monjane



3. Background and Challenges of Rural Electrification in Mozambique



Problem

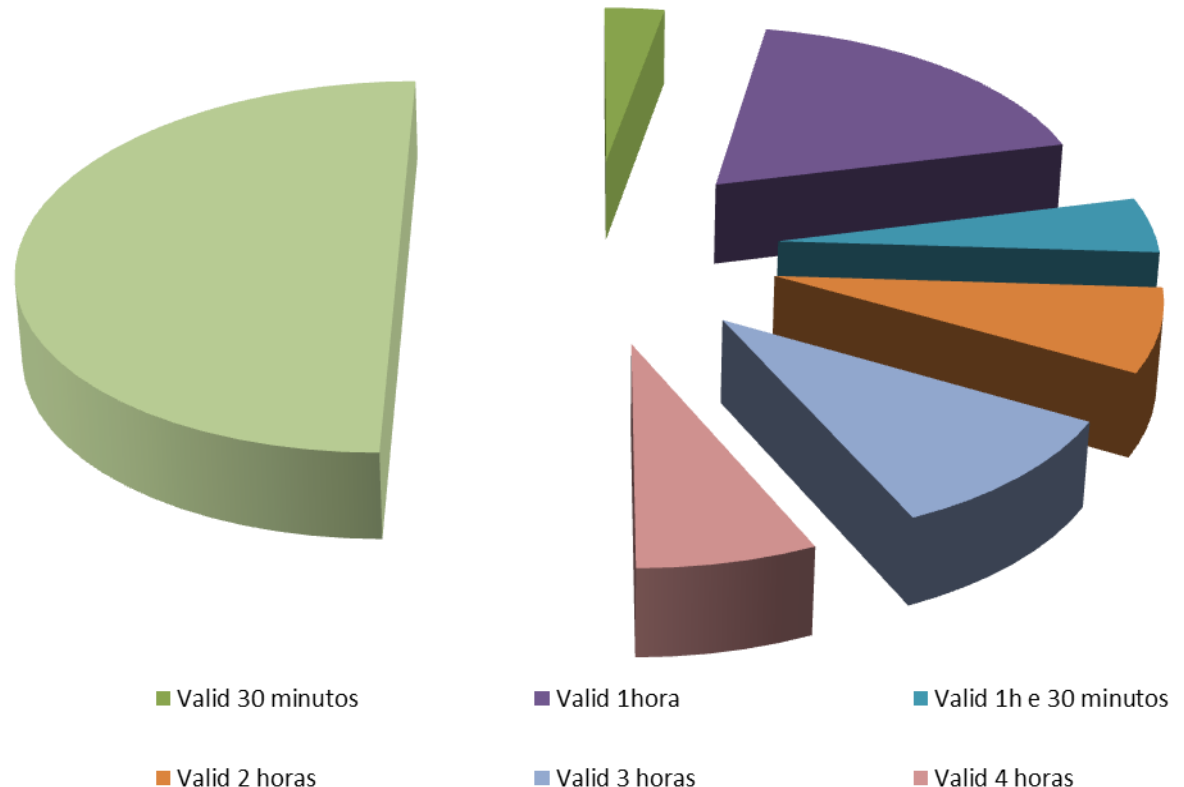


- Like other developing countries, 1 out of 5 people have no electricity connection in rural areas in Mozambique;
- Mozambique has lack of infrastructures in rural areas;
- Houses are very spread apart;
- Most rural people perform unpaid jobs – do not have enough money to pay connection to grid or to pay electricity bill every month;
- Some people are not aware about existing alternatives;
- Some villagers know but do not have shops to buy PV Systems in rural;

4. Master Study Research

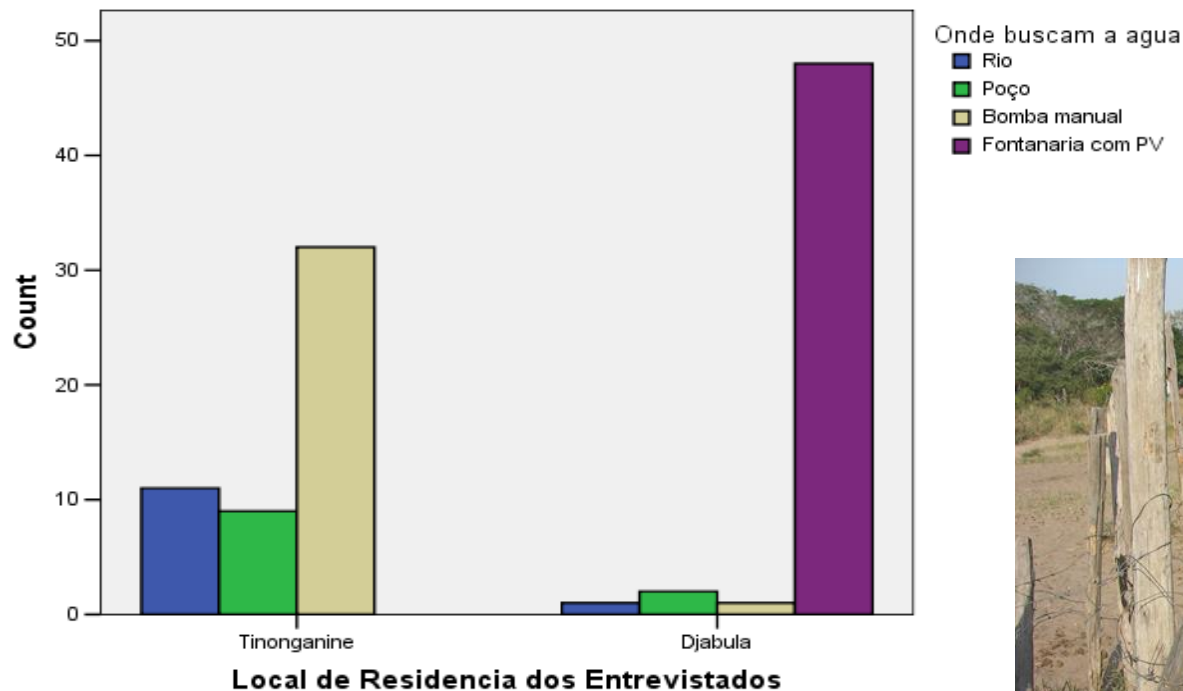
- For final paper I have decided to investigate the Role of Photovoltaic Energy for Rural development;
- I have selected two communities in Mozambique to do a comparative study and see the level of development linked to PV distribution in the two communities.

✓ Time Spent to fetch water before the PV water Pumping in the community was high



4.1 Pv installation for pumping water had a potential to bring benefits for Villagers

Bar Chart



With PV water pumping system: The process is faster, water is relatively closer to the households; it is a clean water.



5. Why Becoming Entrepreneur?

- Initiative was drafted during Master Studies
- Completed Master Studies and did not have job;
- It was a way to use acquired knowledge to help country create strategies to fill gaps, accelerate access to energy and promote sustainable development;
- Selected Energy because wanted to challenge the traditional gender roles;



- Other students are now investigating the impacts of the energy shops and the socio economic gains.

6. Lojas de Energias: The Innovative PV Project in Mozambique

- The pilot projects visited during Master Research seemed not to be sustainable;
- More than half of the PV systems were no longer operational after 3 years;
- Only male individuals were trained to do repairs;
- After 3 years there were no people to repair the solar systems in the pilot villages;
- Frustration on the beneficiaries!
- I have decided to challenge the Gender Roles and learn to repair and install solar systems to help villagers and fill a gap;
- I have created idea of Energy shop for rural off grid areas;



6. Lojas de Energias: The Innovative PV Project in Mozambique

**Inovative
Distribution
idea as a way
to fill a gap**

- Lojas de Energias (Energy Shops) is an adaptation of a new way of supplying clean and affordable energy forms for off grid areas;
- It aims in promoting and taking environmental friendly and clean energy forms closer to the rural population;
- In the energy shops it is possible to charge batteries, lamps and mobiles;
- Promote social independence, Entrepreneurship and well being of people.



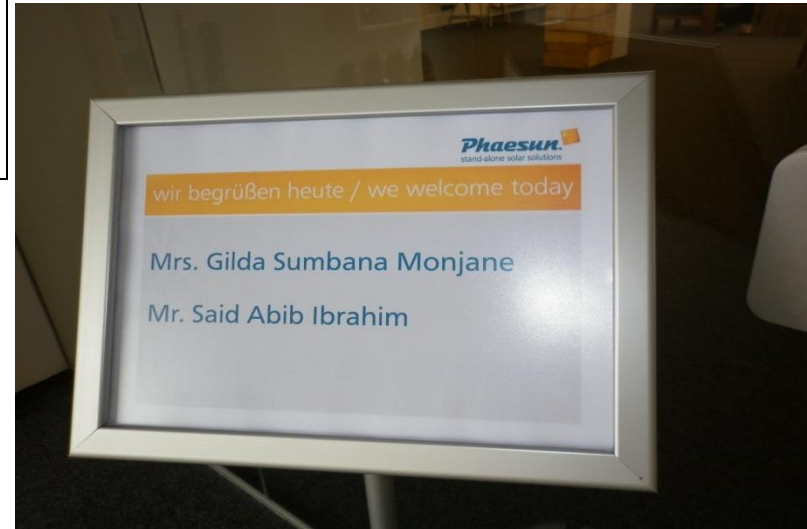
7. Using DAAD Summer Events as an opportunity to identify partners and strength Coordination

- DAAD Summer School offers a great opportunity to share experience and learn from other countries with similar context;
- The Summer school is the right place to plan some South-South and or S-S and N partnership;
- I appreciate the link of DAAD Summer school with the *Messe/Trade/Inter Solar* visits to companies because this gives students opportunity to learn from the experience of the Germany Companies and also possibility to identify potential partners and products;



7. Using DAAD Summer Events as an opportunity to identify partners and strength Coordination

- The DAAD Summer School helped to meet some partners;
- During the 2012 DAAD Summer School some stands and partners were visited to share the Solar Shop idea;
- After some exchange of emails, one partner agreed to offer training for a group of entrepreneurs in Mozambique. I was one of the Entrepreneurs trained;
- I was offered a possibility to visit some partners to learn from their experience and participate in trainings ;



7.1 Establishment of MoU and PPP

- In January 2013, it was possible to open the first Loja de Energias in Mozambique under a PPP initiative and a MoU established with a Germany Company;
- The shop is also used as a charging point;
- It was later included in a Germany publication (Be your own BOSS) under the Case Studies. BOSS stands for Business Opportunity with Solar Systems;



8. Service delivery

- The entrepreneurs take products closer to the communities
- Beneficiaries are explained how to use the new technology;
- After selling services help to build trust and get new clients;
- Beneficiaries do not use kerosene lamps or firewood anymore;



- New forms of supporting low income families were adapted with the possibility of charging services;
- Low cost local material were adapted to make support possible in each context;

9. Replication of the Energy shop Concept and Using the concept to Support Women Economic Empowerment and SE4ALL Initiative

- I helped to establish other 34 selling points (Now in total we have 35 solar shops: 25 managed by women and 10 by male individuals);
- We shared the idea with regional partners during SE4ALL Meeting and we received visits and requests from regional partners to expand the initiative to other countries.

Shops are Managed by women and offer services for women and men



10. Some Awards For the Initiative:

In 2013, Breaking Gender Inequalities

- The Alumni Gender Group awarded the initiative with Breaking Gender Inequalities, in Bonn, on 30th November 2013



This picture can be seen at the Frauenmuseum in Bonn

In 2014, Received Award: During the SADC Gender and Climate Change Summit in South Africa, Johannesburg



On the Left: Gilda presenting the concept of Lojas de Energias
On the right: Gilda receiving the Winner Certificate for the Lojas de Energias, from the Madagascar Gender Ministry

In June 2015, during the Climate Change Meeting in Bonn, the UNFCCC team included in their agenda the Lojas de Energias presentation under the Gender responsive ideas. After presentation it was nominated a BEST PRACTICE;



Winner of the 2015 Africa SEED Award





SEED

10 YEARS OF
SEED AWARDS
2005-2015

promoting entrepreneurship
for sustainable development

Founding Partners



SEED AWARDS 2015
Africa WINNER

Loja de Energias (Energy Shops)

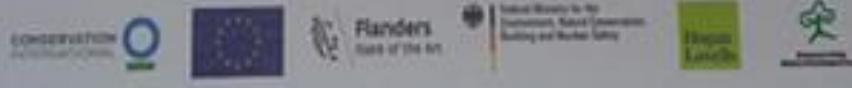
has been selected as an exceptional social and environmental start-up enterprise.

Achim Steiner • UN Under-Secretary General and Executive Director on behalf of the United Nations Environment Programme,
United Nations Development Programme and International Union for the Conservation of Nature.

SEED Founding Partners



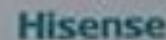
SEED Partners



SEED Hosting Partner



SEED Corporate Partner



In September 2015, during the Off Grid Workshop in Memmingen, the initiative was nominated the “Most Creative Programme”;

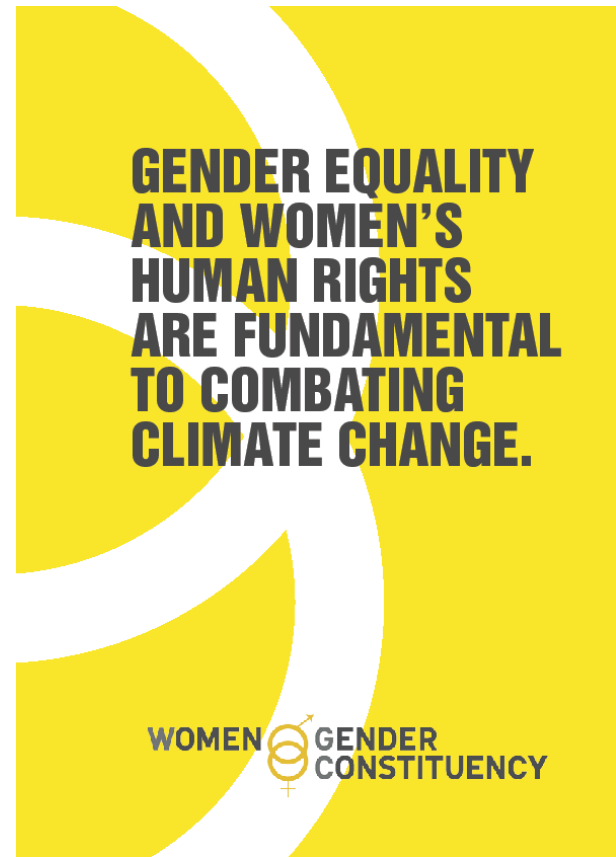
The Entrepreneurs do work to Offer Clean Light for Rural Learners
Access the Link to see one of the beneficiaries:

<http://www.youtube.com/watch?v=j0xf89OLDCc&sns=em>



Support to the Gender Expert Group Meeting

- In October 2015, I was requested to attend the Expert Group Meeting, invited by UNWomen from New York office, Meeting took place at the *Wissenschaftszentrum* in Bonn to support the team in designing a document on Gender Responsiveness to advance some “Technical Climate Solutions” to be presented during COP 21 in Paris;



11. Challenges: Find opportunity of Finance Studies at Eduardo Mondlane University in order to Develop a model to improve the Real Developing Countries Reality to supply Energy for Rural Off Grid Communities

- Get funds to proceed with studies and search for Sustainable ways to supply and Management of Solar Energy shops;
- Need to invest in policy design;
- It is difficult to get funds to invest in ToT in order to expand the initiative to many places;
- High upfront costs make the product unaffordable for poor households;
- Lack of government incentives;
- Difficult to get funding with local banks with fair Bank loans rates;



12. Recommendations

- Energy is essential to reach SDG. There is a need to link energy access with other existing development initiatives;
- It is time to stop looking at women as victims and vulnerable but look to them as change agent and involve them in decision making, planning, implementation of electrification and other development projects;
- Developing countries need to think on reduction or taking out tax for importation of renewable material in order to lower the prices for the end beneficiaries;



British Minister for Africa Nicholas Hurd Visiting Women Entrepreneurs in Rural Off Grid Areas



Minister Nick Hurd Shaking my hand as a Recognition of my work





13. Concluding Remarks:

- Achieving sustainable economic growth requires talents, creativity and entrepreneurial vigor;
- Lojas de Energias is one of the sustainable development projects in a developing country that was originated from a Higher Education research;
- Apart from promoting Renewable Energy forms, it aims in Promoting Gender Empowerment, offering people paid jobs and social independence;
- The approach to involve women contributes to increase and accelerate access to more clean and affordable modern energy and this is critical to alleviate women from a domestic hard work, ensure sustainable development , realization of human rights and achieving the SDG;
- We need to remember: if women cannot participate equally, economies pay a cost in terms of growth, development; and equal distribution of resources.



“To Devise a Planning without the participation of women is like using 4 fingers when you have ten.”

Thomas Sankara (1987)



**Thank you very much
for your attention!**