

Solution for Energy Supply Non-Grid Connected Remote Villages in Democratic Republic of Congo

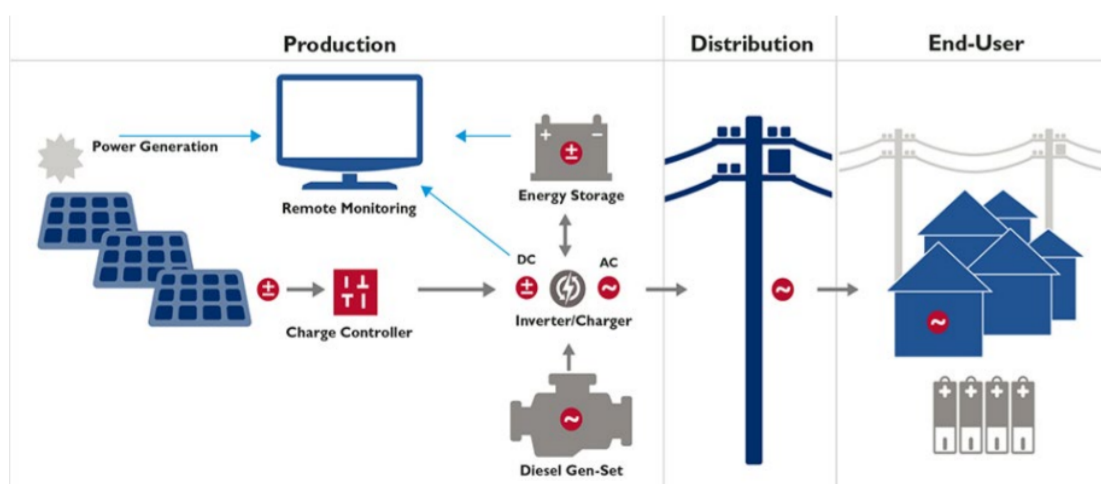
Introduction: Democratic Republic of Congo (DRC) is one of the poorest countries in Africa but at the same time richer in terms of raw material. Still, the overwhelming majority of the population lives in extreme poverty. The lack of electricity brings several challenges to the populations, adopting a retrograde lifestyle. So, this project will focus on trying to find a solution to bring electricity to Belunga village, and a better way to transport the equipment to the village as well.

What is the best solution to bring electricity to Belunga village?

- For the choice of the most profitable source of energy and after, the best system to be used, the following table was made comparing them with the necessary specifications that they must have:

Requirements	Solar	Wind	Hydro
Must be from a renewable energy source	✓	✓	✓
Can work without being connected to the grid	✓	✓	✓
Must have the capacity to supply energy to a village	✓	✓	✓
Easy to instal	✓	✓	✗
Easy to maintain	✓	✓	✗
Easy to transport to the village	✓	✓	✗
Must be resistant to the climate in the village	✓	✓	✓
It can't be too expensive	✓	✓	✗
Able to perform for several years	✓	✓	✓
Easy maintenance	✓	✓	✗

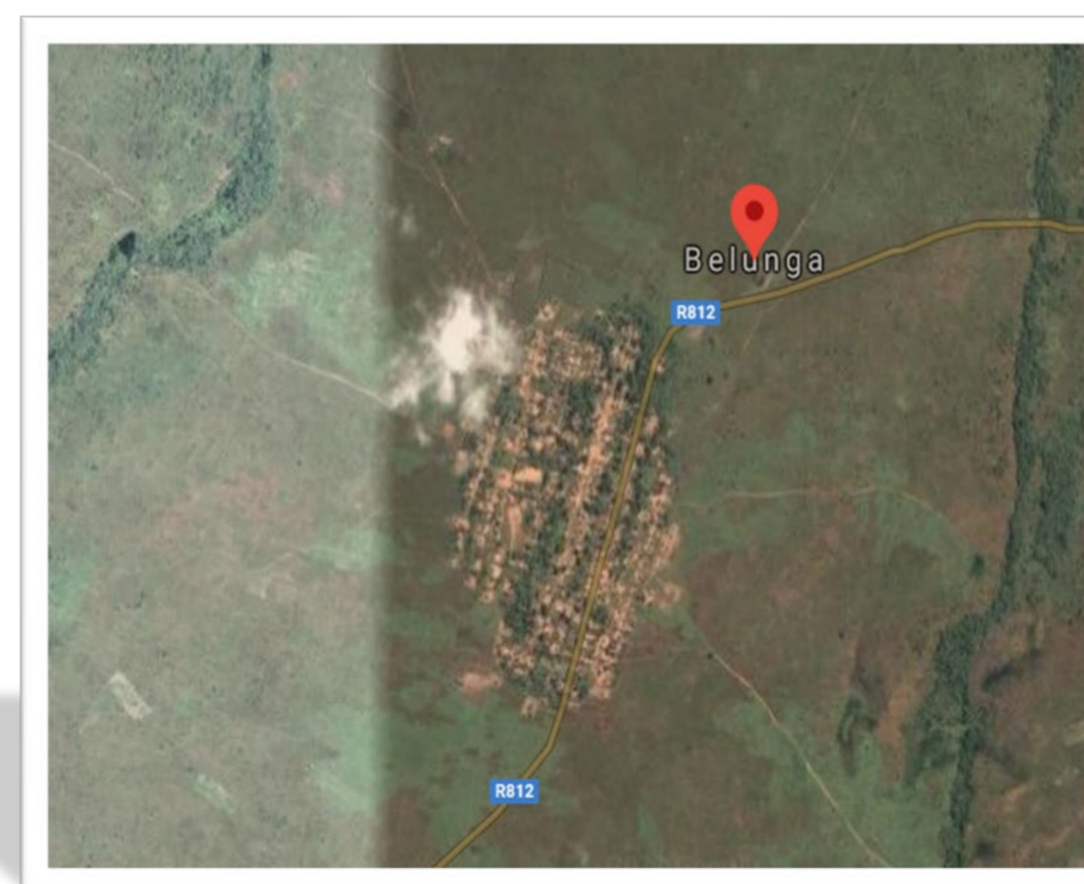
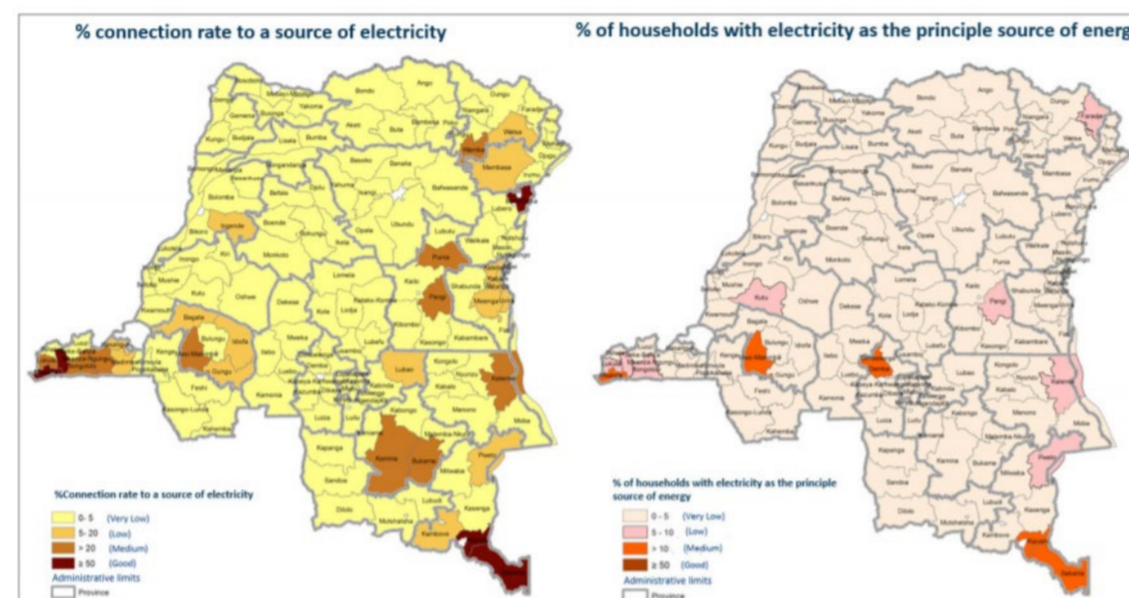
Requirements	Mini-Grid	Micro grid
Must be from a renewable energy source	✓	✓
Has to work without being connected to the grid	✓	✓
Must have the capacity to supply energy to a village	✓	✓
Easy to instal	✓ (easier)	✓
Easy to maintain	✓ (easier)	✓
Easy to transport to the village	✓	✓
Must be resistant to the climate in the village	✓	✓
It can't be too expensive	✓ (less expensive)	✓
Able to perform for several years	✓	✓
Easy maintenance	✓ (easier)	✓



- With this comparison, it can be seen that for this village it will be better to use a mini-grid as it is easier to instal and easier to maintain.

Background

- The lack of energy remains significant impediment to Africa's economy and social development, and it is also a substantial barrier with consequences for education, health and business.



How to bring the chosen system to Belunga village?

- It has to be consider that the components have to be moved between continents. In these types of systems, it is more common to use cargo ships as a type of transport, since it can transport heavier loads and compare to planes, it produces less CO₂ emissions.



- This village is located relatively close to a primary road. So, the best option for transporting the equipment would be by cargo ships; depending on where the equipment was provided. Later, the most appropriate type of transport would be cargo trucks that would take the village's equipment.



Conclusion: These projects still have some challenges, such as transportation of equipment, and still, cause some emissions. However, its advantages prevail over less positive impacts. These systems are essential, and they are increasingly recommended for electricity production because they are in constant development. To conclude, these systems make the country more developed and contribute to the well-being of the population and bring more and more benefits and opportunities for development and gender equality.