On-grid Solar Power for Sub-Saharan Africa

August 2018
SUB-SAHARAN AFRICA - ELECTRICITY STATUS

Over 60% (~600 million) people do not have access to electricity

Electricity is linked to poverty and no educational opportunities

Solution!!!: On-grid solar PV farms required to provide cheap affordable electricity

Source: GWPF (2017)
GLOBAL SOLAR PV MARKET (END OF 2017)

Source: REN21 (2018)
A very important issue to address is whether or not solar PV is the best use for the land. In Ghana, due to generous amounts of daylight hours throughout the year, the feasibility of developing large scale Solar PV and wind systems (e.g. dual tracking panels) is very high. Also the suitability for PV systems is very high just south of the Equator, which removes the requirement for one-axis or two-axis tracking panels. Therefore, it can be easily deduced that this project was created around 19.8°N. After further research it was determined that the lands in Ghana currently have access to 35% of their annual average of global solar radiation. Hence, the solar potential is high. Moreover, the lands in Ghana has these sites currently as unproductive. This is either due to lack of demand for expanding certain crops or due to high marginal cost necessary to expand crops. Second, other RES options have been accessed, but ruled out because of lack of incentives or resources: no FiT offered for CSP; lower FiT and wind resources for wind power.

Therefore, it can be easily deduced that the implementation of a Solar PV project on this land is indeed sensible option in a unproductive and far from densely populated areas. Electricity generation will not compete with food crops of any kind because the land is suitable for agriculture. Directly increase the price of land. From a sustainable viewpoint this land use for population density. This means that solar PV developments in one of these sites will not be realized because the land owner and the partner are looking for other investments. The land is available for use (as Solar PV mounting). The land is complex because the land is far from city and does not have any infrastructure. After combining the mutual interests of land owner and the partner, it was decided that the land owner and the partner will work together to develop the Solar PV project. Hence, the solar potential is high in Ghana. The project is expected to be realized in 2020.

Solar could potentially see total investments of $800 billion to $1.2 trillion over the next decade. Source: McKinsey & Company (2012)
SOLAR PV ENERGY – AFRICA AS A LOCATION

- Significant geographical advantage;
- Simplistic installation = reduced cost of mounting;
- Long sunny days; no variation in daylight hours;
- Availability of land.

Source: UNEP, NREL & The Global Environment Facility
AFRICAN MARKET OPPORTUNITIES

Africa has less than 1% of the total world solar capacities

- **China**: 54%
- **India**: 9.3%
- **United States**: 10.8%
- **Japan**: 7.1%
- **Rest of World**: 10%

Next 6 countries:
- Turkey: 2.7%
- Germany: 1.7%
- Australia: 1.3%
- Republic of Korea: 1.2%
- United Kingdom: 0.9%
- Brazil: 0.9%

Source: REN21 (2018)

Africa has one of the highest capacity factors for converting sun to electricity

- **Manufacture & installation Cost**
- Power Agreements negotiable
- Feed in Tariffs part of agreement
EGB’s STRATEGY

(AFRIKA)

Our vision is to be the premier developer of renewable energy in Africa

Our mission is to deliver renewable and sustainable energy to the people of Africa

Our strategy
• Develop cheap, affordable and renewable energy in key countries
• Promote a framework for economic development
• Create a positive socio-economic impact
• Expand the framework in Africa

Strategic Objectives

- Increase capabilities in renewable energy
- Drive value for renewable energy in Africa
- Accelerate start-up and growth of EGB Services in Africa
- Demonstrate technological capability to win customer trust
- Leverage engineering & technological capabilities within EGB

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ABOUT EGB ENGINEERING

• UK based company founded in 2011, not listed;
• Expertise in the field of power and propulsion;
• Focus on energy (inc. renewables) and Aerospace;
• Sustainable and renewable energy fundamental to EGB;
• Capabilities in development with regard to energy projects.

Click below link for information on EGB’s founder:
https://egb-eng.com/about-us/meet-the-director/

www.egb-eng.com  +44(0)1636 600539  info@egb-eng.com
PROPOSAL

• EGB is seeking investors who are looking for solar PV investment opportunities in Africa.
• EGB has identified African countries with favourable climate for investment.
• EGB proposes role as ‘Developer’ for peak capacity farms (>100 MW) in return for small % of profit per farm.
• Countries identified based on a set of stringent criteria.
• EGB has deep understanding of the African climate.
• Established & reputable network within countries; support available to commence license applications & technical surveys.

Seeking investors looking for solar PV investment
EGB has deep understanding of the African climate
EGB identified countries with favourable investment climate
Priority is for investment to alleviate poverty & improve economic outlook

Role as ‘Developer’ of solar farms
Established & reputable network within countries

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SUMMARY

• Solar PV the most dominant player for new investment. >400 GW world capacity. Investment of $114b in 2016. $1.2t in the next decade;

• Solar PV accounts for less than 1% of energy mix in Africa. Africa has one of best capacity factors to convert solar energy into electricity;

• Large peak capacity (approx. >100 MW) to be filled by Solar PV;

• Opportunity to gain significant market share in sub-Saharan Africa;

• EGB’s long term goal is to be the premier developer of renewable energy in Africa.