Euro-African business partnership on the forefront: Opportunities and challenges with case study of Photovoltaic converter business

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Background of Euro-Africa Trading and its challenges

- Earlier trading
- Modern trading
- Another modern trading

Trading rate is high
• high regulation
• high labor cost

Trading rate is low
• flexible regulation
• low labor cost
Energy trading Opportunity

The developed project under BOF is between two countries which have some similarities:
- Belgium
- Rwanda

Fig. 1 A long life PV converter (Alex Van den Bossche, JMV Bikorimana and Furgan Perad, 2014)

Fig. 3 Favorable Technology in the Africa Regions (Baker and Mc Kenzie, 2013)

Fig. 2 Current Africa power consumption vs full access in 2030 (IRENA, 2012)
Less costly and Longer lifetime PV system

Inequality of life span between Panels and Converters
Panels=30 Years
Converters=10 years

Cost
Labor cost > Grid connection cost >

Materials of topologies
Lossfull materials (Electrolytic capacitors)
Complex control
Expensive control

Low labor cost:
• PV and PCB development and manufacturing in Belgium
• Assembling and maintenance in Rwanda
PV sponsorship and chain supply

2nd generation PV business model integrate Ownership, operation and Control

1st generation PV business model considers third-party ownership and operation

Zero generation PV business model is concerned by PV system supply

Fig. 7a. PV Business supply chain

- PV panels
- Converters
- services
**PV life cycle cost ownership**

Where \( k \) is different costs (Total investment, capital replacement, maintenance, servicing, ……), and \( \alpha_{ij} \) are different factors which may affect the cost. \( \text{LCC}_1 \) and \( \text{LCC}_2 \) are respectively the lifetime cycle cost for the first and the second parties.
Conclusions

- Europe has been a good position to trade with Africa despite some challenges (high labor cost, strong regulations).
- Euro-Africa trading has many opportunities in different sectors (Agriculture, Energy, ...).
- Energy as one of the opportunities can be a model of Euro-Africa Business partnership and PV converter being developed in EELAB can be a good model.
- The model must combine two partners (North–South): PV, PCB and spare parts development and manufacturing must be done by European companies and maintenance/servicing must be done by African Companies. This can overcome the challenges of high labor cost.
- Life cycle cost of ownership period of a PV system is 30 years.
Questions