Chances of renewable energy in Zambia with a short view on the PEESA Project

ACRIS Conference

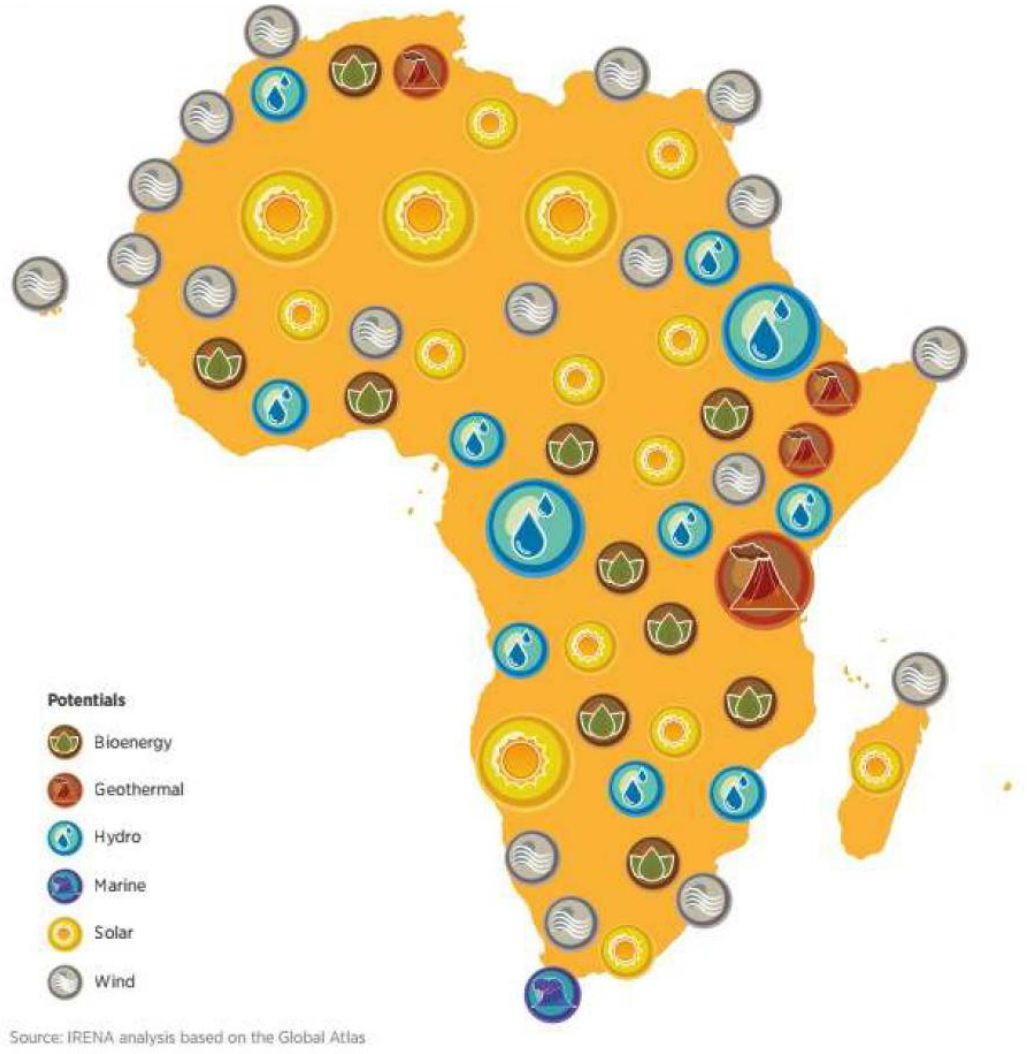
Energy Session dealing with country overviews

General overview on renewable resources in Africa

In Gerneral:

Water, sun and biomass

for Zambia



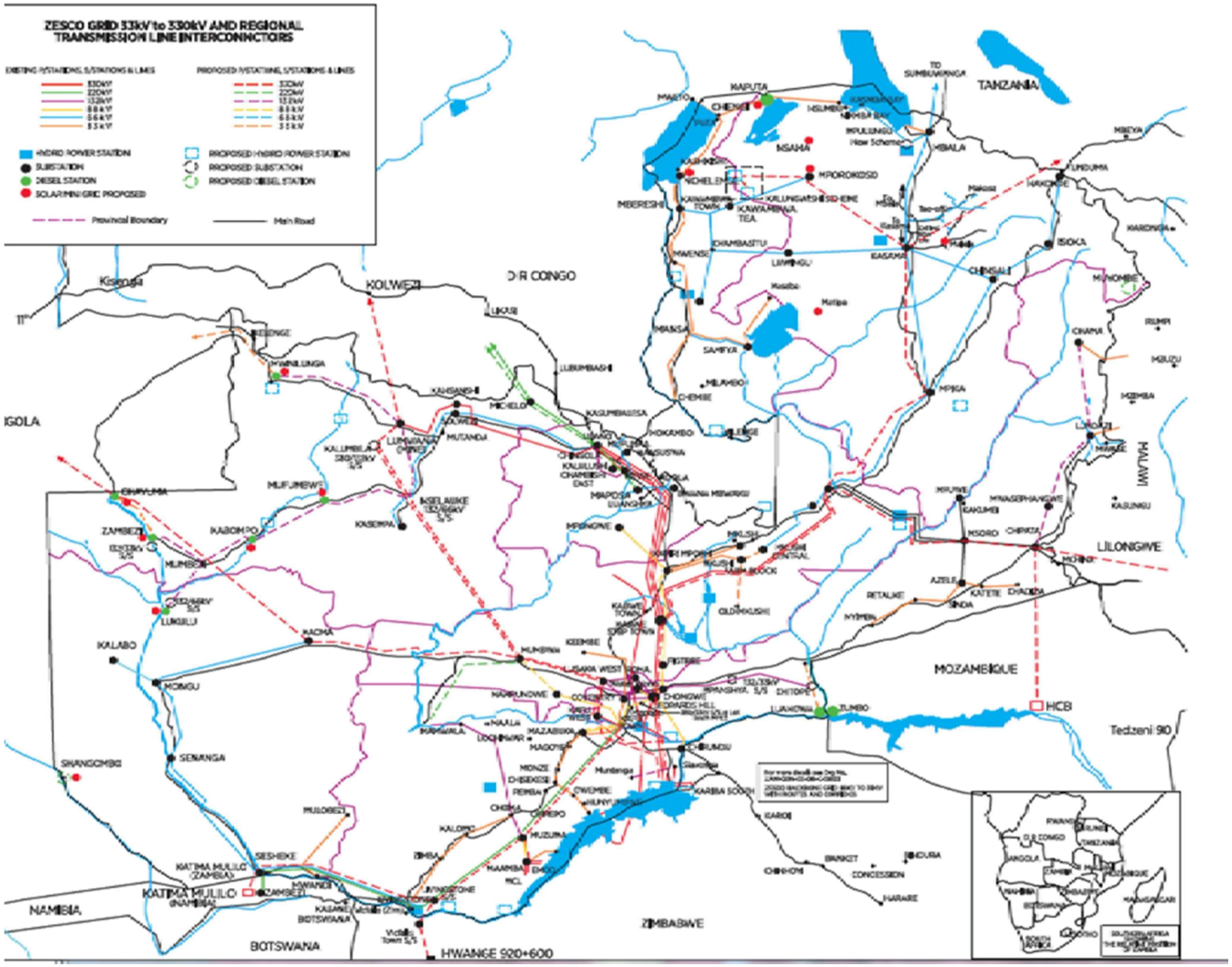
Analysis of the current state of the energy sector of Zambia

Supply of electricity

- Only 22% of the population in Zambia has access to energy. Moreover, in rural areas the electrification rate lays within 3%
- Due to the bad energy supply, Zambians face supply scarcity
- The country has an installed capacity of 2,214 MW (2.214 GW). For comparison, Germany has an installed net capacity of 188,000MW (188 GW)
- Biomass is dominating the energy sector with 80% of the supply and for demand 70%. This energy is mainly used for cooking and heating in households
- Large Hydropower plants are dominated the electricity generation with 99%, the rest is generated from mini hydro and diesel plants

Source: Homepage Germany Trade & Invest 2013ff.

Zambian electrical grid – existing & planed



Building new capacity

1. New hydropower

e.g. Batoka Gorge Dam, which is a joint project from Zimbabwe and Zambia, shall generate 1,600MW (1.6 GW)

→ this power plant could endanger UNESCO World Heritage

Water-run-power-plants (lower investment, easy to install but limitations according to adjustability)

2. Solar power

sun shines on average 3,000 hours per year with an average potential of 5.5 kWh/m²/day

Special off-grid, rural areas, single households (beginning)

Source: IRENA Report

3. Geothermal power

- Geothermal stations provide reliable energy and can cover parts of the basic load
- Nevertheless, they can just be built in specific seismic active regions in Zambia like:
- the Kafue Trough or the Rift Valley close to Tanzania's border

Challenges:

- The technique is quite expensive and a good infrastructure is required
- Skilled employees are needed as well

Source: IRENA Report

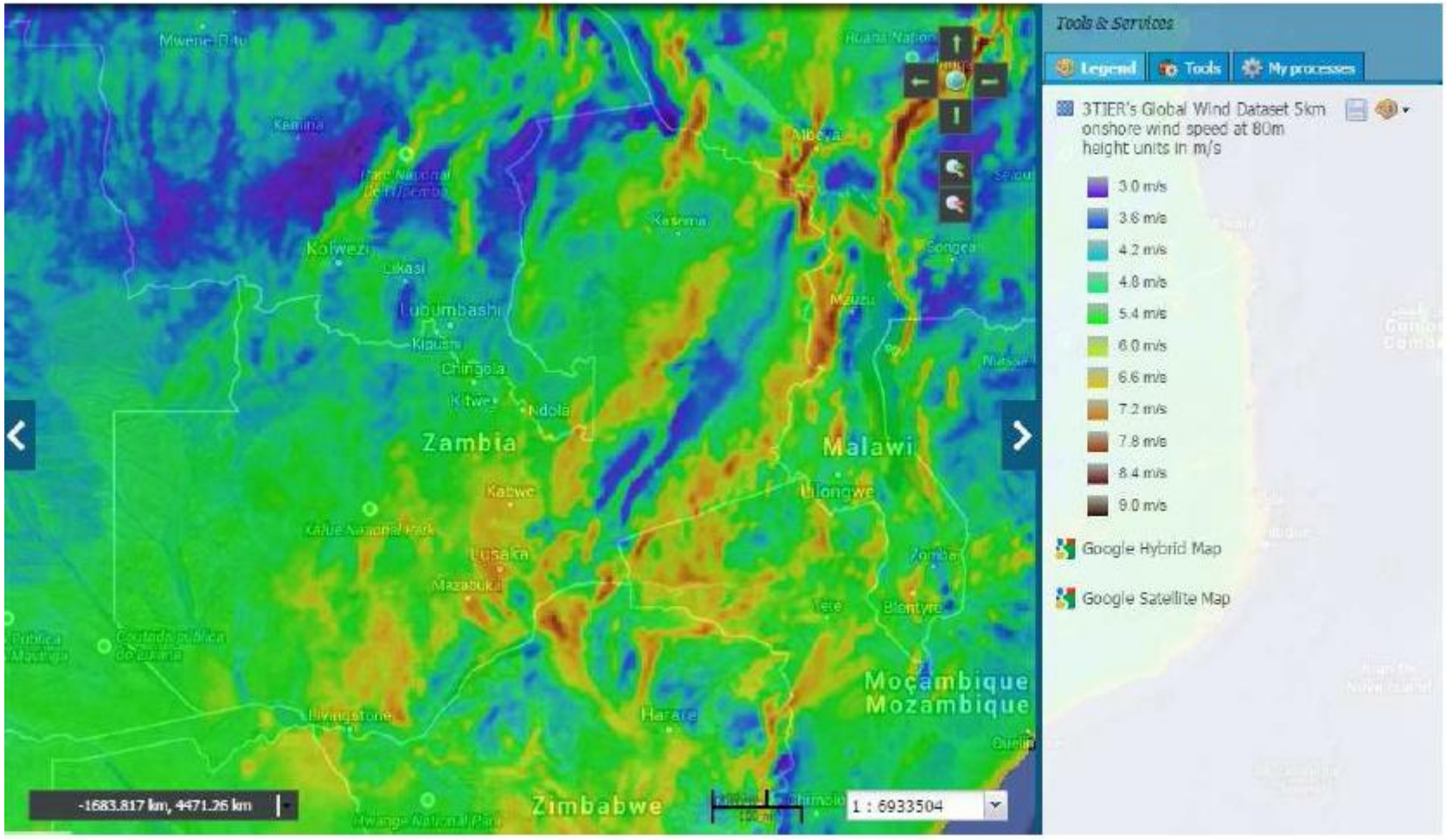
4. Wind power

- IRENA wind atlas shows parts of the country with common wind speeds of 6.0 m/s to 7.2 m/s in 80 meters
- to use the wind in such high altitudes towers and big wings are required
- big parts are expansive, logistical challenging and hard to install
- gondola, tower, wings and the generator must be installed by technicians
- good infrastructure and machines are essential
- For building and maintains the power plants machines and big cranes are important

- towers made by wood could be a possible solution to avoid some problems

Source: IRENA Report

Zambia´s Wind Profile

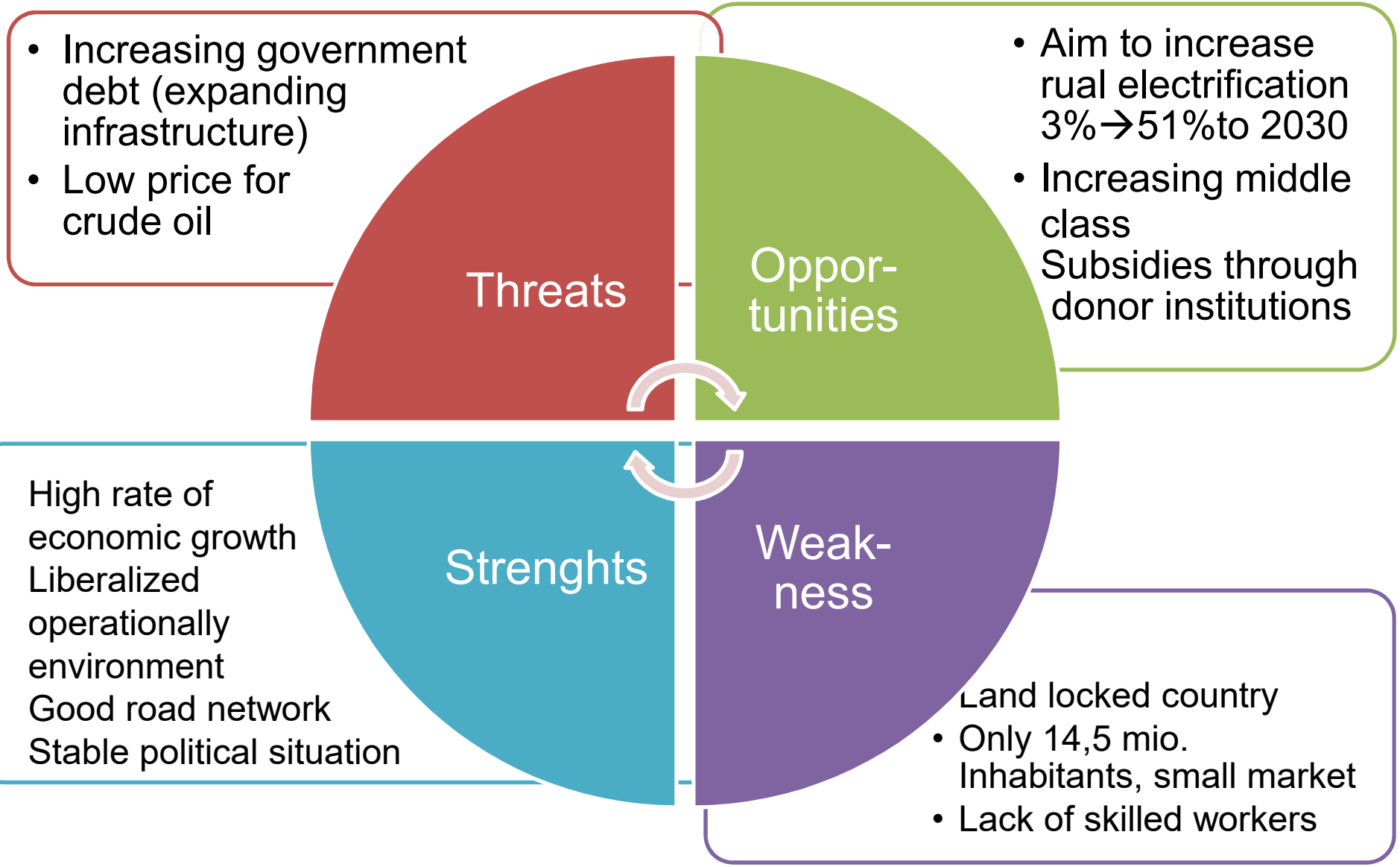


Source: Homepage IRENA, 2014

5. Biomass energy

- energy can be produced by combustion of the biomass and by digestion of the biomass
- combustion could be used agro wastes, forest wastes and sawmill wastes
- digestion could ferment animal waste, agro- and industrial waste and wastewater to generate biogas
- waste of Zambia's sugar industry can be used for energy matters

Swot-Analysis



About EDULINK

Implemented by the ACP Secretariat

Financed by the European Union

Policy of the European Union (EU) is to provide support to Higher Education in ACP partner countries in the context of a balanced approach to investment across the education sector as a whole

The ACP Higher Education sub-sector needs to respond to a number of key development issues

Key development issues

1. First, the need to stimulate potential for economic growth by increasing the supply of high level qualified human resources available to ACP economies.
2. Second, the need to improve the quality of locally provided Higher Education in the ACP states.
3. Third, the importance of building local capacity by promoting both co-operation between ACP tertiary education institutions, and between ACP and European universities, and finally, the importance of promoting inter-cultural dialogue and understanding among European and ACP countries

ACP – EU CO-OPERATION PROGRAMME IN HIGHER EDUCATION

Results

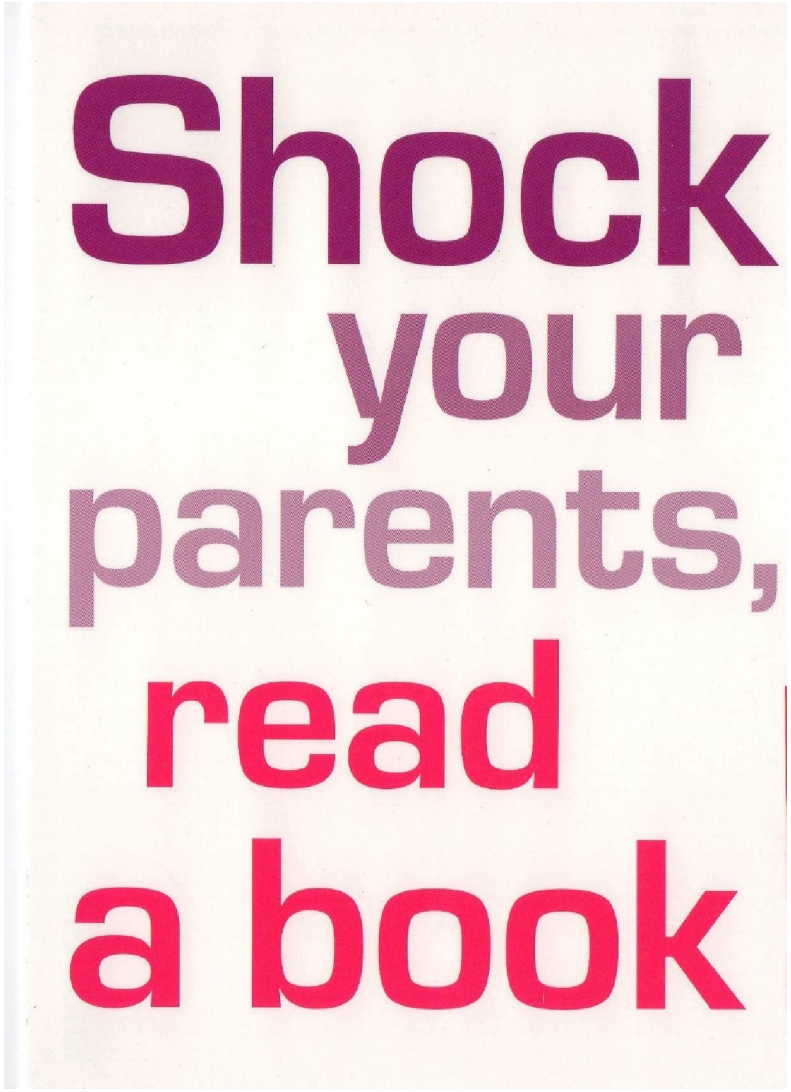
The project will develop methodology for engineering curriculum design in order to structure programmes and graduates' competences,
based on the alignment of EU quality standards taking into account the national educational requirements

Guidelines for designing an engineering programme within a harmonised quality assurance system on both a European and African level will be published at the end of the project

Visiting the largest rooftop PV installation (09.05.2014 - Windhoek, Namibia)

Programme on Energy Efficiency in Southern Africa (PEESA)

- Four **Master's programmes** in the field of Energy Efficiency
- at the African partner universities will be developed and adapted
- with a guideline on engineering programme design and curriculum and syllabus development,
- by 2016 be ready for implementation
- The new programmes will be based on updated syllabi and teaching materials with credits allocated to learning outcomes



Thank you very much for your kind attention!