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NEI NAMIBIA ENERGY INSTITUTE

EU-ACP EDULINK
Southern Africa Sustainable Energy Initiative

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Introduction

- Man needs **food** and **thermal comfort**;
- Man works for these – from birth to death;
- Man harnesses these locally and from afar;
- Man shows love through provision of food and thermal comfort;
- Man fights, and protects these with all they have;
- Technology eases their harnessing, storage, transmission, protection, and provision.

Irresponsible technology threatens man's livelihood.

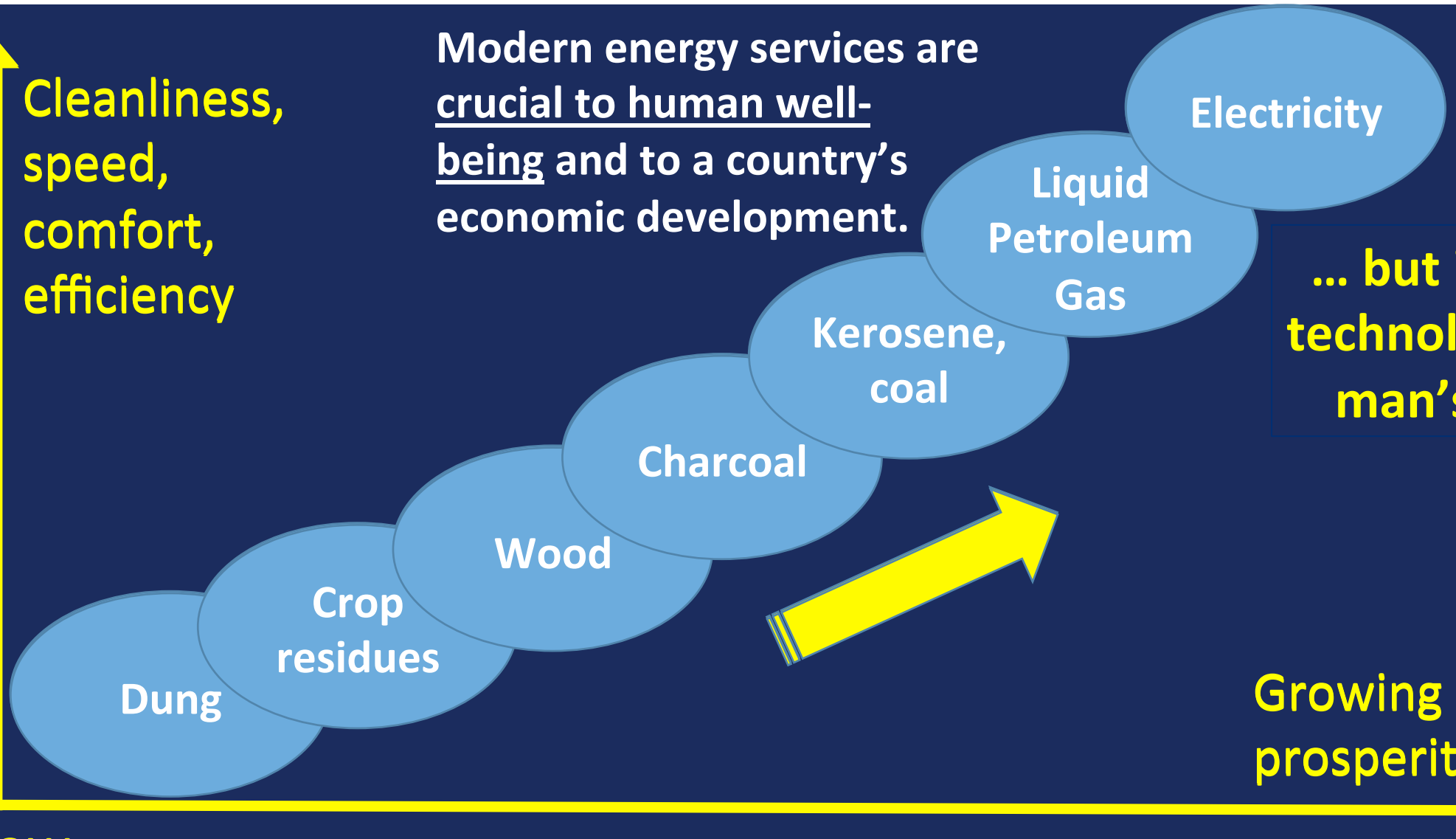
Introduction

Energy Needs?

To what extent do we harm ourselves to bring energy home?

Where on the energy ladder?

Modern energy services are crucial to human well-being and to a country's economic development.



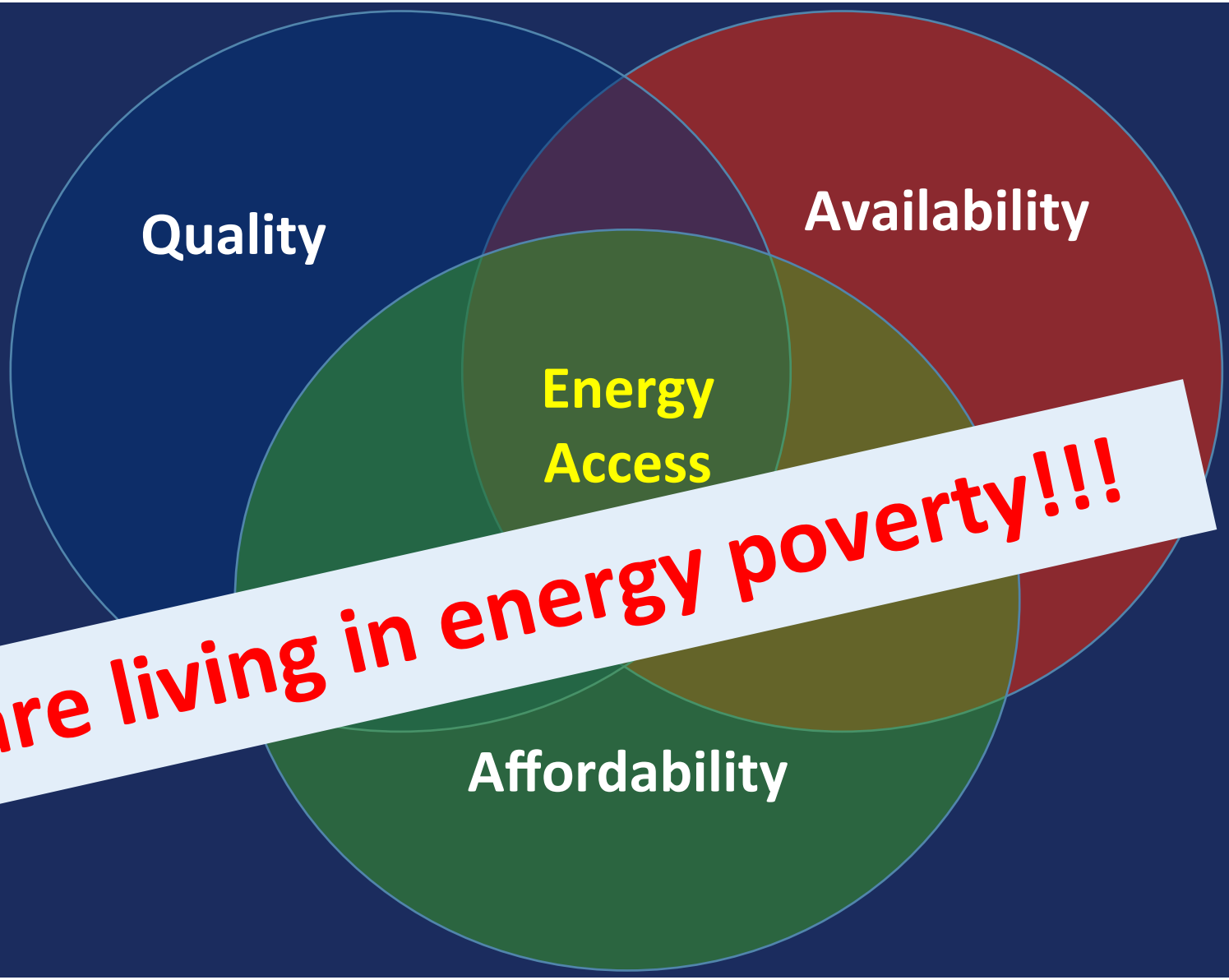
… but irresponsible technology threatens man's livelihood.

Energy Access

…Access to at least:

- the equivalent of **35 kg of liquid petroleum gas for cooking per capita per year** from liquid and/or gas fuels or from improved supply of solid fuel sources and improved (efficient, hygienic and non-polluting) cooking stoves; **AND**

- **120 kWh of electricity per capita per year** for lighting, acces… to most basic services (dri… communicati… servi… well as for …ocal production.



Otherwise … We are living in energy poverty!!!

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World access to energy

Number of people without access to electricity by region in the New Policies Scenario (million)

	Without access to electricity		Without access to clean cooking facilities	
	2011	2030	2011	2030
China	3	0	446	241
India	[illegible]	[illegible]	[illegible]	730
Latin America	24	0	6[illegible]	53
Middle East	19	0	[illegible]	8
World	1 258	969	2 642	2 524
Sub-Saharan Africa	**599**	**645**	**695**	**879**

Only region where population without access increases over time

WHY???

Africa's Energy Resources

Africa is:

- **third largest in crude oil reserves** (behind the Middle East and Latin America), third largest in natural gas resources (behind the Middle East and Europe),
- **second greatest for uranium** (behind Australia), and
- **is plentiful in hydro energy potentials and other renewable energy**, such as bio-energy and solar energy.

Yet … Scarcity in Abundance?

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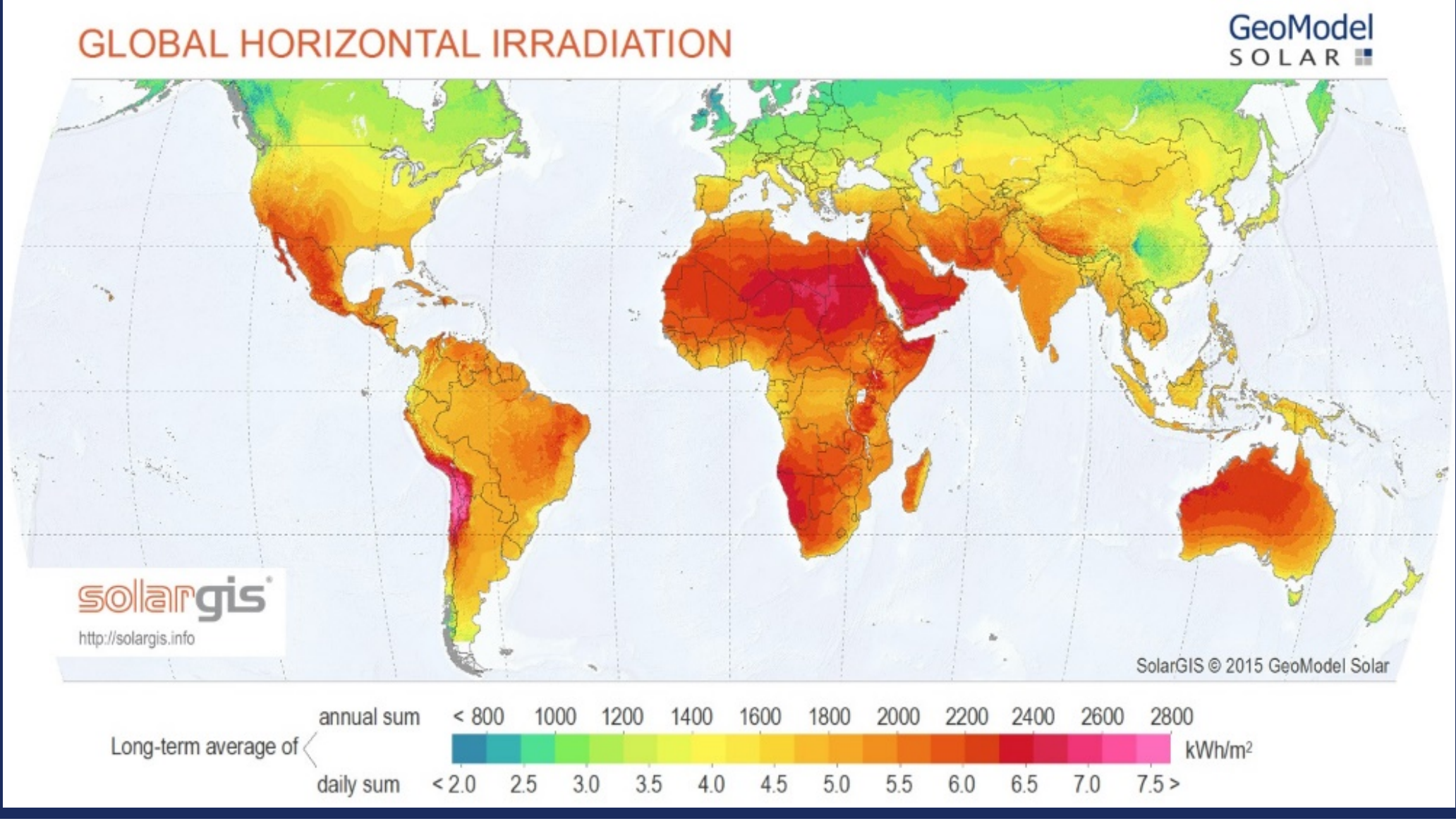
Africa's Energy Resources



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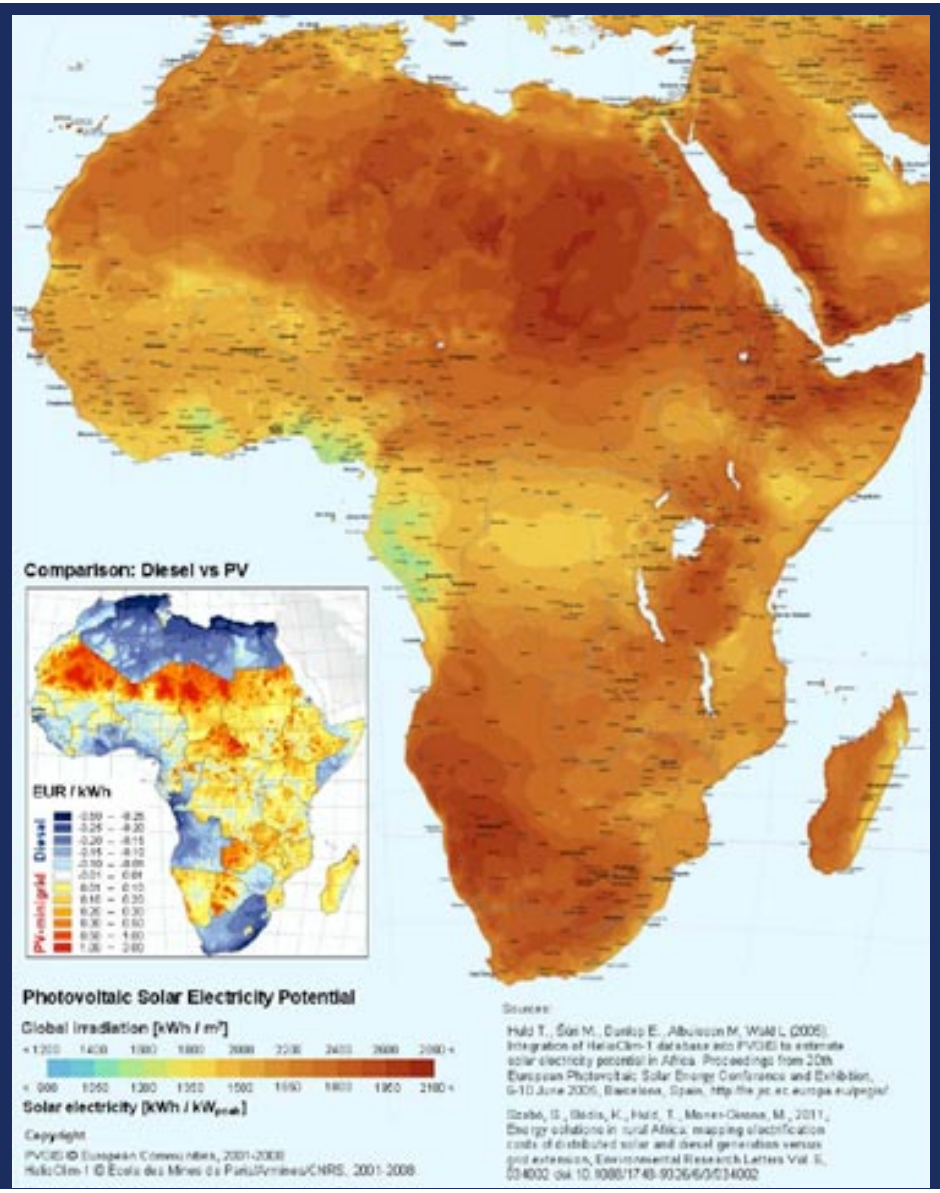
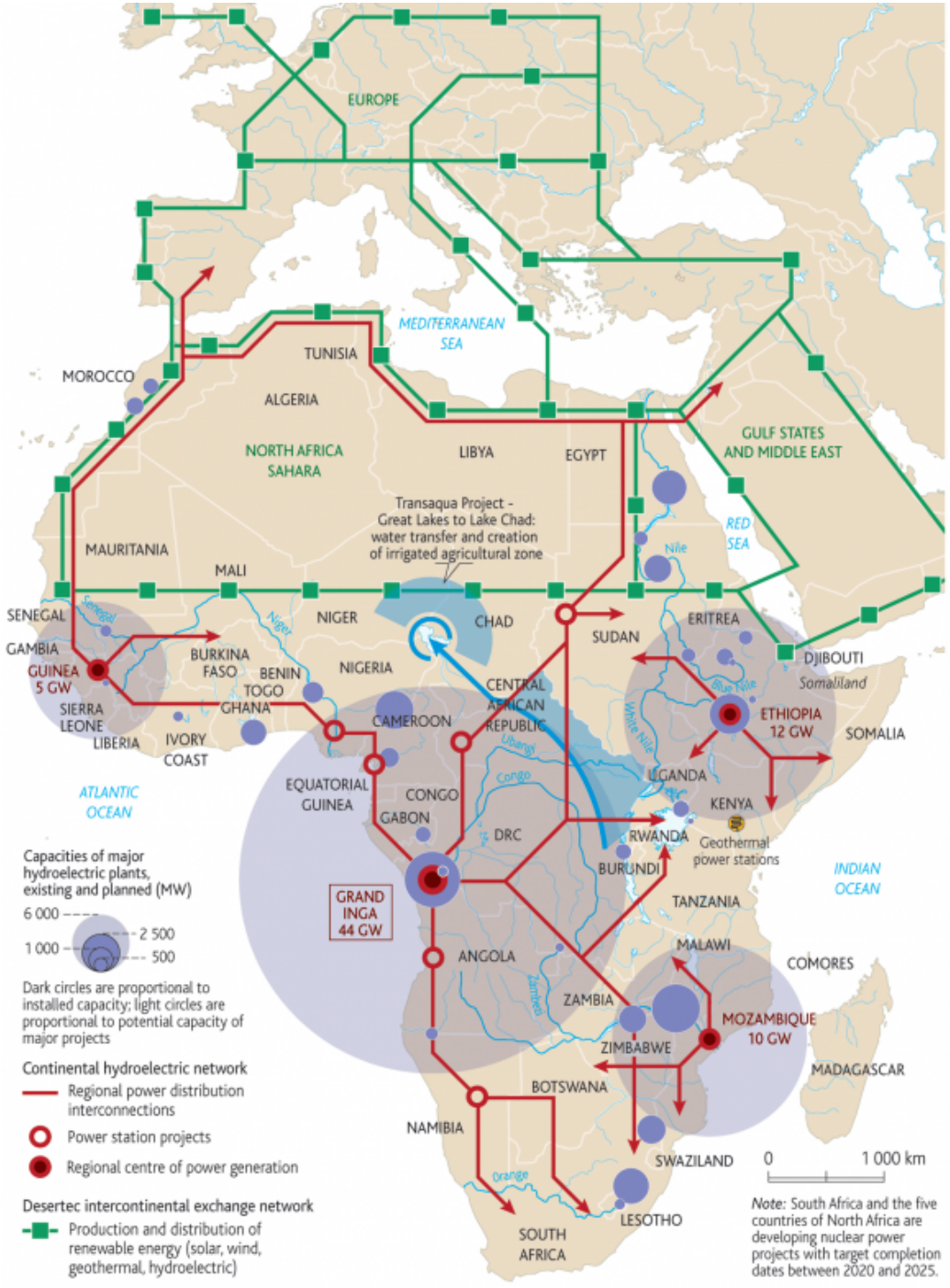
Africa's Solar Energy Potential



Photovoltaic Geographical Information System (PVGIS), shows that in many parts of Africa the same photovoltaic panel could produce twice as much electricity as it would produce in Central Europe.

Yet only 1 % of energy consumed in Africa is solar

Africa's Hydropotential



Our continent's immense resources have strong potential to boost energy access and improve the lives of our people.

Total installed capacity from all sources in Sub-Saharan Africa today = 68 GW

Potential hydro – 71 GW

In general – environmentally friendly

What is stopping us?

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Nuclear power plants around the world

As of November 28, 2016 in 31 countries 450 nuclear power plant units with an installed electric net capacity of about 392 GW were in operation and 60 plants with an installed capacity of 60 GW were under construction in 16 countries.

https://www.euronuclear.org/info/encyclopedia/n/nuclear-power-plant-world-wide.htm

The world at night

Abundant resources, yet …

To achieve Africa's aspiration of

universal energy access,

responsible environmental custodianship, and

uncompromised energy security:

bold and visionary policies that stimulate trust and cooperation between public and private sectors, **coupled with regulatory and fiscal consistency**,

will be **essential**.

SASEI Objectives

Overall Objective

•to enhance capacity for national and regional planning, development and implementation of sustainable energy systems and projects.

Specific objectives

•To provide a regional platform for knowledge sharing, thereby integrate and co-ordinate regional initiatives in the field of sustainable energy;

•To support capacity development through joint curriculum and development of graduate and undergraduate course programmes focusing on energy;

•To provide innovative services and products platform to raise awareness and provide research support to a broad range of stakeholders in view of ensuring participation and ownership of interventions and implementation;

•To strengthen political, cultural and economic links between the EU and ACP countries as a direct short term educational advantages

SASEI Objectives

- collaborative research, curriculum development, training and capacity building in sustainable energy

- formulate the establishment of a regional sustainable energy initiative to improve the ability of the region to effectively co-ordinate and manage sustainable energy sources

SASEI Project Partners

1. Hochschule Darmstadt- University of Applied Sciences
2. National University of Lesotho
3. Namibia University of Science and Technology
4. University of Botswana

- Total project period: **42 months**
- Start: **October 2013**
- End: **March 2017**
- Budget: **EUR 463,992**

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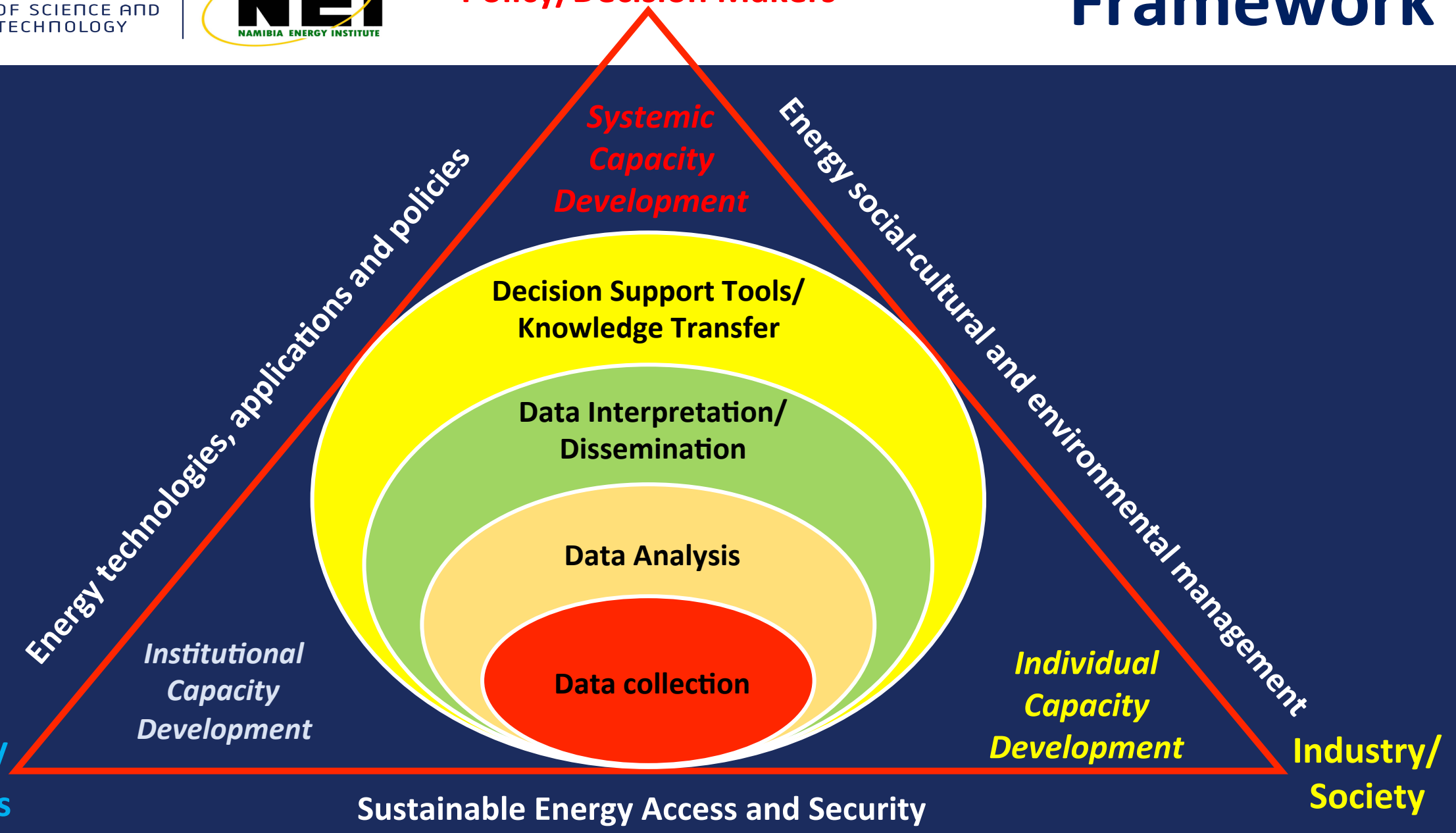
Framework



SASEI Work Packages

Energy Database

- Country Energy Needs Assessment

Implementation of training programmes in partner institutions

- Training materials for the types of trainings offered;
- Increase in skilled human resource in partner institutions.
- Curricula for the short courses for professionals and long term professional/ academic programmes (bachelor's and postgraduate programmes); NUST - MASTER OF ENGINEERING IN SUSTAINABLE ENERGY SYSTEMS (MESES) PROGRAMME

Publications

- Energy report for the three partner countries in SADC;
- Annual regional energy conference/symposium;
- Journal of Renewable Energy and Energy Efficiency for Southern Africa (JREEESA).
- Sustainability plan

SASEI Outputs

International Conferences

International Renewable Energy Symposium - **Namibia 2015**

International Renewable Energy Conference – **Botswana 2016**

Pledge to run IREC by Tshwane University of Technology – **South Africa 2017**

IRES Namibia 2015 - delegates declared access to modern energy services a human right

SASEI Outputs

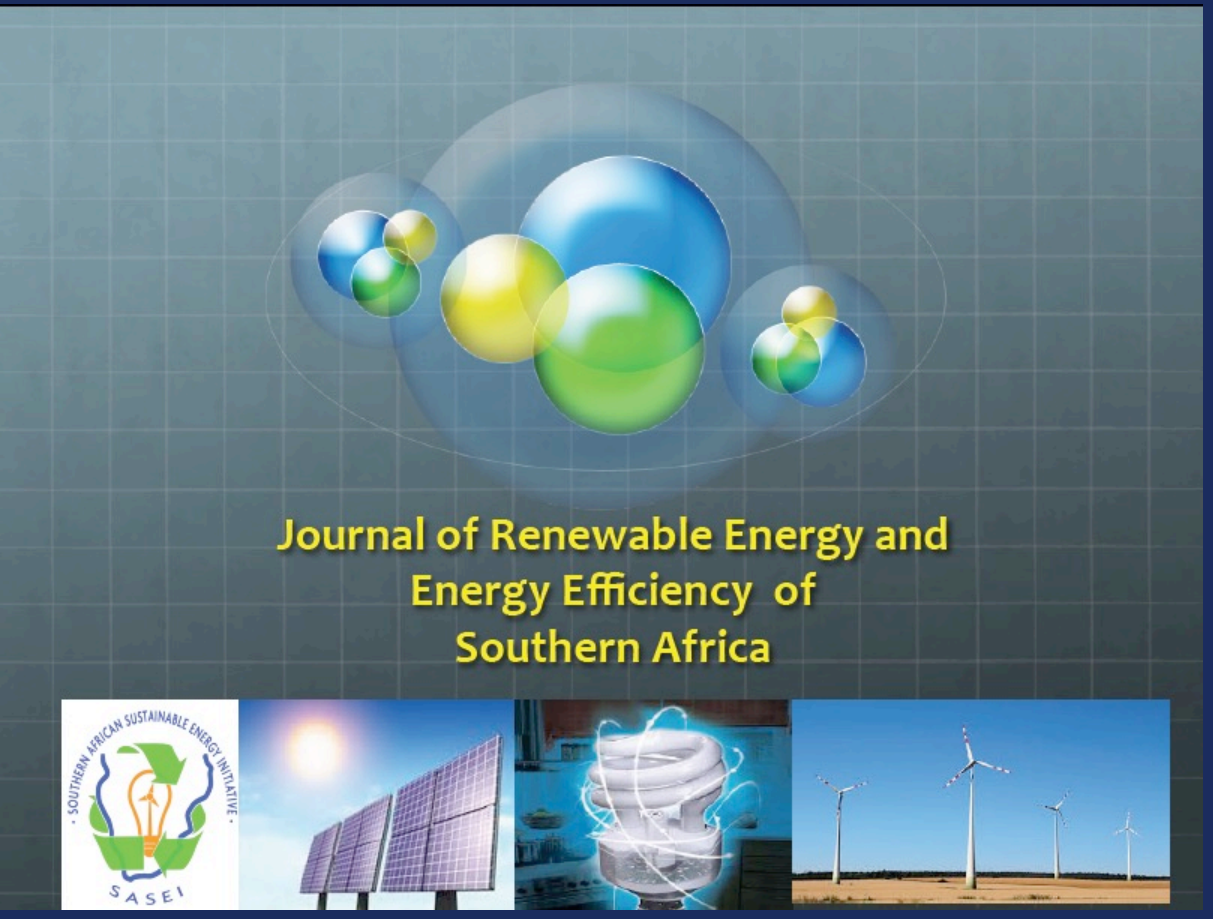
Launch of the Southern Africa Sustainable Energy Network

Mission: to effectively plan and coordinate the assessment, quantification, system technology choices, systems design, installation, operation and management of sustainable energy sources through the development of appropriate technologies and capacity development to implement scientifically identified measures, in a cost effective, and an environmentally friendly, manner.

55 Members subscribed as members, from 6 SADC countries, Windhoek, Namibia 2015

SASEI Outputs

JREEESA



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biannual, refereed, multidisciplinary journal

SASEI Train the Trainer Workshops

Botswana: Several short courses incorporated into existing curriculum

Lesotho: Certified short courses in Sustainable Energy

Namibia: Master of Engineering degree in Sustainable Energy Systems

Project Closure: March 2017

Opportunities

- **Exploit the abundant local energy resources for the benefit of the population;**
- Develop clear and objective value chains around each energy resource;
- **Build local capacity;**
- Develop and implement deliberate policies for energy access for the entire population;
- **Participate actively in regional power pools;**
- Develop a national energy wealth fund – for sustainability and future security;
- **Include energy efficiency in all energy plans.**

Conclusions

- SASEI fostered strong collaboration links between Southern African Universities from 3 countries, and one German University;
- EDULINK projects: PEESA and PARTICIPIA complemented SASEI activities;
- Energy sector needs analysis for Botswana, Lesotho, and Namibia done;
- Train the trainer courses conducted in all partner countries;
- Two International Conferences;
- Registered journal of Renewable Energy and Energy Efficiency of Southern Africa.

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  EU-ACP EDULINK

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