
Research Infrastructure: Energy systems for the future

What is needed?
ICRI2012

WillieCronje
South Africa



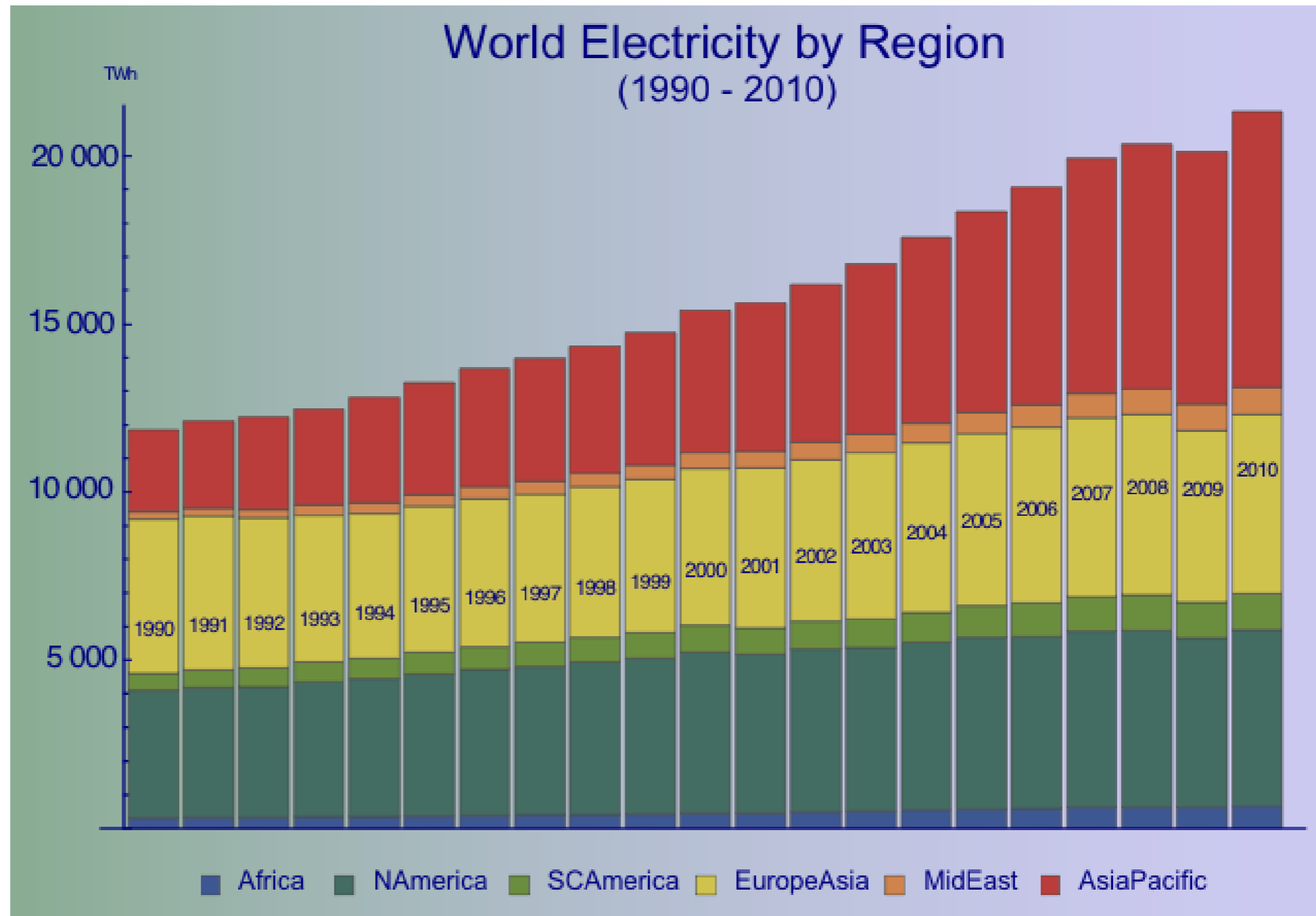
Overview

- What the energy future holds
- What will change?
- What will stay the same?
- How do we strategically position?

The energy future

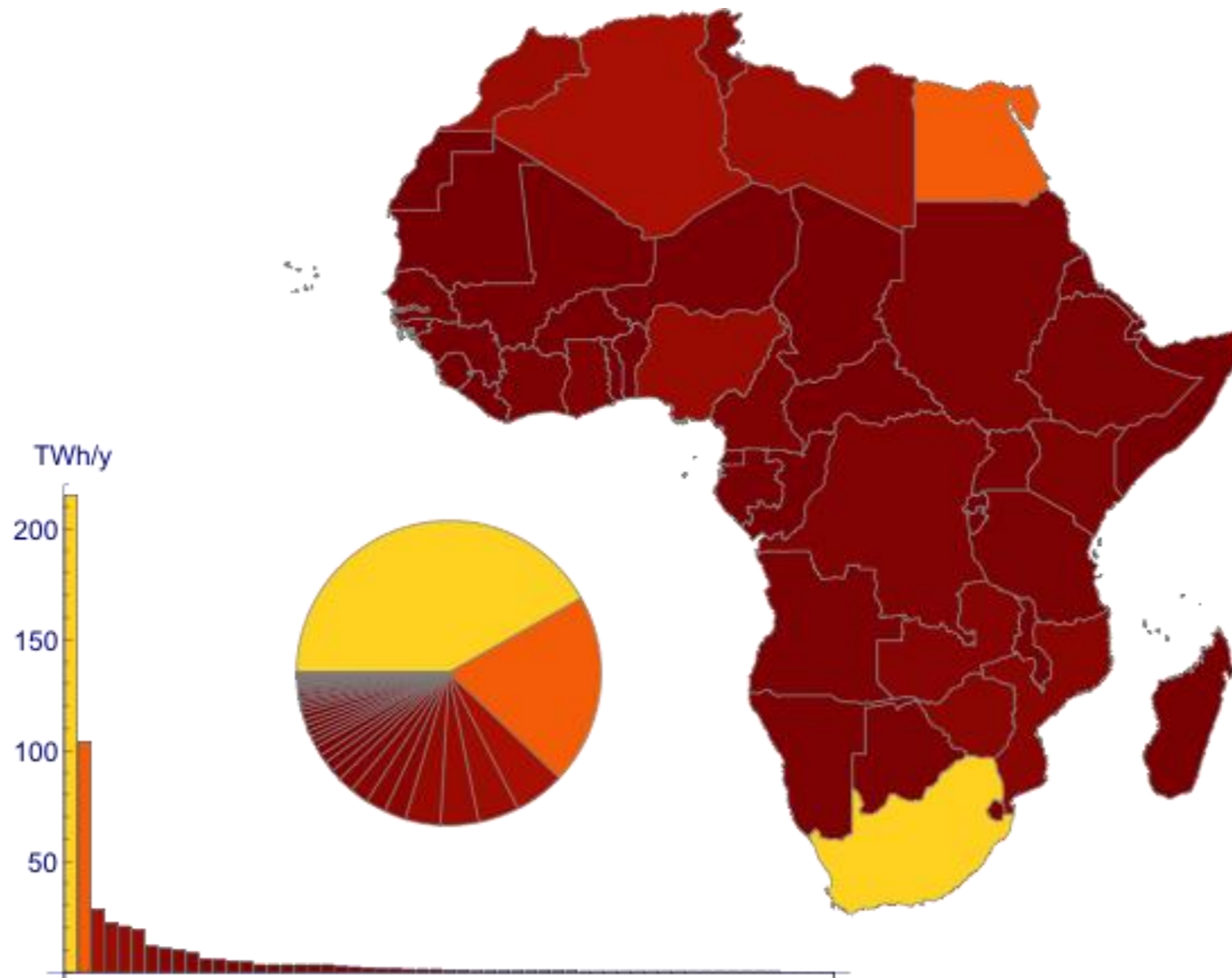
- Growth in renewables.
- Re-structured energy markets.
- The growing demand for electricity!

Electricity in the World



BP world energy review 2011

Electricity in Africa



The Southern African Grid



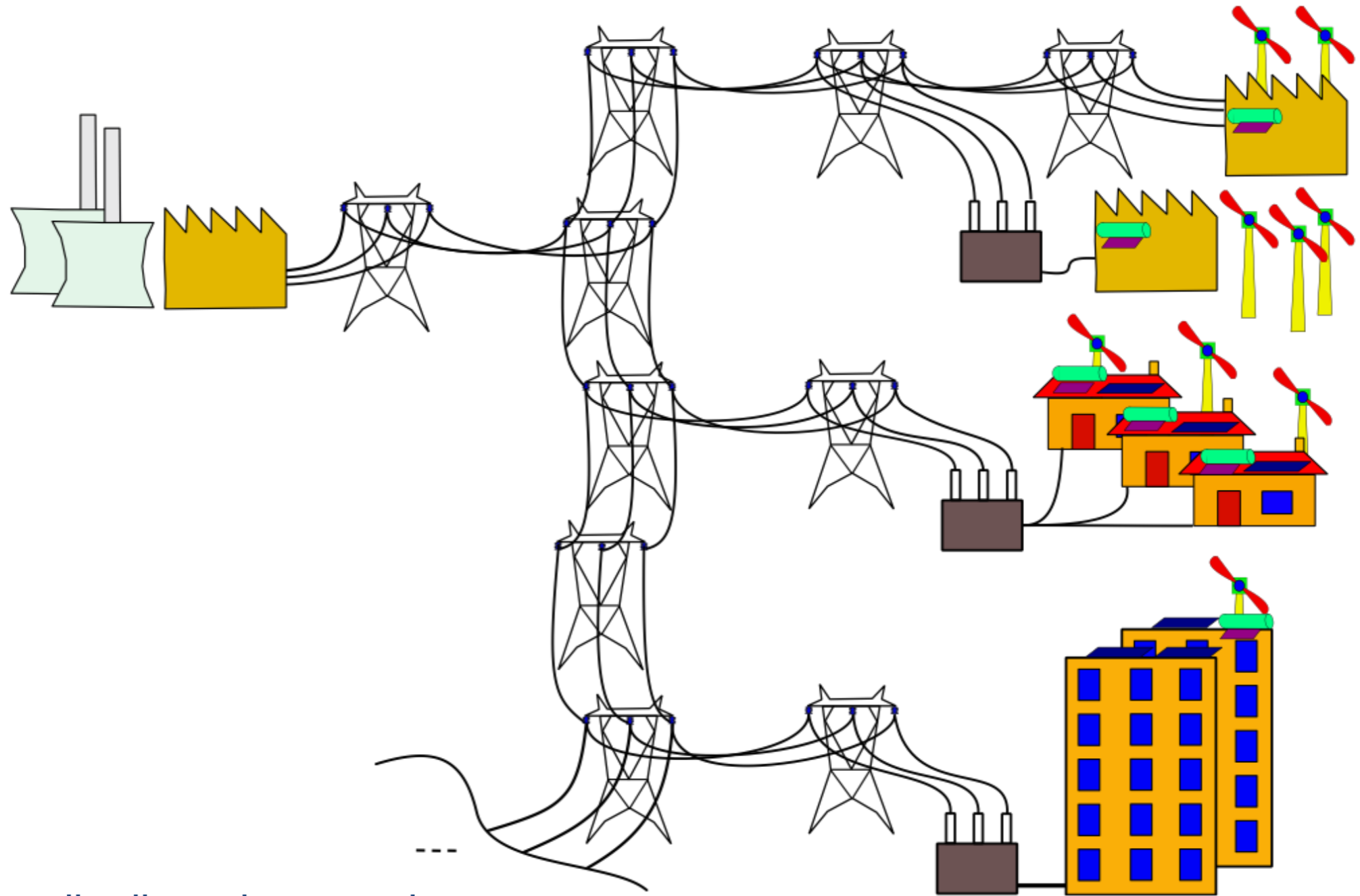
(Source: Eskom annual report 2006)
Inga rapids?

Other options?

What will change?

- Addition of renewables
- New system topologies
- New control requirements
- ...

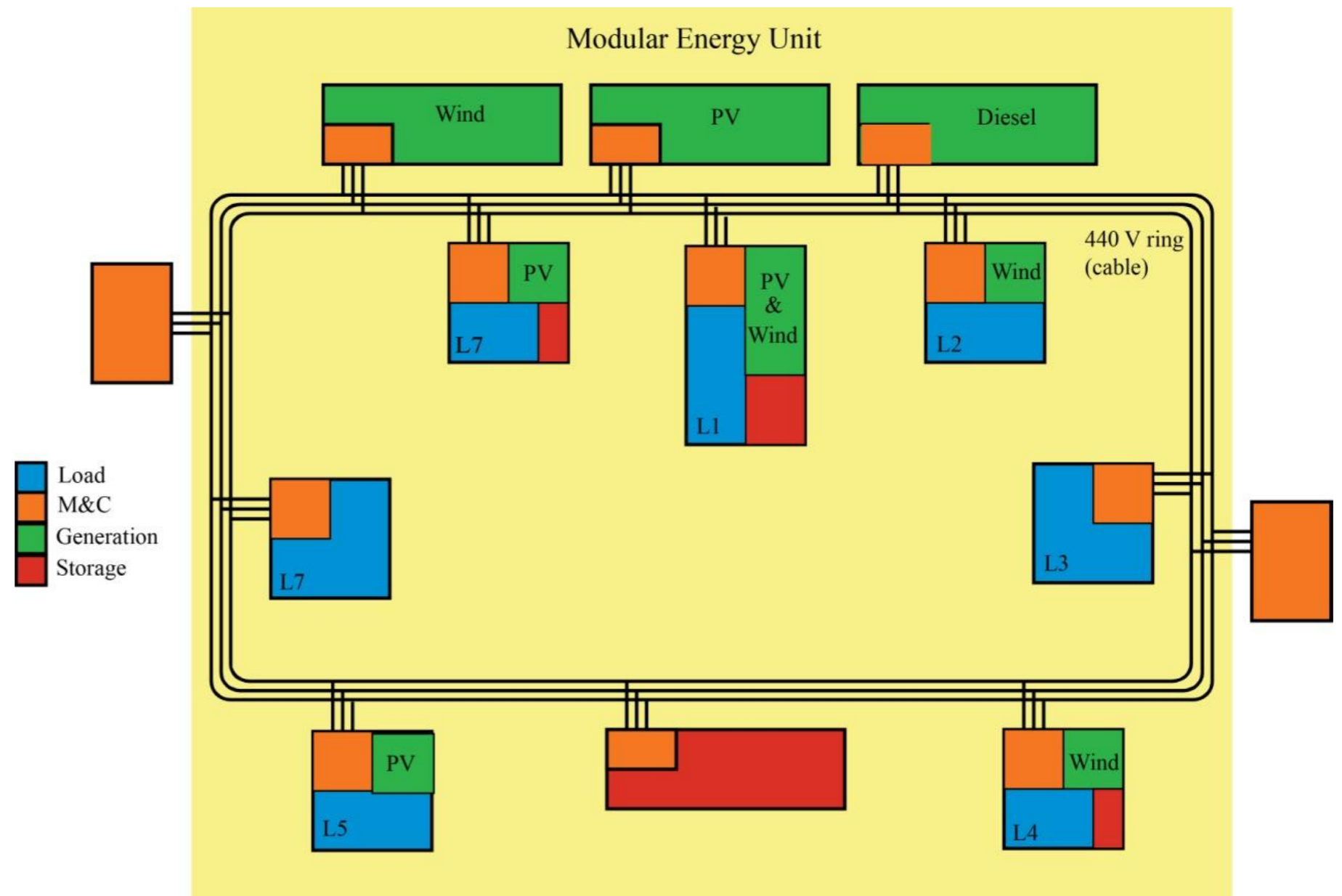
Power Systems – Future?



More distributed generation

Mini/micro-grid Architecture

Modular approach to integrating renewable resources at neighbourhood level, for rural and urban communities



Joint project:
Wits
CSIR
SANEDI
DTU/Riso

School of Electrical &
Information Engineering

2012/03/22

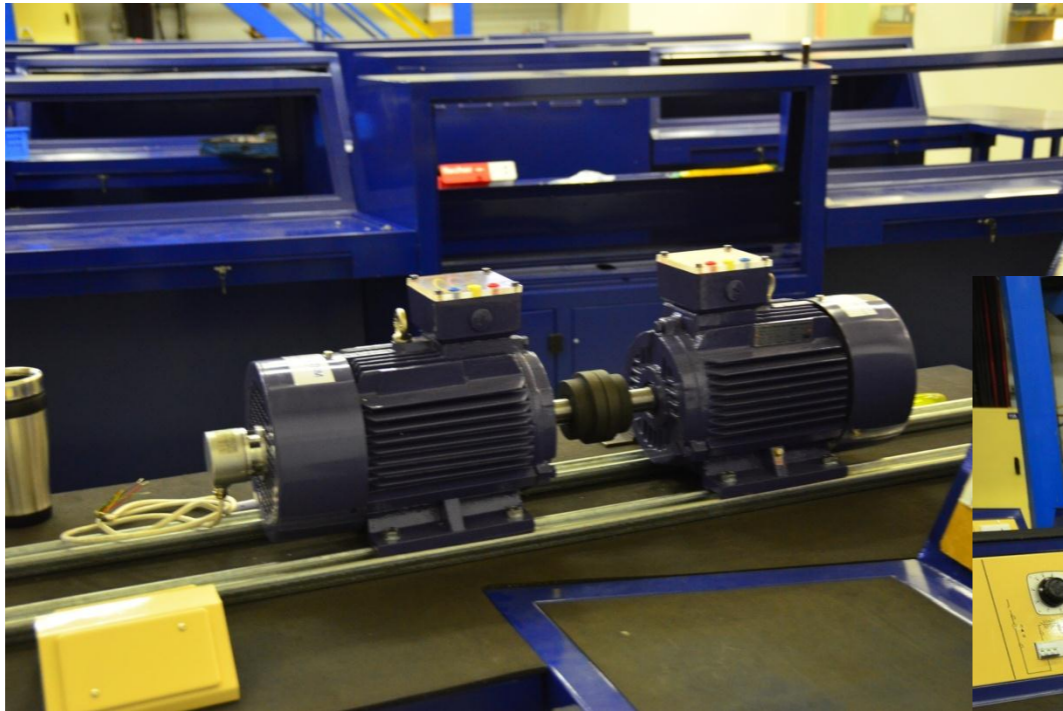
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What will stay the same?

- The use of electricity
- The use of alternating current
- The use of 3-phase systems
- ...

Strategic alignment

Modular electrical energy laboratory



UG + PG

Strategic alignment

- Reinforce basics (spreading)
- Living labs (urban + rural)
- ...

Three questions

Within energy systems:

- What will change?
- What will stay the same?
- How do we strategically position?