



## **Eskom Power Plant Engineering Institute (EPPEI)**

**Presentation to Consulting Engineers South Africa (CESA)**

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## Timeline of major events

- 2008 Load-shedding
- South Africa and France (President Nicolas Sarkozy's two day state visit to South Africa – February 2008)
- Eskom & EDF signed MoU
- Professor Louis Jestin – EDF Engineering Director's deployment to SA in Middleburg to help Eskom
- Professor Louis Jestin and Eskom team conduct engineering skills gap assessment to benchmark Eskom against similar utilities particularly in Europe
- Assessment findings reveal Eskom's technical skills are not at the right level
- Business Case developed to establish EPPEI in line with similar programmes EDF had developed in Poland power sector with similar Generation technologies as South Africa (Collaboration of Industry and Academia)
- Phase I First intake in 2012
- Phase II agreement signed in 2016
- Over 200 Masters and PhD graduates to date
- 2017 focus on Operators, Maintainers, Artisans and System Engineers through the Operation and Maintenance training intervention.
- Established a Task Force comprising of the existing EPPEI academics in the programme and Eskom SMEs, to provide technical solutions to Eskom's existing challenges at site (e.g. Lethabo 5 incident, Duvha oil contamination issues, Medupi boiler performance verification)
- Dire need to accelerate and sustain the achievement of the EPPEI programme within Generation



Eskom established EPPEI in 2012. Objectives have evolved with Programme maturity.

1

## First Objective (MSc/MTech/PhD/DTech)

- Solve Eskom's technical challenges using a research-based methodology that develops deeper understanding & problem solving ability amongst its students, while at the same time advancing them to Masters and Doctoral degree levels

2

## Second Objective (Engineering Practitioners)

- Develop technical competencies of Engineering Practitioners (i.e. EITs and System Engineers), using short-courses and on-the-job assignments that develop deeper understanding and problem solving ability amongst employees, while at the same time advancing them to obtain CPD points, certificates, higher certificates & diplomas

3

## Third Objective (Operators & Maintenance Practitioners)

- Develop technical competencies of Operators & Maintenance Practitioners, using short-courses and on-the-job assignments that develop deeper understanding and problem solving ability amongst employees, while at the same time advancing them to obtain CPD points, certificates, higher certificates, diplomas & registration

4

## Fourth Objective (Academic Capacity)

- Build academic electricity research capacity at both Universities and Universities of Technology, in order to train Eskom and non-Eskom students in various specialisation technical areas relevant to Eskom

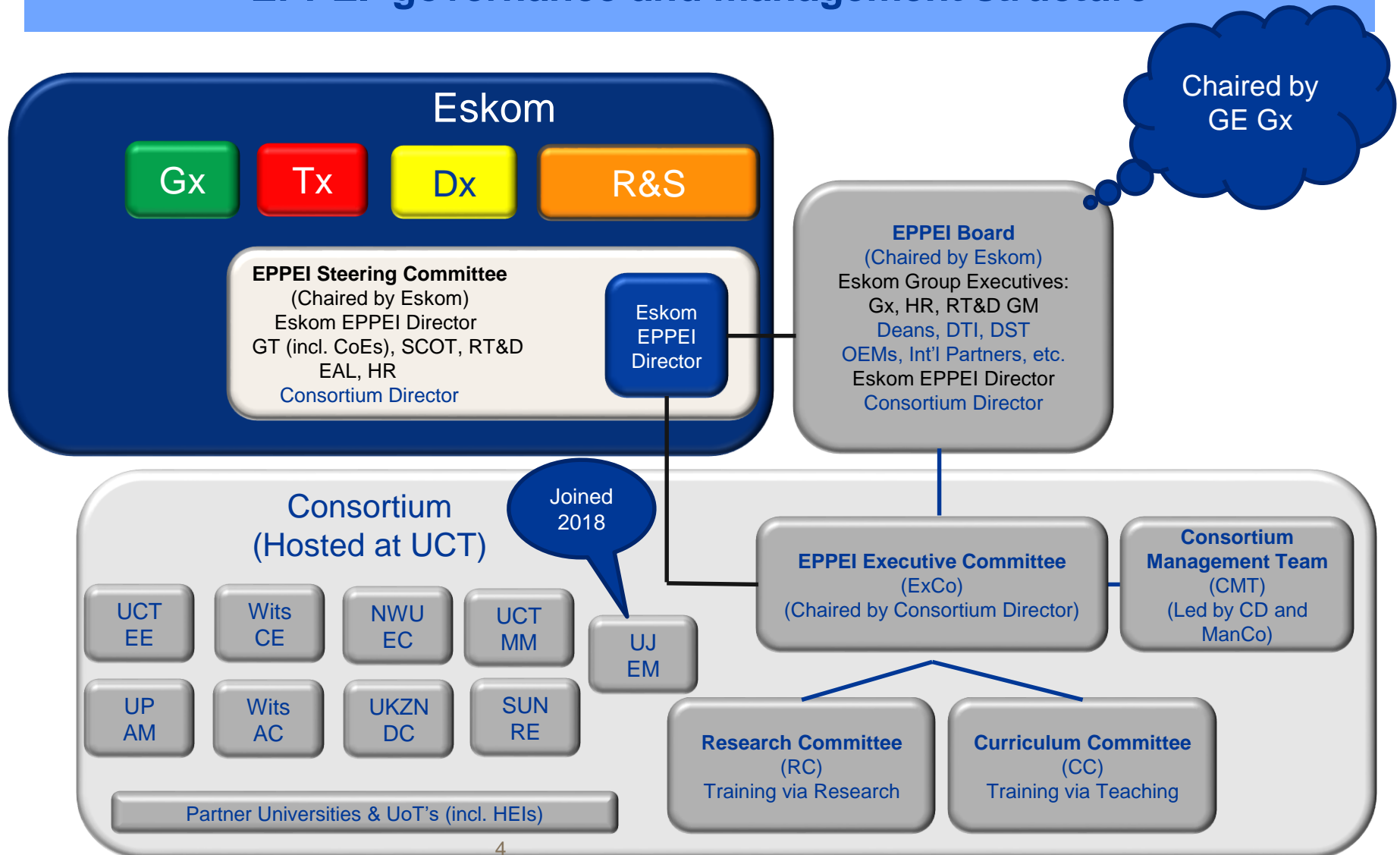
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## Fifth Objective (self-sufficient legal entity post 2021)

- Post 2021 EPPEI to be Pan-African and self-sufficient legal entity. Establish partnerships & collaborations with Independent Power Producers (IPPs), African Utilities, OEMs and Higher Learning Institutions to further develop electricity sector skills & competencies in order to contribute to the socio economic development of South Africa and Africa. Contribute to localization of power technologies, IP and local manufacturing



















## EPPEI governance and management structure





# Who is involved in the EPPEI programme?

Lead University		Partner University		Specialisation
University of Cape Town		Nelson Mandela University		Materials and Mechanics
Wits University		University of Johannesburg		Combustion Engineering
University of Pretoria		Vaal University of Tech		Asset Management
Stellenbosch University		Cape Peninsula Univ of Technology		Renewable Energy
University of KZN		Durban University of Tech		Heavy Current DC
University of Cape Town		Vaal University of Tech		Energy Efficiency
Wits University		TBC		Heavy Current AC
North West University		Vaal University of Tech		Emissions Control
University of Johannesburg		TBC		Engineering Management



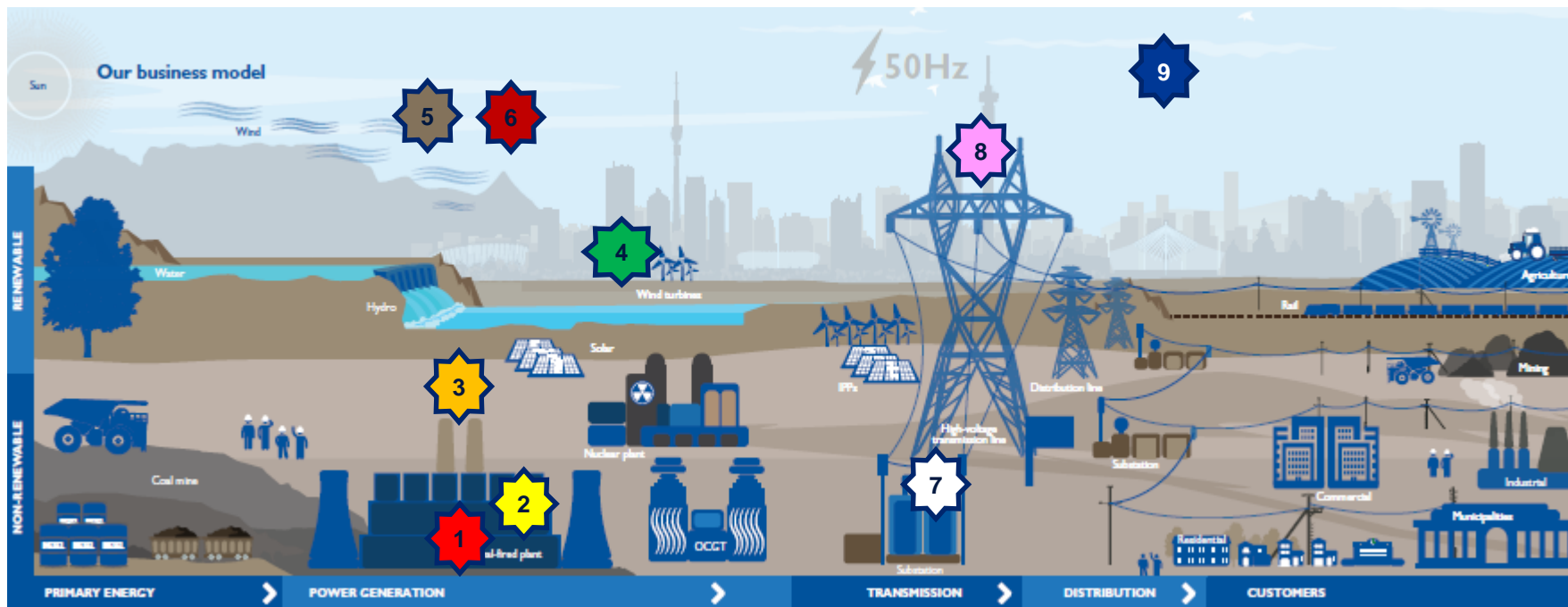
# EPPEI Specialisation Centres established in line with Eskom's technical challenges

## Power generation EPPEI SCs

- 1 University of Cape Town – Energy Efficiency
- 2 University of Wits – Combustion Engineering
- 3 North-West University – Emissions control
- 4 Stellenbosch University – Renewables, Heating and Cooling

## Cross-Cutting EPPEI SCs

- 5 UCT – Materials Science & Mechanics
- 6 University of Pretoria – Asset management
- 7 Wits – High Voltage Alternating Current
- 8 UKZN – High Voltage Direct Current
- 9 UJ – Engineering management





# EPPEI Specialisation Centres to be established

9. Water Engineering & Chemistry

12. Civil & Structural

15. Risk-Based Inspections/  
Smart Resilience

10. Fire Systems & Engineering

13. Smart Grids

16. Digitization & Digitalization

11. Construction Engineering

14. Smart Generation

17. Others





# EPPEI programme's direct beneficiaries Phases 1 & 2 (as at February 2021)



**525** EPPEI doctoral and masters students since inception (Jan 2012)

**281** graduated



**155** Eskom graduates

**126** non-Eskom graduates

**41** Doctorates

**210** Masters

**30** Honours and Post Graduate Diplomas

**190** currently registered

**91** Eskom students

**99** non-Eskom students

**54** de-registered

**39** Eskom students

**15** non-Eskom students



# EPPEI Task Force

A dedicated initiative established in 2018/19 to address Eskom's immediate challenges. It is a collaboration between fulltime EPPEI Professor/Senior lecturer and Eskom Subject Matter Experts started by Eskom to address Eskom's immediate technical challenges. It focuses on:

- Problem analysis and quick resolution
- Skills gap
- Identification of operational and applied research opportunities



Examples of EPPEI Task force activities include the following:

- Lethabo Power Station Unit 5 failure analysis;
- The boiler performance verification testing procedure analysis at Medupi Power Station;
- Duvha 100 day challenge rapid results methodology, to facilitate results-driven execution at the lower levels of the engineering organisation
- Wet Coal and Rain readiness simulation model





## Competency development of Engineering Practitioners

- Target Engineers, Technologists and Technicians
- On-site and classroom (virtual) capacitation
- Site visits to workshops
- Tracking and monitoring





*Thank  
you*

