POWER-GEN AFRICA

SANDTON 2016

A roadmap to address disruptive forces in the ESI

A benchmark study between South African and other African jurisdictions

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aurecon

CDH
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Paper Outline

1. **Drivers for Reform**
2. **The History of Power Sector reform**
3. **Current legislative framework in South Africa**
4. **Drivers for Reform – benchmarking**
5. **Current challenges in Africa – the disrupting forces**
6. **How can the future African Power Sector evolve?**
7. **A legislative roadmap for intervention in South Africa**
8. **Conclusion**

1. Drivers for Reform

Major Disruptive Force

- Social requirements (Electrification)
- Power Shortage
- Funding Shortage

- Kyoto Protocol (Market entry of renewables)
- Competitive market Requirements (EU)

Three stages of reform for private participation

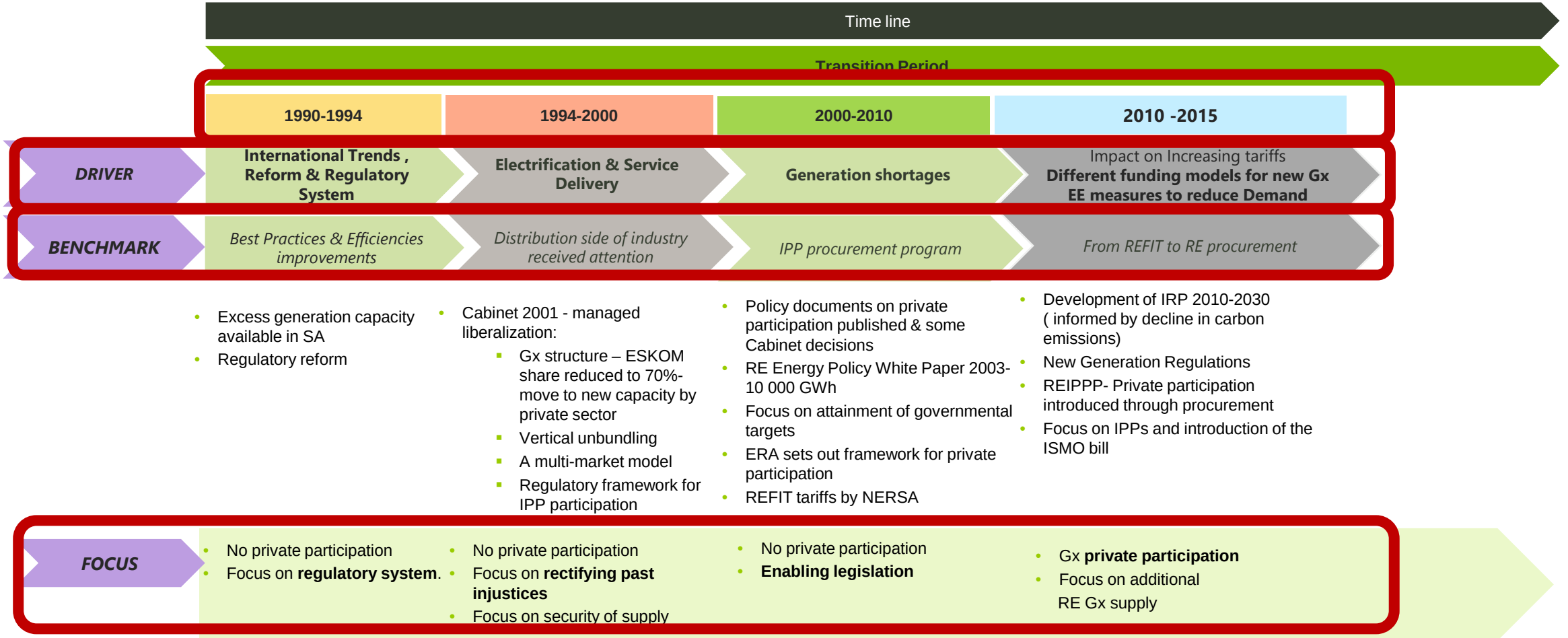
Improve investment & operational efficiencies

Private sector financing for new capacity

Privatisation

2. The History of Power Sector reform in South Africa

The drivers that created the ESI



2. The History of Power Sector reform in South Africa

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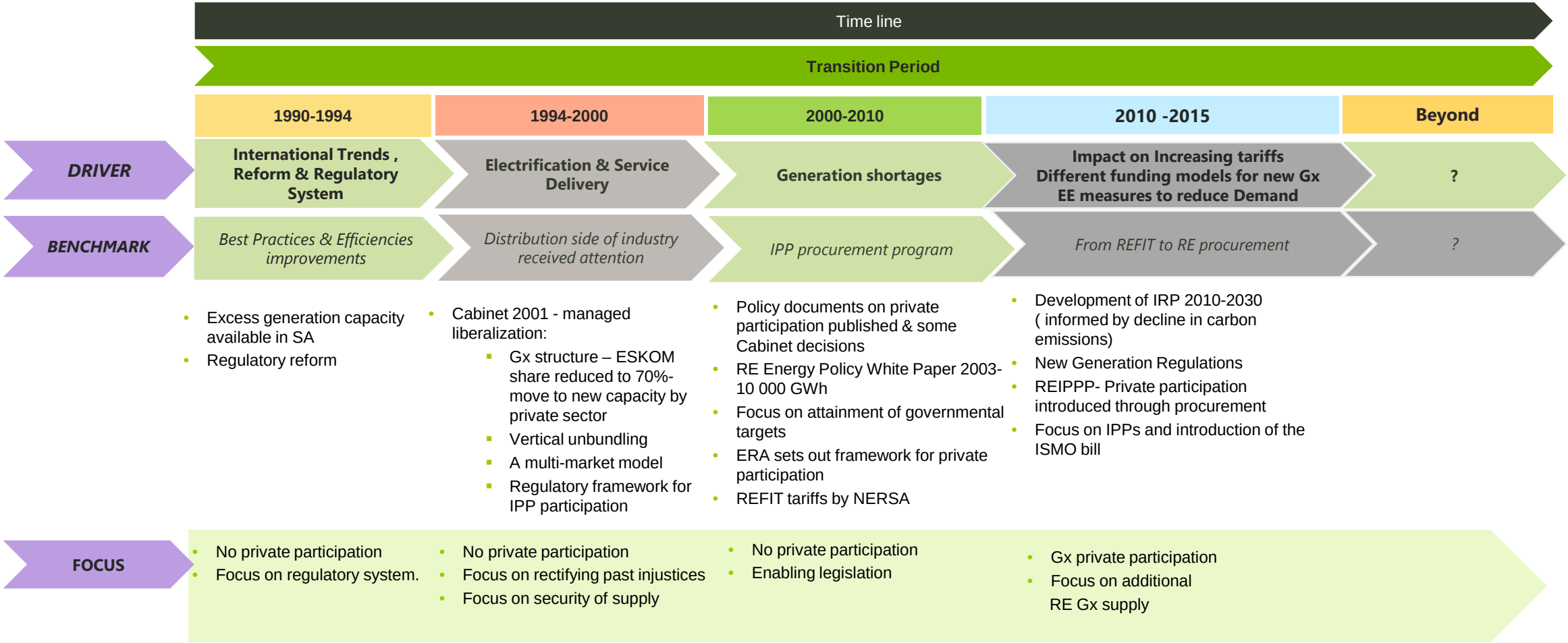
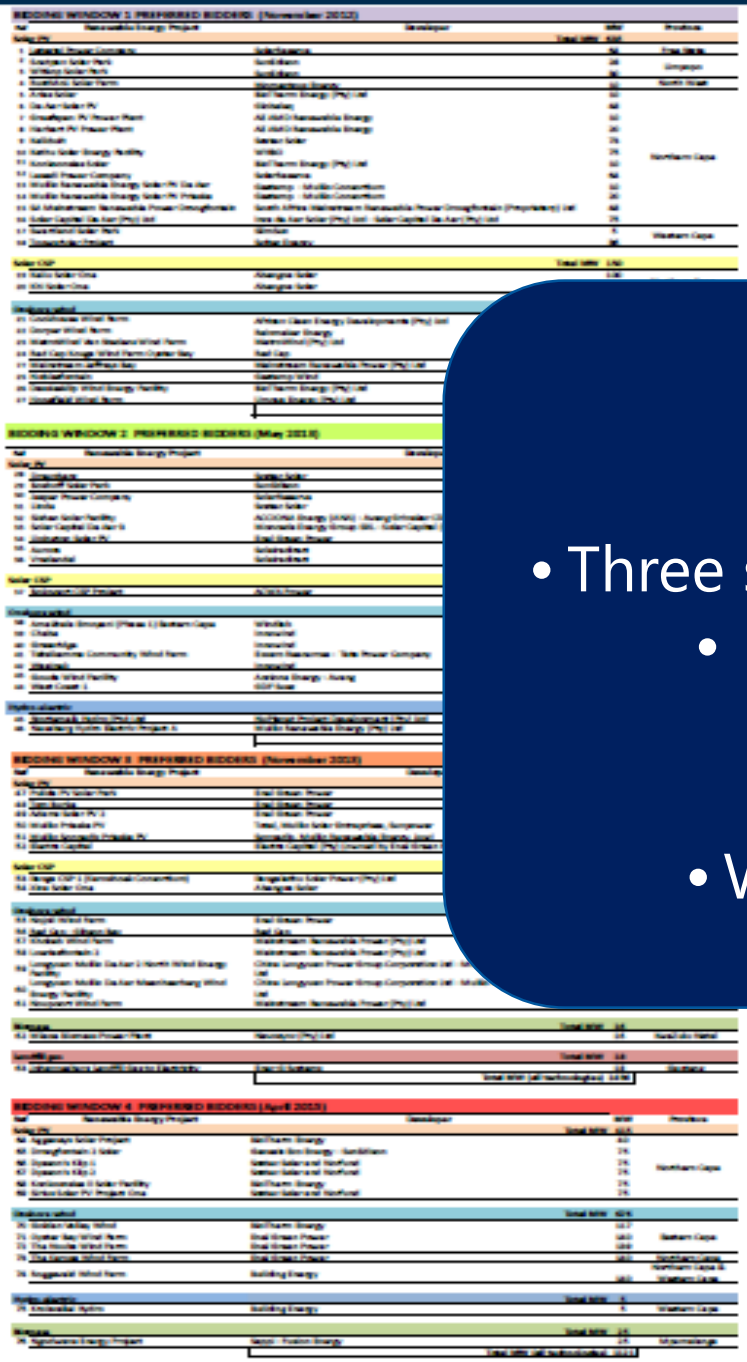


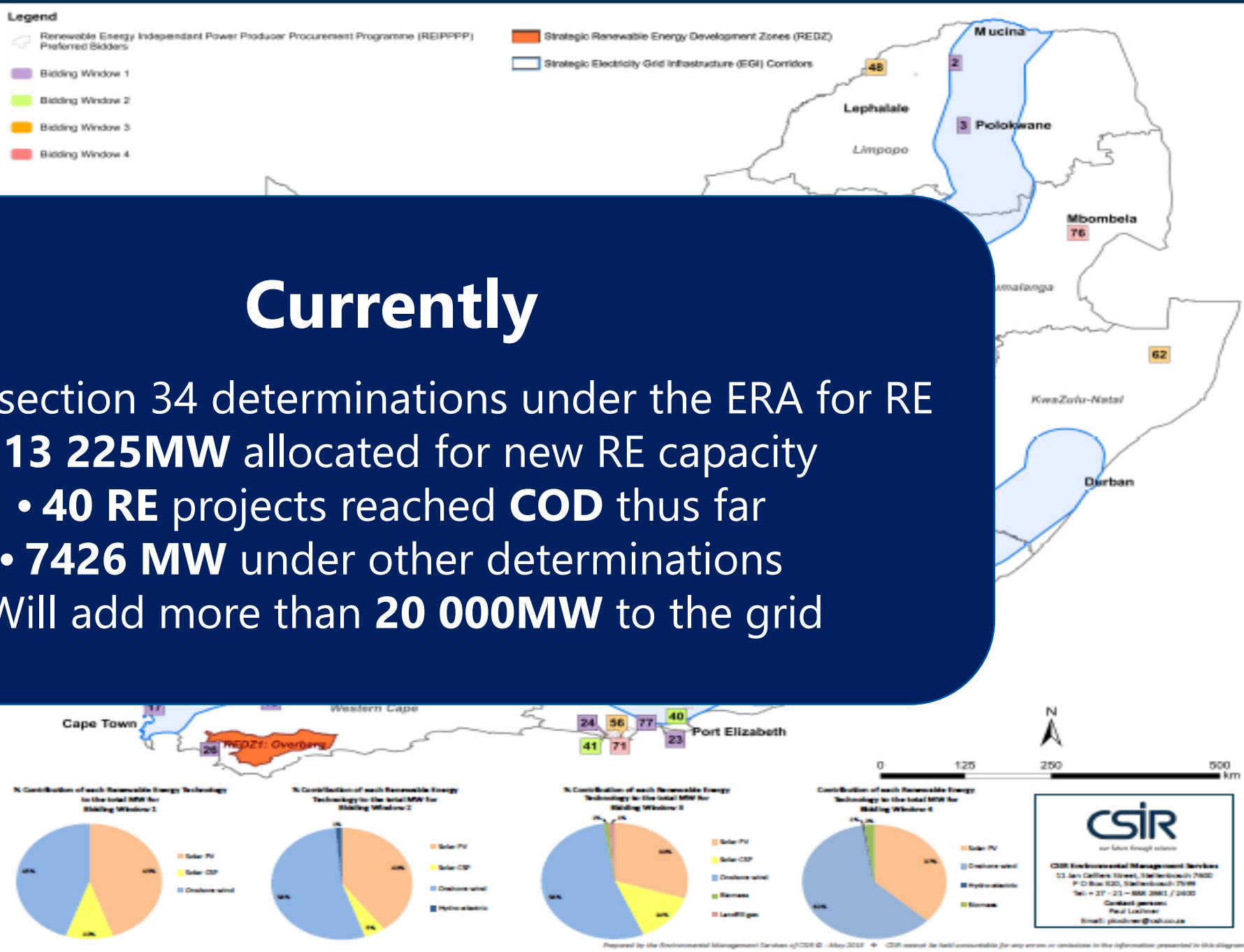
2. History of Power Sector reform in South Africa

Summary

Phase	Importance
One ***1948 – 1994***	• **No private participation** • Focus on regulatory system
Two ***1994 – 2000***	• No private participation • **Social requirements** - electrification • Focus on security of supply
Three ***2000 – 2010***	• Policy documents on **private participation** published and some Cabinet decisions • Focus on attainment of governmental targets set in the **IRP** 2010 - 2030 • **Single-buyer** model with Eskom as the **off-taker** • **ERA** sets out framework for private participation
Four ***2010 - 2030***	• Electricity Regulations on New Generation Capacity • **Private participation introduced** through **procurement** under the DoE's IPP programmes • Focus on IPPs and introduction of the ISMO bill

Renewable Energy Independent Power Producer Procurement Programme





Currently

- Three section 34 determinations under the ERA for RE
- **13 225MW** allocated for new RE capacity
- **40 RE** projects reached **COD** thus far
- **7426 MW** under other determinations
- Will add more than **20 000MW** to the grid

3. Current legislative framework

Existing tapestry of policy, legislation and permitting requirements regulating the ESI

The plan

Allowing to play

IRB RUGBY WORLD CUP 2015

Policy

- Energy White Paper
- IRP 2010-2030
- Integrated Energy Plan

Regulation

- Electricity Regulations on new generation capacity
- Ministerial Determinations

Permitting

- Consents
- Authorisations
- Licences
- Approvals

Legislation

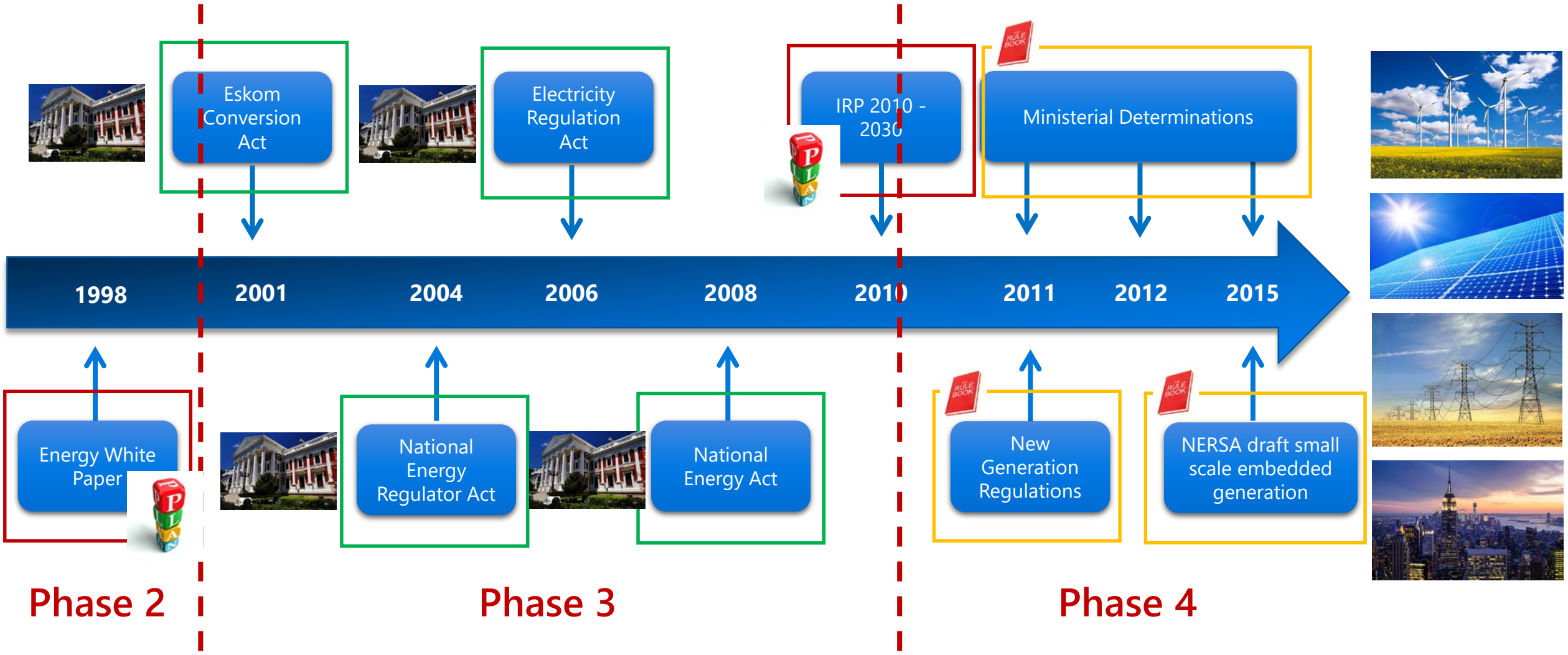
- Constitution
- National Energy Act
- National Energy Regulator Act
- Electricity Regulation Act

Rules of the game

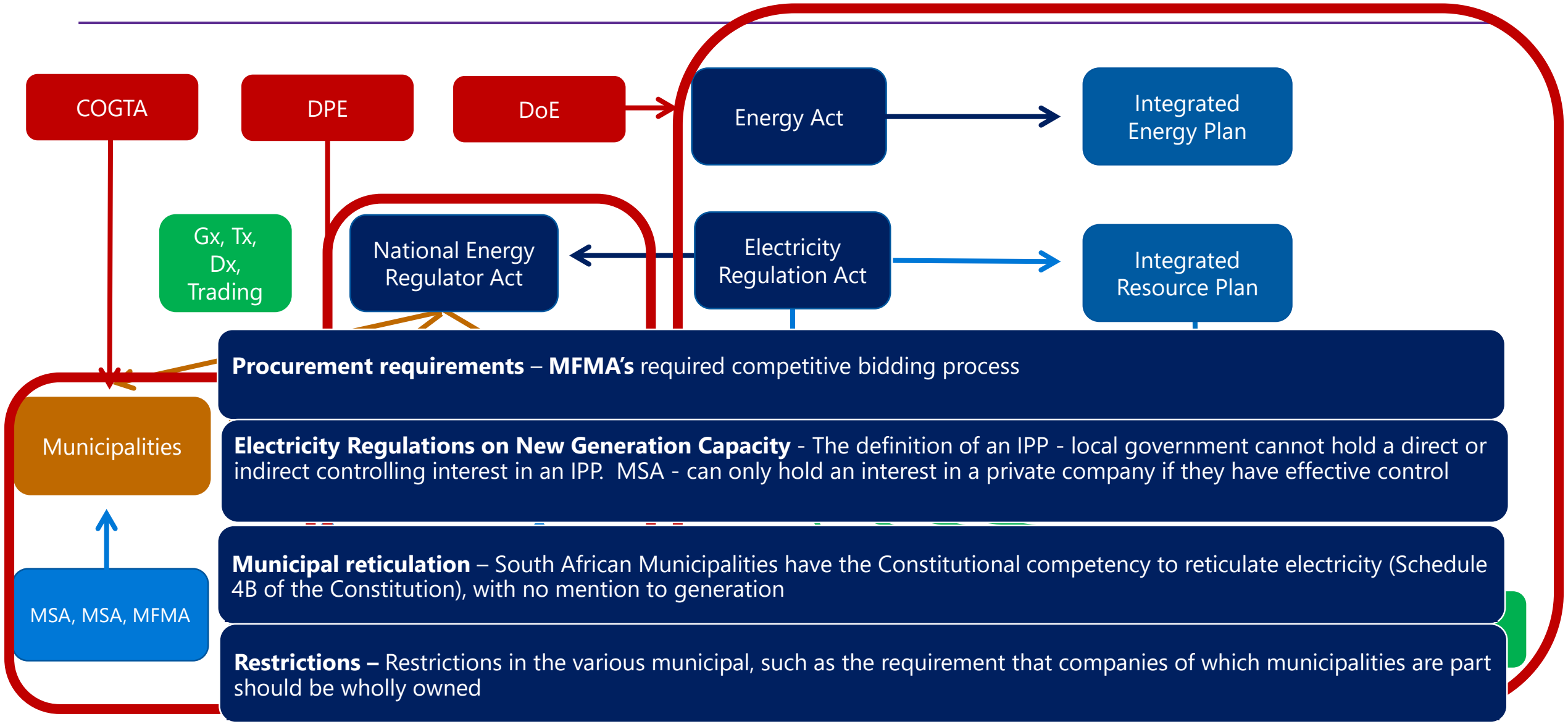
Enabling

3. Current legislative framework

The timeline of South African Power Sector reform…



3. Current legislative framework
South African Legislative interaction



3. Current legislative framework
Summary

Private sector participation in the South African power sector is possible through, amongst others -

Procurement programmes - for which the Minister of Energy will make section 34 determinations under the ERA and in line with the IRP

Generation outside of the IRP - pursuant to a deviation application submitted under section 10(2)(g) of the ERA

Own use - Any generation plant constructed and operated for own use, according to Schedule 2 of the ERA

Non-grid connected supply of electricity - except for commercial use, according to Schedule 2 of the ERA

As seen from the above, private participation in every jurisdiction is nuanced, and require specific analysis to address specific needs

4. Drivers for Reform – benchmarking

Introduction

- To **understand** South Africa's power sector's development we undertook a **benchmarking exercise**.
- Analysed **how** private sector participation was introduced in –
  - South Africa
  - United Kingdom
  - Kenya
  - Nigeria
- **Questions** –
  - Are there **similarities** in these jurisdictions?
  - Are the power sector **models** the same?
  - Are some models **better** than others?
  - What elements are **unique** to South Africa's power sector?
  - **How** should we develop the power sector further?

4. Drivers for Reform - benchmarking

Types of private participation

	South Africa	United Kingdom	Kenya	Nigeria
Form of private participation	Procurement via RFP Licencing under ERA	Privatisation of ESI Electricity Act	IPPs Geothermal Development Corporation	IPPs NIPPs (National Integrated Power Projects)
Planning oversight	DoE: IRP 2010-2030	EU and UK policies	Ministry of Energy	Bureau Public Enterprises
Market reform	1. Private participation (ERA) 2. Ministerial Determinations 3. REIPPPP 4. Restructure ESI (ISMO)	1. Restructured industry (via Electricity Act) 2. Privatised by selling state shareholding to private participants	1. Reform in 1990s, separating regulatory and commercial functions 2. Facilitate restructuring 3. Promote private-sector investment	1. Create competitive wholesale market (Market & Systems Operators). 2. Create retail competition (long term vision)

4. Drivers for Reform - benchmarking

Types of legislation for private participation

	South Africa	United Kingdom	Kenya	Nigeria
Focus	Introducing private participation Alleviating the energy shortage	Introducing competition	Creating a common energy sector regulator Ensure cost-effective, affordable, adequate and quality services	Private sector participation and eliminate government involvement Competition
Unbundling	Via the ISMO?	Via the Electricity Act Utilities Act required licence separation	Via the Electric Power Act of 1997	Privatised Generation 7 Generators, 11 Distributors, state owned Transmission
Market control	Direct through IPPP Programmes Ministerial determinations Excludes various stakeholders	Incentive based, no direct control Renewable Obligation, tax incentives, rebates, subsidies	Planning oversight via the Ministry of Energy	Competition based, no direct control (Vice President chair Power Sector Committee)
Energy security	South Africa has to be self-reliant to ensure energy security	The UK can import electricity from EU member states	The East African Power Pool provides access to other energy sources	WAPP, but current Gx shortage Adequate gas supplies

4. Drivers for Reform - benchmarking

Degree of legislation induced private participation in the Power Sector

	South Africa	United Kingdom	Kenya	Nigeria
Market for Electricity	Internal market can be created by the ISMO	Internal market of the UK is connected to that of the EU	Potential large East African Power Pool market	Market created via the Market and Systems Operator
Regional Market	SAPP, which is hampered by inadequate interconnections South Africa is highly self generation reliant	The UK has access to the EU regional market EU market rules enable competition and allows for cross border energy trade	Potential large East African Power Pool market	West Africa Power Pool market Limited interconnections currently
Competition	Private participation introduced to attract funding. No competition focus (but attained through a IPP procurement process)	Common market ideal led to the a competitive ESI, which is ensured and enhanced by the EU Competition Commission	Minimal competition	Unbundled and privatised to attract private investment MO and SO established and in operation
Regulation	Regulation via the NERSA	Regulation via GEMA, and informed by EU policy	Energy Regulatory Commission (ERC)	Federal Ministry of Power and NERC

4. Drivers for Reform - benchmarking

Conclusion – Questions answered

- Are there ***similarities*** in these jurisdictions?
  - All jurisdictions established ***regulators*** and introduced private participation which contributed to security of supply
- Are the ***sector models*** the same?
  - ***No, different disruptive forces*** necessitated different business drivers which lead to different power sector models
- What elements are ***unique*** to South Africa's power sector?
  - Introducing private participation through ***procurement***
  - ***Municipality as player*** in Power Sector
  - Municipal ***cross subsidisation*** function
  - Municipal legislation creates various ***barriers***, limiting active involvement in the IPP space
- Are some models ***better*** than others?
  - ***Different*** horses for ***different*** courses
  - ***Reasons*** for market intervention determines the ***method*** of intervention and the resulting business model

5. Current challenges in Africa

Disruptive Forces Impacting on the Power Utility Model - what is happening elsewhere?

This event was kindly supported by ESB

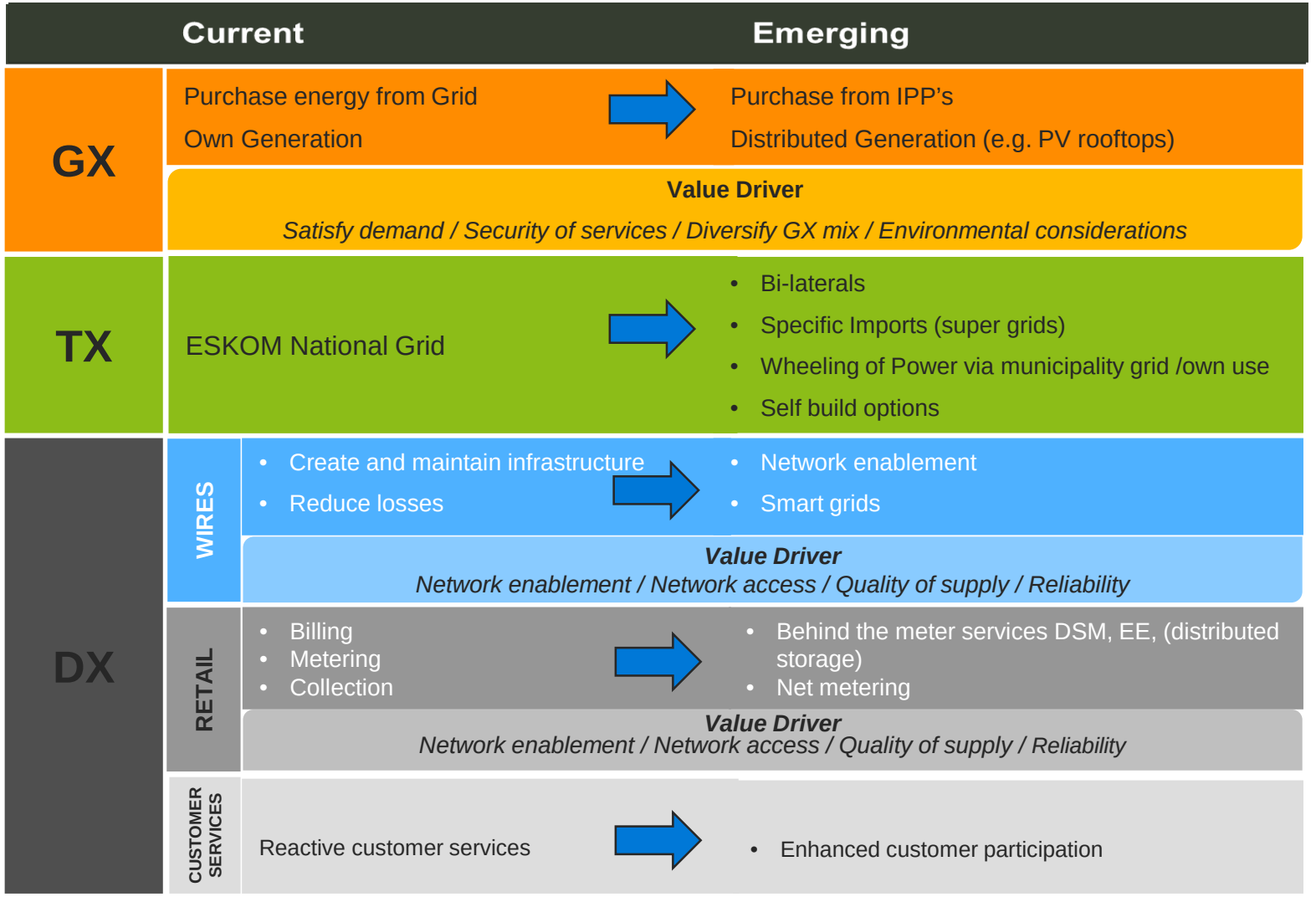
Energy for generations

5. Current challenges in Africa

Disruptive Forces Impacting on the Power Utility Model

- **Green revolution**
  - ***Barriers*** in entry to Dx sector are declining
  - Soon ***affordability*** will drive customer choice
  - Classic kWh selling business is changing to ***service business***
- **Distributed Gx and mini grids**
  - ***Not*** shielded by fact that business is a ***natural monopoly***
- **Regional (super) grids and wheeling**
  - Sub Sahara Africa – 4 Power Pools
  - ***Interconnectors*** - Grand Inga Hydro Scheme
  - ***Bi-laterals*** between producer and off-taker
- **Increased urbanisation- shortage of supply**
  - ***Underinvestment*** in Infrastructure – e.g. in SA some R68bn refurbishment
- **Smart technologies**
  - Increase ***demand response*** and energy efficiency
  - More ***knowledgeable*** customers

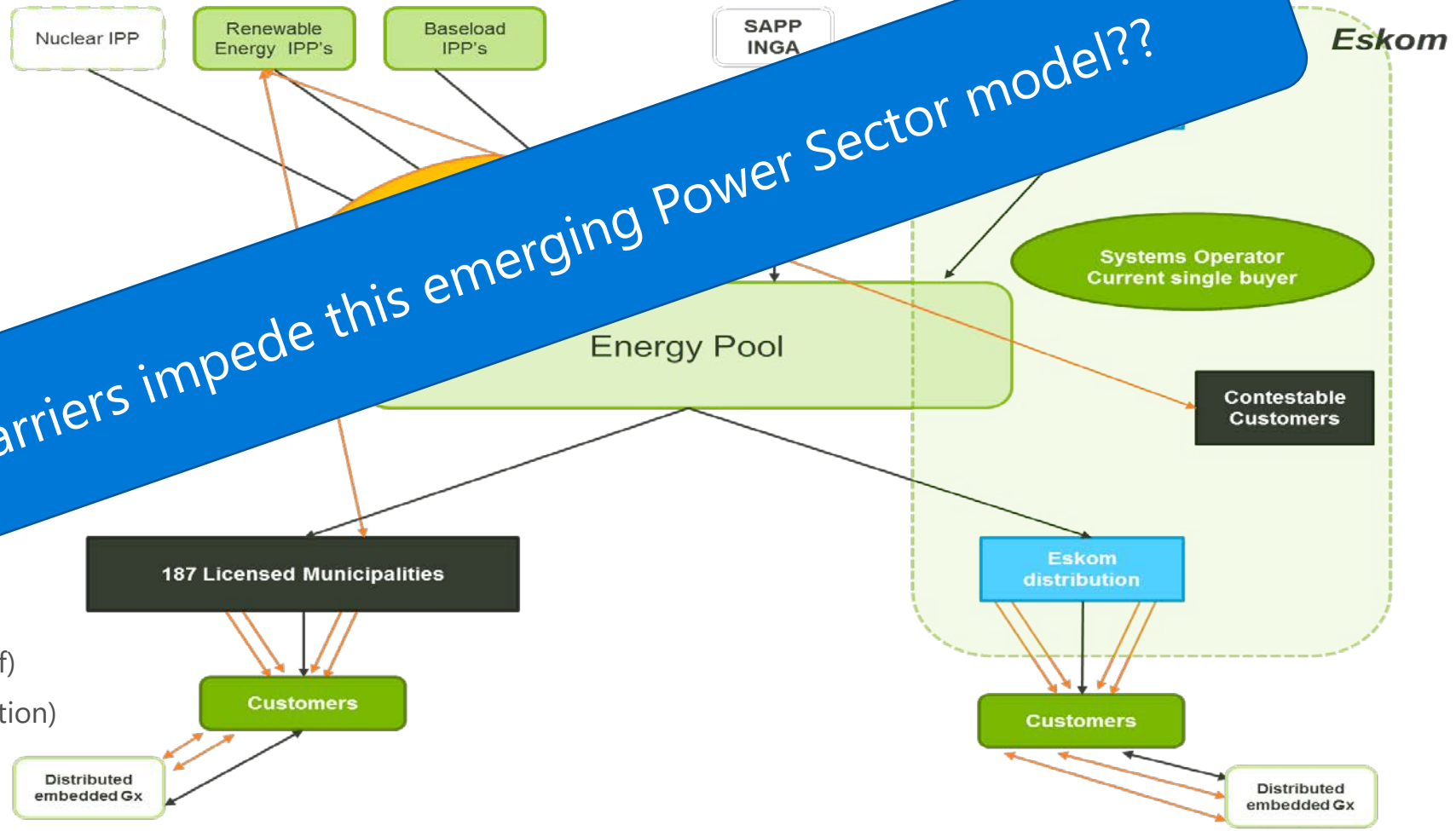
6. How can the future South African Power Sector evolve…



6. How can the future South African Power Sector evolve…

How do you get more capital into the energy space to mitigate against power shortages?

- **Regional grids**
  - Wheeling and bi-lateral trade
  - Regional trading
  - Self – build options
- **Competition**
  - Additional IPP's
  - Market (ISMO/ SO/ M
  - Contestabi
  -
- **
  - andled tariffs(and Green tariff)
  - Net Metering (Customer participation)



What legislative barriers impede this emerging Power Sector model??

7. Towards a legislative roadmap for intervention

What is happening elsewhere?

7. Towards a legislative roadmap for intervention

What are the challenges impeding private participation

Procurement regulations are limiting municipalities in providing reticulation services in ***innovative*** ways

Uncertainty regarding regulations for ***small scale embedded generation*** to allow exporting to the grid (*PV rooftop installations, Net-metering, Unbundled Tariffs*)

Lack of clear planning, policy, regulations and incentives for ***off-grid*** and ***mini-grid*** development

Regulations with regard to trading is unclear *(How, who and when can Traders enter the market)*

The market is developing from a single buyer to a ***multi buyer model*** *(Wheeling arrangements)*

Uncertainty on how to allow for ***generation outside the IRP*** *(deviation applications)*

Funding complexities when attempting to create sustainable, integrated and fully ***functional*** value chains (Gx; Tx; Dx; Trading)

7. A legislative Roadmap fo

Areas of intervention to enable power s

- **Create attractive financial incentives for mini and micro grids**
- **Plan for the evolving multi buyer model**
- **Finalise the Integrated Energy Plan**
- **Publish trading regulations**
- **Better utilisation of procurement legislation to allow Eskom and municipalities to better procure required services**
- **Finalise small scale embedded generation regulations**
- **Streamline deviation application process**

8. Conclusion

- Internationally the power sector has always experience disruptive forces – ***now more than ever***
- Utility managers and policy makers need to be ***cognisant*** of these ***disruptive forces impacting on the business model***
- International learnings suggest that ***Power Sector reform*** will take place, ***either by design or by default***
- ***Reform by default*** should ***not be an option***
- Therefore sufficient ***enabling policy and relevant regulation*** is of ***critical importance***

In closure

We advocate for a policy and regulatory ***roadmaps*** throughout Africa…

- **that will allow for *private participation*,**
- **that seeks *African solutions* for *African problems*,**
- **alleviate the crippling *energy shortage* and**
- **provide *affordable* and *reliable* electricity for all.**

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