AMEU/SAIEE Workshops 16 August 2022

Webinar 3

Evolving business models for a sustainable SA municipality Dx Electricity Utility

Emerging business structures to address the challenges in the distribution sector in South Africa.

By | At van der Merwe

Presenters/Panel Members

At Van Der Merwe Dr Leslie Rencontre Leshan Moodliar Dr Silas Mulaudzi Dr Willie de Beer

International Presenters

Hamilton Locke Australia Ricardo Energy UK CPCS Canada Eskom Dx (South Africa)

Learning Objectives

- Analyse & review selected solutions and suggest alternatives for the quo vadis of electricity supplies in the Distribution sector in SA.
- ...will culminate with key learnings from international case studies & panel discussions,



Learning Outcomes

- History and high-level overview of Business Structures worldwide
- Bundled versus unbundled structures
- Monopolistic vs competitive structures
- Ownership as an influencer of structure and some examples
- The changing generic value chain due to emerging technologies and disruptors as well as the emerging distributed ESI
- Sustainability challenges of current structures (especially in SA municipalities)
- Selected solutions that address sustainability challenges





Webinar Structure

Part1: Theory (30 min) Poll

Part 2: International Case Studies (1h40)

Part 3: Panel Discussion

How has the "story" started?

Part1

... War of the currents

- Competing electric power transmission systems in the late 1880s & early 1890s
- AC vs DC



American inventor and businessman Thomas Edison established the first investorowned electric utility in 1882, basing its infrastructure on DC power.

American entrepreneur and engineer George Westinghouse introduced a rival AC-based power distribution network in 1886



Characteristics with the start of the business model ...

- Originally designed to provide *universal access* to electricity
- Developed around a vertical integrated value chain, which bundles costs and returns from the various value chain activities
- Customers are mostly captive with limited alternatives
- Supported by a *regulatory paradigm* that permits the *recovery of fixed costs* and a fair *rate of return* on investments
- Strong reliance on rules, regulations and bylaws
- Primarily a model *around selling kWh, reducing losses and recovering costs* from the captive customers through tariffs



Since early 1990's a "Standard Reform Model" was advocated

Vertically-integrated, publicly-owned *monopoly*

Commercialisation and corporatisation

Independent regulation Unbundling to separate potentially competitive elements from non-competitive elements

Private sector participation

Introduction of competition

Indicative waves of recent ESI reform & drive to review Business Model and Structure

1990 to 2000	Last Decade +
 <u>Vertical</u> industry <u>unbundling</u> Generation Transmission Distribution <u>Horizontal unbundling</u> Independent generation companies Introduction of <u>competition</u> <u>Regulatory independence</u> 	 <u>Renewable generation</u> uptake Increased flexibility Variable solar & wind Cost reduction Efficiency improvement Renewable energy starting to displace older generation plant <u>Market structure and utility model changes</u> <u>Distributed generation</u> <u>Decentralised market developments</u>

Why reform?

- Disrupters & emerging technologies
- Fiscal needs of governments,
- Shortage of Power
- Economies of scale benefits,
- Competition in generation,
- Reform in support of *capital market*
- Knowledge & funding enhancement by introducing strategic equity partners into energy market,
- Vertical *separation* between monopoly & competitive parts of ESI



ESI Reform around the world is characterized... (1)

• Vertical separation between monopoly & competitive parts of ESI



ESI Reform around the world is characterized... (2)

Horizontal unbundling



Unbundling of Wires & Retail Formation of the NSP

The History of ESI reform in South Africa



Adapted from Van der Merwe & van der Merwe: Legislative Imperatives AMEU Convention 2015

Current challenges in South Africa Disruptive Forces Impacting on the Power Utility Model

This event was kindly supported by ESB



Acknowledgment Van der Merwe² : Legislative Imperatives AMEU Convention 2015

Overview of the changing energy landscape

Current change drivers in the Electricity Supply Industry (ESI) & Electricity Distribution Industry (EDI)

- Challenges/drivers facing the current power utility model due to disruptive forces in the market.
- These are also found elsewhere in the world.
- Typical experience is that changes are driven by market forces rather than legislative and regulatory guidance of governments.



Acknowledgement: De Beer, vd Merwe & vd Merwe: The Dawn of the New Municipal Business Model and the Legal Imperatives to Realise Same AMEU TECHNCIAL CONVENTION SANDTON 2018





Current Trends in South African ESI



Adapted from Van der Merwe² : Legislative Imperatives AMEU Convention 2015

In the global context - Restructuring & the ESI have become synonymous



Some **Reform leaders** are:

- United Kingdom
- United States of America
- Australia
- New Zealand
- Europe
- Latin America

Reform Drivers:

- Power shortage
- Customer choice
- Affordable and reliable energy
- Economic growth requirements
- Asset management challenges
- Efficiency improvement Investment/funding requirements
- Improved regulation
- Industry sustainability

Emerging characteristic requirements

- 1. Competition bringing innovation in traditional monopoly parts
- 2. Energy markets
- 3. Bundled tariff /"on-selling kWh" unsustainable option
- 4. Distribution not monopoly anymore DER (customer) emerging as competitor
- 5. New energy options changing the distribution grid/network dynamics among others need for DSO
- 6. Clear identification of *wires (NSP) and Trading* requirements
- 7. "Behind the meter" services

Process

- "Unbundling" vertically integrated utilities (often as part of a general sector reform programme);
- Introduction of Gx & Retail competition;
- Private sector participation & Investment(Procurement, Concessions, SDA's)
- Regulatory change
- Takeovers & mergers

Electricity Industry Restructure is a Global Phenomenon



The Evolution of Power Business Models



- Disruptions
- Decarbonisation
- Decentralisation
- Customer preference
- Market transformations

https://www.powermag.com/the-evolution-of-power-business-models/

Is some of the war of currents in reverse...?



DER (Distributed Energy Resources) as a Dx Competitor



DER*- The focus on energy resources vs only electricity (kWh) as the energy source an important distinguishing factor

- As emerging technologies and disruptors enter the market different opportunities is coming to the fore across the ESI and EDI value chain.
- These are evident as an energy market develops and participation across the value chain becomes possible.

- Current suppliers are assuming different roles from traditional kWh on-selling business
- New players is coming into the market
- These players is assuming both roles of suppliers & service providers including some hybrid roles
- New ownership structures are emerging
- Funding readily available from financial institutions

Adapted from - Acnowledgement Dr CC Brown CSIR

Traditional Value Chain



PWC- Looking ahead: future market and business models*

Private Sector Participation



Summary: Evolving Features of the Industry



Acknowledgement: Vd Merwe- The New Energy landscape SAIEE KZN 2019

Evolving Business Structures for the Dx sector

Lets apply the changing ESI characteristics explored earlier



Adapted from De Beer, Van der Merwe & van der Merwe: AMEU Convention 2018



Evolving Business Structures for the Dx sector



Evolving Business Structures for the Dx sector



• The changing landscape(from current to an unbundled restructured market)



Some Drivers that will accelerate reform: Price / reliability

Adapted from Utility Coach-Energy Policy & Regulations for SA GIZ/SAGEN & Anglo American Strategy & Road map Decarbonisation



<u>Theme 1</u>: Lessons learnt from the different business models in Australia- reference SA: **Hamilton Locke Australia**. *Matt Baumgurtel / Adriaan van der Merwe*

<u>Part 2:</u>

<u>Theme 2</u>: The UK example: The journey of the UK. The journey from Electricity Area Boards to customer choice. Reference to other Jurisdictions **Ricardo Energy and Environmental UK** *Tony Woods/Lesley Fernando.*

<u>Theme 3</u>: Different market models in different jurisdictions-"not one shoe fits all" **CPCS Canada**: Stephane Barbeau /Anirud Gautama.

<u>Theme 4</u>: **Eskom Dx**: Distribution System Operator and Distribution Energy trader(DSO/DET). Al'Iouise van Deventer



Burning Platform

Dr Willie de Beer



Part 3: Panel discussion

Chair Dr Leslie Recontre Director Electricity Generation & Distribution City of Cape Town



Summary: Business Model Design Learning Outcomes

Issue

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- Importance/focus on the Dx assets
- Diversified generation mix
- DER
- Energy market
- Bi laterals, wheeling, balancing of market
- Service authority/ service provider role
- Weak balance sheet/ service delivery sustainability issues

What this may mean..

- Unbundling in complete chain of Gx & Dx • Innovation, competition, financing, funding, skills
 - Unbundling of the wires/trading-the formation of the NSP
 - Appears to be a less focus on the IRP & greater focus on private offerings (Exmpt Sched2)
 - Accommodate the Proconsumer (Third party access/ REFIT etc)
 - Both a regulatory & nonregulatory arrangement
 - New regulation, wheeling method, market design & market rules
 - ROI on RAB vs/ tax balance affordability(rethink COS model approach)
 - Different PPP approaches, Traders (SDA, Concessions, leases etc)





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