Key Lessons on Institutional Arrangements for Managing the Restructuring of Power Utilities

Policy Note

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22 MAY 2019

ACKNOWLEDGEMENTS

This report has been prepared by Anna Filipova (Lead Author, OneWorld Sustainable Investments) and Michael Boulle (PhD Researcher).

There are OneWorld team members, not acknowledged as authors to this report, who we thank for their research and analysis, editing, proof reading, brainstorming and logistical support: Belynda Petrie, Chipo Rusere, Pippa Tsilik and Tamara Merrill.

The report has been prepared for the Power Futures Lab at the University of Cape Town's Graduate School of Business under the leadership of Prof Anton Eberhard who is also chairing President Ramaphosa's Eskom Sustainability Task Team.

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Abbreviations and acronyms

ANC	African National Congress
APDRP	Accelerated Power Development and Reform Program
BOT	Build-Operate-Transfer
CA	Competition Authority (Turkey)
CENACE	Centro Nacional de Control de Energía
CERC	Central Electricity Regulatory Commission
CFE	Federal Electricity Commission
COSATU	Congress of South African Trade Unions
CRO	Chief Re-organisation Officer
CTU	Central Transmission Utility
DME	Department of Minerals and Energy
DoE	Department of Energy
EML	Electricity Market Law (Turkey)
EMRA	Energy Market Regulatory Authority (Turkey)
ERA	Electricity Regulatory Authority of Uganda
ERB	Electricity Regulatory Board (Kenya)
ERC	Electricity Regulatory Commission
ESI	Electricity Supply Industry
EU	European Union
EUAS	Electricity Generation Company of Turkey
GoI	Government of India
IDA	International Development Association
IMF	International Monetary Fund
IPP	Independent Power Producer
IRP	Integrated Resource Plan
ISO	Independent System Operator
ITSMO	Independent Transmission, System and Market Operator
ITSO	Independent Transmission and System Operator
KPLC	Kenya Power and Lighting Company
LTSO	Legally Unbundled Transmission and System Operator
MD	Managing Director
MENR	Ministry of Energy and Natural Resources (Turkey)
MoFPED	Ministry of Finance, Planning and Economic Development
MoLJ	Ministry of Law and Justice
MoP	Ministry of Power
NER	National Electricity Regulator
NERSA	National Energy Regulator of South Africa
NVE	Norwegian Water Resources and Energy Directorate
OECD	Organisation for Economic Co-operation and Development
PA	Private Administration (Turkey)
PGCIL	PowerGrid Corp. of India Limited

PPIAF	Public-Private Infrastructure Advisory Facility
PTC	Power Trading Corporation
PS	Permanent Secretary
PWC	PricewaterhouseCoopers
SACP	South African Communist Party
SENER	Secretaría de Energía or Ministry of Energy of Mexico
SEB	State Electricity Board
SOE	State-Owned Enterprise
TEAS	Turkish Electricity Generation and Transmission Company
TEDAS	Turkish Electricity Distribution Company
TEK	Turkish Electricity Authority
TOOR	Transfer of Operational Rights
TSO	Transmission System Operator
UEB	Uganda Electricity Board
UETCL	Uganda Electricity Transmission Company Limited
WBG	World Bank Group

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Executive Summary

South Africa is embarking on a process of power sector reform, focused on restructuring the country's biggest state-owned enterprise – Eskom, driven primarily by concerns about the economic implications of an ongoing electricity supply crisis, as well as concerns about the impact of Eskom's huge debt burden on the country's fiscus. This report looks at South Africa's previous attempts at restructuring its electricity sector (Section 3 of the report) and presents six country case studies, from Uganda, Kenya, Mexico, Norway, Turkey and India (Section 4), representing several global regions and a range of high-, middle- and low-income countries. It then draws key lessons from these experiences (Section 5) and makes recommendations for the governance and management of South Africa's current efforts in power sector restructuring based on the key findings (Section 6).

Key Learnings

While we note a clear differentiation in the factors driving power sector reform between developed and developing countries, in most cases **the unbundling of previously vertically integrated utilities was seen as a pathway to enhanced competition and transparency in the sector**.

The creation of an Independent Transmission and Systems Operator (ITSO) was a key action which five of the six countries (Uganda, Kenya, Turkey, Norway and India), studied in this report, undertook as one of the first steps in power sector restructuring. Only one of the countries – Mexico – went further to establish a separate Independent Systems Operator (ISO). The creation of an ITSO **guaranteed open access to the national grid for both public and private actors, who engage in electricity generation**, and as such was an important step towards improving the efficiency of the electricity sector. **All countries studied chose to keep transmission assets and operation under the ownership and control of the state**.

The case studies indicated that **power sector reform is a long-term process, which requires careful sequencing of implementation**. Kenya's case study illustrates the need for a sustained research effort, which is responsive to a continuously changing context. The case studies also demonstrate the redundancy of a "one-size-fits-all" approach to reform, which does not take into account local political and socioeconomic conditions. **An incremental and iterative process of implementation can enable learning-by doing**, which yielded significant benefits in the case of India.

The development of a coherent policy and legal framework, which guides the reform process, emerged as a key success factor. The role of a proactive government in driving the reform process and establishing this underlying framework appeared to have been

critical in the experiences of each of the case study countries, even in the cases where external international cooperation partners were deeply involved in the design and implementation of the reform. Incumbent, dominant utilities cannot be relied on to lead the process of their own unbundling; government has to take the lead. In some of the countries, such as Kenya and Mexico, the restructuring process benefitted hugely from the **active presence of a reform champion, who played the role of a key driving force for the reforms**.

Nevertheless, **the provision of technical and financial support from external actors throughout the reform process also proved to be an important component of success**, especially in cases where local capacity was low. The case of India, however, demonstrates **the importance of closely managing their involvement in order to ensure that national priorities and objectives remain the main driver**.

In the experience of the countries, studied in this report, **the establishment of independent regulatory institutions, to oversee the performance of the sector during and post reforms** emerges as an important factor for success. A well capacitated independent regulator appears critical for regulating the natural monopoly activities of transmission and distribution post unbundling of vertically-integrated utilities, as well as fostering competition in power generation.

Political and public buy-in and support emerged as crucial for the successful implementation of power sector restructuring. **Political support for the reform process is imperative, while political opposition can derail technocratic processes**. The case studies have provided several examples of experiences where the reform process can be impeded by political conflict or lack of political support, such as the cases of Kenya, India and Mexico. At the same time, **transparent consultation processes, which include all key stakeholders, both from the 'winning' and 'losing' sides, are key to building broad-based support, ensuring feasibility and legitimacy of the reform**. This requires a comprehensive process of stakeholder engagement and consensus building, which raises awareness of the need for reform and its objectives, while also integrates the views and priorities of key stakeholders into the design and implementation of the restructuring process.

Recommendations

The following recommendations are intended to provide guidance for the governance of the current process of restructuring, based on learnings from the country case studies and South Africa's previous restructuring attempts.

South Africa is falling behind in terms of the global trend towards power sector restructuring, with 106 countries having already unbundled their electricity sectors. The country's political economy has in the past presented challenges to a successful process of power sector restructuring and hence as much attention needs to be given to the "how" as to the "what" of restructuring and reform.

Clearly articulate the drivers and goals of power sector reform. Communicating these clearly with key stakeholders and the public from the outset will lay the foundations for increased awareness around the need for reform and will also help in identifying the concrete and politically feasible steps which need to be taken in the short to medium term.

Assign a well-resourced team of communications and stakeholder engagement specialists the task of running a campaign that will advocate for the reform, raise awareness, educate, and manage media relations, communications and engagements with the key impacted stakeholders. The role of this team will be to raise awareness about the drivers and objectives of the reform among key stakeholder groups and ensure political and public support for the process. The team will also feed the outcomes from consultation processes back to the Reform team, ensuring that a wide range of concerns and priorities are taken into consideration.

Create an enabling policy environment and put in place the necessary legal foundations for restructuring. The 1998 Energy Policy White Paper can serve as a legal basis for the reform process. The legal and policy framework is instrumental in setting out the sequencing of the reform implementation and clarifying the functions of an ITSO. This will create an enabling environment and provide policy certainty, a critical precondition for increasing investment in generation. **Policy and legal changes can proceed in parallel with the initial steps towards reform, supporting the ongoing process**.

It is crucial for the South African government to be a main driver of the reform process and provide clear direction on the way forward. Continuing support by the President will play an important role as the process is initiated. In addition, **a reform champion, with a strong mandate from the President, should be assigned to drive the reform process** and ensure that the stakeholders are aligned and that the restructuring process is implemented in a timely and efficient manner, and the key outcomes, as outlined by the government, are achieved. In addition, **the National Energy Regulator of South Africa (NERSA) needs to play a key role in ensuring the sustainability of the reform process by ensuring transparency, cost-reflective prices, open-access on the grid and competition in generation**.

As per the Task Team's recommendations and the President's announcements, the immediate first step towards structural changes in the electricity sector is unbundling transmission. **We recommend establishing an Independent Transmission, System and Market Operator (ITSMO) that will manage an independent, state-owned transmission grid, combined with a systems operator and functions to include power planning, procurement and contracting.** This will be an important step towards ensuring open access to the national grid, as well as fair competition in generation. It is also **recommended that the proposed ITSMO remains a state-owned and operated enterprise,** based on the studied country experiences in electricity sector restructuring. As the key to reduced costs of electricity, introducing competition in the generation space will be critical. **It is therefore recommended that mixed public and private ownership and operation is stimulated in electricity generation through furthering IPP procurement. We recommend that electricity distribution remains in public ownership and operation**.

It is recommended that the reform process be carefully sequenced, but begins immediately with the incorporation of a shell subsidiary company under Eskom Holdings, in order to ensure that the reform momentum is under way. The ITSMO will have its own board of directors, which will be its main governance structure. **We recommend that the board reports directly to the shareholder as opposed to the Eskom board, in order to guarantee its independent operation and reduce the possibility of a conflict of interest**. Initially, this will be a shell company; systems, people, assets and debt will be migrated into the company over time. This process should be coordinated with the proposals for Eskom debt restructuring and re-financing.

External support will be required in the form of legal and management consulting during the setup of the new ITSMO. We recommend that clear Terms of Reference are drawn up immediately, detailing the aspects of the support required, so that the procurement process can be got underway as soon as possible.

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Introduction

South Africa is embarking on a process of reforming its electricity sector by restructuring the country's biggest state-owned enterprise (SOE) – Eskom. The process was initiated and is being led by President Cyril Ramaphosa, driven by concerns about the negative economic impact of ongoing electricity supply shortages as well as the fiscal implications of Eskom's severe financial crisis.

Purpose and Structure of the Report

The purpose of this report is to present case studies of international experiences in power sector restructuring with the aim of drawing key lessons and making recommendations for South Africa on how the process of restructuring Eskom could be managed. The report serves as resource for the Eskom Sustainability Task Team (the Task Team) appointed by President Ramaphosa, and informs a number of their recommendations on how the restructuring process can be designed and implemented.

The report is structured as follows: Following this introduction, Section 3 of the report summarises South Africa's previous attempts at electricity sector reform, with a discussion on the underlying reasons why these were unsuccessful. Section 4 presents six country case studies as examples of restructuring through the unbundling, or partial unbundling, of vertically-integrated power utilities, with a focus on the establishment of Independent Transmission and System Operators (ITSOs) or Independent System Operators (ISOs). The case studies provide a range of different experiences from high, mid and low-income countries. Section 5 summarises the key lessons that emerge from the analysis of these experiences. Section 6 of the report makes recommendations for applying these lessons to the South African restructuring process.

Learning from International Experience

106 countries around the world have undertaken unbundling of their electricity utilities (Boulle, 2019). In terms of transmission, this reform process has resulted in either a combined ITSO or the establishment of a separate ISO. Globally, this process has been underpinned by an understanding that operation of the grid remains a largely monopolistic activity, while competition can to be introduced in electricity generation (as well as in the trading and sale of electricity). The drivers of the restructuring process differ across countries. While high-income countries embarked on reform in a bid for enhanced competition and efficiency, and lower consumer tariffs, reform in developing countries has been driven mainly by the poor technical and financial performance of electricity utilities and a need for increased investment in generation and network capacity.

Box 1. The Structure of Electricity Sectors (Boulle, 2019)

Unbundling refers to the functional, accounting, structural and/or legal separation of different components of electricity production and supply, viz. generation, transmission, distribution and retail supply or sale of electricity (Chawla & Pollitt, 2013; Sen et al., 2016). The focus of this report is on the unbundling and separation of transmission and the system operator as a first step in this unbundling.

A vertically integrated utility refers to cases where one entity is responsible for generation, transmission, distribution and retail. Meaningful unbundling of a vertically-integrated utility, to separate transmission/system operation from generation and distribution, involves a legally unbundled transmission and system operator (LTSO) or a fully independent transmission and system operator (ITSO) or an ISO on its own. A LTSO is a company that operates the transmission grid and system operator but is a subsidiary of a parent company that owns other parts of electricity supply such as generation, distribution and retail. In the case of an ITSO, an independent company is responsible for ownership and operation of the transmission grid and is independent from any other players in the electricity market. The state may still own an ITSO. ISOs, on the other hand, are responsible only for system operation (i.e balancing demand and supply in real time) while a separate company owns, operates and maintains the transmission grid (Chawla & Pollitt, 2013).

The Eskom Sustainability Task Team

On 4th December 2018, the President appointed the Task Team to advise government on actions to resolve Eskom's operational, structural and financial challenges (The Presidency, 2018). The high-level Task Team is comprised of experts with extensive combined experience in electricity, management and economics. The Task Team was set up to assess Eskom's current state and business model, as well as to review and advise on the turnaround strategy, designed by the Eskom Board of Directors. The Team was also given the responsibility for proposing a new structure and business model for the utility and the industry as a whole, to align with current and global energy and technological trends. An important aspect of the Task Team's work is to make proposals for resolving the SOE's debt crisis. The Team will work in consultation with key stakeholders of the sector, including the Eskom Board of Directors, Eskom Management, the Department of Public Enterprises, and business and labour representatives.

Due to the urgency of the underlying issues, the Task Team was required to submit its initial assessments and recommendations by the end of January 2019. On 15th January, the Team presented its interim findings to the President at a meeting at his official residence in Pretoria. The interim report was submitted at the end of January and included recommendations for urgent steps to restructure Eskom and improve its operational and financial sustainability in the short, medium and long term. The Task Team recommended that Eskom be unbundled into separate entities, starting with separating out its transmission operations. A key transformational intervention proposed for the medium to long term was establishing an independent transmission and systems operator (ITSO), initially as an Eskom subsidiary, later to be spun off as a separate SOE.

The interim findings of the Task Team were presented by the President and discussed at an African National Congress (ANC) National Executive Committee meeting on 19th January, and at an ANC Lekgotla on 20th January. The Task team also presented its recommendations at a Cabinet Lekgotla on 30th January and 5th February.

The President accepted the Task Team's recommendations and announced the decision to restructure Eskom during his State of the Nation Address to a joint sitting of the two Houses of Parliament (National Assembly and National Council of Provinces) on 7th February (The Presidency, 2019a). He reinforced the risks posed to South Africa's economy by Eskom's current state and the need for urgent, bold and decisive action to be taken to resolve this. He highlighted the need for the development of a new business model for Eskom, which would ensure its future sustainability, taking into account the causes of the current crisis, as well as global and national energy trends. He declared the immediate start of a process to establish three separate entities - Generation, Transmission and Distribution - under Eskom Holdings, which would ensure appropriate allocation of responsibility and costs. A key priority for the restructuring process would be establishing an entity to manage an independent, state-owned transmission grid, combined with a systems operator and functions to include power planning, and procurement. President Ramaphosa reinforced the decision to establish this entity in the National Assembly on 7th March 2019, when he answered questions on Eskom's restructuring and stressed that the restructuring process will not result in the privatisation of Eskom (The Presidency, 2019b).

This announcement was confirmed by the Minister of Finance, Tito Mboweni, in his 2019 Budget Speech on 20th February (National Treasury, 2019). He reiterated that the subdivision of Eskom into three independent components would ensure competition, transparency and a focused funding model for the electricity sector. Minister Mboweni announced an allocation of R23 billion annually over the course of three years in support of the restructuring process, conditional upon the appointment of an independent Chief Re-organisation Officer (CRO). The CRO would be jointly appointed by the Ministers of Finance and Public Enterprises, with the explicit mandate of delivering on the Task Team's recommendations.

At the request of the Presidency, the Task Team is currently developing an updated report with detailed steps on the way forward for Eskom's restructuring. This will be completed by the end of May 2019, with the expectation that it will be made publicly available in due course.

3

South Africa's Experience in Power Sector Restructuring

The standard model for power sector reform rose to prominence around the world in the 1990s. At the same time South Africa was establishing its democracy, leading to major changes in governance and policy. Given its origins in the apartheid state, the electricity sector required a significant departure from the established policy and planning processes. This began with amendments to the existing Energy Act in 1994 and 1995, as well as the establishment of National Electricity Regulator (NER – to become NERSA in 2006) and later led to the 1998 White Paper on Energy Policy, a public enterprises policy framework *An Accelerated Agenda Towards the Restructuring of State-Owned Enterprises*, and the Independent System and Market Operator (ISMO) Bill (Baker et al., 2015; van der Heijden, 2013). Despite these milestones, in 2019 actual progress on restructuring the electricity supply industry (ESI), is well short of the goals of these policies. This section investigates the previous attempts to enact reforms, with a specific focus on unbundling, to identify reasons for the lack of progress achieved that could assist the latest efforts to restructure the sector.

White Paper on the Energy Policy, 1998

In 1998 the government released the *White Paper on the Energy Policy of the Republic of South Africa* (the White Paper) to chart a new course for the energy sector. The White Paper was formulated mainly by a small group of academics and government officials that were observing the trends internationally of power sector reform and were concerned about the weaknesses in South Africa's electricity sector by virtue of the vertically integrated monopoly held by Eskom. The White Paper included features of the standard model of power sector reform that was shaping the development of ESIs across the globe, such as the following (Department of Minerals and Energy, 1998; Eberhard, 2004; van der Heijden, 2013):

- Vertical and horizontal unbundling to separate generation and retail which are typically competitive elements of the ESI, from transmission and distribution which are natural monopolies
- Introducing private sector participation to increase competition in the relevant parts of the ESI, namely generation and retail; 30% of generation would be provided by Independent Power Producers (IPPs)
- Establish non-discriminatory and open access to the transmission grid, particularly for new comers such as IPPs, typically achieved by establishing an independent transmission system and market operator
- Independent regulation (in this case specifically to support private sector participation) and the establishment of an independent and well-resourced regulator

- Establish a multi-modal electricity market

In addition to the above, the White Paper sought to allocate responsibilities away from Eskom, two major ones being planning of generation capacity expansion, and procurement. The White Paper made clear that the integrated resource plan (IRP) for electricity would be responsible for establishing capacity expansion, which fell under the mandate of the Department of Minerals and Energy (DME). DME also became responsible for procurement. Lastly, the White Paper identified the need to plan for capacity expansion, without which the country would face a supply shortage by 2007 (DME, 1998; Trollip et al., 2014; van der Heijden, 2013).

2000 DPE Policy Framework

One of the complexities of enacting reform of the ESI in South Africa was that responsibilities for the electricity sector lay primarily with the DME (now the Department of Energy), but Eskom the single most influential actor for implementing or opposing reforms is answerable to the Department of Public Enterprises (DPE). This has resulted in a situation where the DME is highly dependent on Eskom participating in planning, procurement and reform but has no authority over Eskom. In 2000 the DPE released the policy framework, *An Accelerated Agenda Towards the Restructuring of State-Owned Enterprises* (referred to after this as DPE's framework to restructure SOEs). This would have major implications for Eskom.

The framework included similar objectives to the White Paper. It anticipated the restructuring of Eskom through corporatisation and partial privatisation, with separate entities to be established for generation, transmission and distribution. For generation the framework proposed setting up different companies but clustering Eskom's power stations in order to establish internal competition in generation and later introduce private sector participation. For transmission an independent state-owned company would be established to remove conflict of interests that were present with the vertically-integrated monopoly held by Eskom, enable non-discriminatory access to the transmission grid, a prerequisite for enabling competition in generation (Eberhard, 2004; Ministry of Public Enterprises, 2000; van der Heijden, 2013). In 2001, not long after the DPE's policy framework was released, Cabinet approved reform proposals for the ESI, primarily contained in the White Paper and DPE's framework to restructure SOEs (Eberhard, 2004; Trollip et al., 2014).

The ISMO Bill

The objective of the Independent System and Market Operator Bill (ISMO) was to guarantee non-discriminatory access to the transmission grid, which was a core objective of the White Paper, DPE's framework to restructure SOEs and in Cabinets decision to approve the reform of the ESI. Establishing a state-owned ISMO was central to this goal. However, little progress was made on this until, in his 2010 State of the Nation Address, President Zuma once again expressed the commitment of the South Africa government to establish an ISMO. On the back of this announcement the Department of Energy tabled the ISMO Bill in Parliament in 2011. Despite initially being passed by the Parliamentary Portfolio Committee on Energy, the Bill was eventually withdrawn from

Parliament in 2015, the reasons for which will be discussed in the subsequent section (Baker et al., 2015; Ministry of Energy, 2012; Trollip et al., 2014).

Opposition to Restructuring

Despite restructuring gaining momentum through the aforementioned policy documents, and others such as the Eskom Conversion Act, No.13 of 2001, so too did opposition to the proposed reforms. Notable opposition lay within the Tripartite Alliance: a coalition between the ruling ANC, the South African Communist Party (SACP) and Congress of South African Trade Unions (COSATU), an important feature of the political landscape in democratic South Africa. Historically, the constituencies of the SACP and COSATU have been important for the ANC securing votes, and thus the Tripartite Alliance has been influential in the ANC's policy positions and decision making. Restructuring of the ESI and the introduction of IPPs were contentious within the Alliance as some saw it as synonymous with privatisation of Eskom and the ESI, which was in conflict with their political and ideological positions. This led to a split in the Alliance between those in support and those in opposition, with COSATU making a formal submission to the Public Enterprise Parliamentary Portfolio Committee in 2001; and in 2002 initiating a nation-wide strike to oppose the planned restructuring. Opponents of reform within the Tripartite Alliance formed key political alliances within Eskom, which could assist their political priorities, such as low cost electricity to low-income communities and continued state ownership of the ESI (Trollip et al., 2014; van der Heijden, 2013).

Despite the participation of Eskom in the White Paper development process, and subsequent steps taken to start the restructuring progress, the leadership of Eskom began to express concern about what restructuring would mean for the future of Eskom and began to pushback against the planned restructuring, including lobbying the government to maintain Eskom's position in the sector. The CEO of Eskom at the time, Thulani Gcabashe was particularly vocal about his opposition to restructuring and used Eskom's strong performance record in 2001, and their success at providing electricity at low cost, as a justification for Eskom to maintain its dominant position in the sector (van der Heijden, 2013). Eskom began to mobilise against the proposals by making counter-proposals and highlighting the risks restructuring posed to the security of electricity supply.

Government set up a series of meetings, which included Eskom, to chart the way forward - the so-called 'Farm Inn Summits' - which culminated in an agreement in 2001 between Eskom, the DME, the DPE, the South African Local Government Association, and the NER, which outlined the next steps for reform of the ESI. The agreement included the establishment of an ESI restructuring committee to be chaired by the DPE. Subsidiary companies would be set up for Eskom Generation and Eskom Transmission and as well as an independent market operation company. Following the agreement an ESI restructuring office was set up by the DPE to commission studies by consultants, coordinate inter-departmental and stakeholder committees and oversee the entire process (van der Heijden, 2013).

In 2004 a follow up to the initial Farm Inn Summit was held, bringing together the same group of stakeholders as well as Treasury, the Department of Provincial and Local Government, the Department of Trade and Industry, and the Competition Commission. The Summit confirmed the

outcomes of the previous meetings, however it was decided that the milestones for restructuring should be delayed, some to as late as 2007 (van der Heijden, 2013). Eskom's sustained efforts to oppose reform with the support of members of the Tripartite Alliance, as well as a looming electricity supply crisis, appeared to be effective as the Government began to back down on its restructuring proposals and in 2004, after winning the elections, announced a major shift in the outlook for the sector indicating that it would concentrate on security of electricity supply rather than increasing competition. The primary reason behind this decision, was Eskom announcing that there was a high risk of load shedding due to insufficient system capacity, and that new generation capacity was urgently needed.

Little progress had been made to procure power from IPPs to increase generation capacity and competition. This was partly because the 2001 Cabinet decision not only stopped Eskom from building new generation capacity but, in line with the White Paper, made DME responsible for electricity planning through the IRP as well as for IPP procurement. But without the necessary in-house capacity to carry out these functions nor the supporting policy framework, DME could only partially fulfil these roles which led to delays and reliance on Eskom. It took five years for the DME to develop the legislative framework for the ESI, namely the Electricity Regulation Act of 2006, and another five years were needed to develop the procurement framework for IPPs, eventually leading to the first Renewable Energy Independent Power Producer Procurement Programme auction in 2011 and the first IPPs being contracted in 2013. Eskom had maintained its dominance in the sector despite the pressure for reform in the early 2000s (Eberhard, 2004; Trollip et al., 2014; van der Heijden, 2013).

By the end of 2004 it became clear the country would face electricity supply shortages starting in 2007 (as had been stated in the White Paper) and as a result the government lifted the ban on Eskom, who shortly afterwards announced the decision to embark on building two of the world's largest coal power stations, Medupi and Kusile, for which they were granted a license by NERSA in 2006. But this decision was too late to prevent load shedding which had started in 2005 with the crises deepening in the years to follow (Newbery & Eberhard, 2008; van der Heijden, 2013).

A later development, although it had its origins in the White Paper, was the formal tabling of the ISMO Bill in 2011. As with earlier reform efforts Eskom argued that separating transmission would negatively impact on their ability to raise debt which could further exacerbate the electricity supply crisis that had unfolded in recent years. Members of the Tripartite Alliance and some civil society groups opposed the Bill on the grounds that they saw it as a move to privatise Eskom and the ESI, which they indicated would lead to job losses, and prevent Eskom from providing low-cost electricity to low-income communities. Given the opposition and lack of broad-based support for the Bill, as well as factional battles within the ruling ANC and its Tripartite Alliance, the Bill was withdrawn from Parliament in 2015 (Baker et al., 2015; Ministry of Energy, 2012; Trollip et al., 2014).

Concluding Remarks

Despite the well-formulated technical proposals, policies and legislation that made the case for restructuring of the ESI, South Africa's efforts have fallen short of the goals outlined in Energy Policy White Paper introduced more than twenty years ago. Eskom holds a powerful incumbent monopoly

position and their cooperation in restructuring is obviously necessary. But restructuring represents a curtailing of Eskom's power and influence in the sector and therefore Eskom has unsurprisingly opposed reform efforts. This has proved to be crippling for reform efforts albeit gradual and at times masked behind seeming cooperation in policy processes such as the White Paper. Some have referred to this a "malicious compliance" – Eskom says it agrees with government policies but sometimes actively undermines them.

Eskom has also found influential allies in the Tripartite Alliance (Trollip et al., 2014). Furthermore attempts at reform have failed to cultivate a broad-based support, or attract a political champion, and a high turnover of staff in key positions in government has meant institutional capacity has been lost (Eberhard, 2004). However, the material conditions in the sector have changed significantly since the earlier reform attempts. Eskom's financial crisis makes a financial solution imperative for the ongoing sustainability of the sector and renewable energy built by IPPs, as well as small-sale embedded generation, are now the lowest cost new build option. The energy market is undergoing a fundamental transition and traditional utility models, especially those built on large nuclear and coal assets, are under threat. The current crisis offers opportunities for meaningful reform but will still require that it is led by a reform champion with mandated political support as well as broad-based support from key stakeholders.

4

Country Case Studies

This section presents six case studies detailing the experiences of Uganda, Kenya, Mexico, Norway, Turkey and India with power sector reform, with a specific focus on the establishment of TSOs/ISOs in these countries. The countries were selected in order to present important lessons from a variety of contexts, including high, middle and low-income economies, and from various global regions: Sub-Saharan Africa, South Asia, the Middle East, Latin America, and Northern Europe. The case studies tell stories of how the reform process was governed and yield important lessons for management of infrastructure reform in South Africa.

The case studies attempt to answer the following key research questions, noting that the findings vary from country to country in terms of level of detail, based on the specific experience, as well as the availability of information:

- What were the key drivers that led to the initiation of the restructuring process?
- What was the sequencing of the restructuring process? Was transmission unbundled and separated first?
- What was the level of institutional, technical/skills capacity to implement the reform?
- What was the role of government in initiating and leading the restructuring of national power utilities and establishing TSOs?
    - How did government lead the reform? Was there a reform champion or a lead ministry?
    - What structures were put in place by the government for managing and implementing the reform? Who did these structures report to?
    - Were there any joint structures or processes developed between the government and the utility to lead the process? What were the characteristics of these structures and processes?
    - Which other stakeholders were included in any structures that were established for managing the restructuring?
- How was the new transmission company set up? What was its structure? Who did the company's board report to?
- What kind of technical support was provided during the restructuring process? What kind of management consulting support was required in the process of the legal structure of the TSO?
- How did the government manage the process of stakeholder/interest group engagement?
- In terms of reform outcomes, did the separation of independent transmission increase investment in generation through IPPs?

Uganda

Uganda has gone further than almost all countries in Africa in reforming its power sector (Godhino & Eberhard, 2019a). Despite being a small power sector, it fully unbundled a previously vertically-integrated electricity utility – the Uganda Electricity Board (UEB) – into separate generation, transmission and distribution companies. The process was implemented at a relatively fast pace: it took the government four years to make the necessary policy and institutional changes which led to the restructuring of the utility. An independent regulator was established and IPPs were introduced into the electricity generation space.

Drivers and Rationale of Power Sector Restructuring

Power sector reforms in Uganda were driven by an electricity supply crisis characterised by low levels of electricity access and consumption and serious deterioration of in the assets and performance of the utility. The impacts of the disruptive civil war of the 1980s as well as decreasing levels in the main reservoir generating hydroelectric power – Lake Victoria – led to a significant decrease in generation capacity (Kapika & Eberhard, 2013). The resultant load shedding significantly hampered the country's post-civil-war economic recovery.

The national utility UEB was regarded as highly inefficient (Mugyenzi, 2000). It suffered from a shortage of domestic capital for investment in power generation, while foreign borrowing by the UEB exacerbated its financial difficulties. Limited management autonomy characterised the institutional structure of the UEB and prevented it from providing good quality services. There was a lack of a comprehensive plan for the expansion of rural electrification. In addition, a lack of a legal and regulatory framework promoted the monopoly status of the UEB, which played the dual role of a utility and a regulator. The UEB's poor performance posed a significant threat to economic development and eventually eroded the viability of the vertically-integrated, state-owned model (Godhino & Eberhard, 2019a). Public dissatisfaction with the quality of electricity services was seen as one of the key drivers behind the swift implementation of the power sector reform.

In order to improve power sector performance, the government initiated a reform in 1999, which has been amongst the most ambitious ever implemented in Africa, and lead to the first instance of the unbundling of an electricity utility on the continent (Kapika & Eberhard, 2013). The reform was aimed at improving the sector's efficiency, and increasing private participation and inflows of capital into the sector (World Bank, 2000).

Governance of the Reform

The power sector reform in Uganda was pushed as part of a broader macroeconomic reform process, led by President Museveni who was instrumental in driving the economic liberalisation and market-oriented public sector reforms of the time. The reform process was supported financially with a loan from the World Bank's International Development Association, extended under a broader programme aimed at promoting divestiture and restructuring of SOEs, increased private sector participation, and enhancement of regulatory frameworks (Meyer et al., 2017).

Reform Champion

The then newly-established Ministry of Finance, Planning and Economic Development (MoFPED) was given significant power as a reform implementing agent and became one of the key driving agents (Godhino & Eberhard, 2019a). The ministry, established through merging the Ministry of Finance and the Ministry of Planning and Economic Development, brought together critical technical expertise from both ministries, making it an important centre of excellence. The Permanent Secretary (PS) of MoFPED, Emmanuel Tumusiime-Mutebile, who enjoyed a long tenure between 1992 and 2001, emerged as a champion of the reform process. He came to be seen as an intellectual and political force behind both macroeconomic and power sector reforms, with significant freedom in managing economic processes while working closely with the international cooperation community. MoFPED's capacity was significantly increased under his leadership, giving it the organisational and technical capabilities to be a driver of reform implementation.

The Policy Framework

The restructuring of the Ugandan power sector was underpinned by the establishment of a robust policy and legislation framework. One of the first steps undertaken by the MoFPED was the development of the 1993 Public Enterprises Reform and Divestiture Act, which established the Privatisation Unit within MoFPED as the force behind managing the divestiture of public enterprises (Godhino & Eberhard, 2019a). The Unit reported to the Finance Minister and the Secretary of the Treasury, and was responsible for driving the financial, legal and operational analysis and asset valuation of the SOEs. The Unit also held talks with the SOE board, chief officers and employees, with a view of achieving a just transition in the restructuring process. While attracting private sector investments was a key objective of the reform, full privatisation of the utility was never on the table for the government. Instead, the concessional model was chosen as more fitting to the country's context, under which the government retained ownership of the underlying assets but concessioned the operation of generation and distribution.

In 1998, with personal direction from the President, and with the financial and technical support of the international cooperation community, Uganda embarked on a comprehensive power sector reform beginning with restructuring UEB. In 1998, the government commissioned consultancy firm London Economics to develop the Power Sector Restructuring and Privatisation: New Strategy Plan and Implementation Plan, which was published in June 1999. Also in 1999, the Electricity Act was published, which guided the implementation of reform measures along the lines of the standard power sector reform model implemented in other countries globally during the 1990s. The Electricity Act of 1999 provided the policy and legislative basis for the unbundling of UEB.

The Role of Government

External actors from the international cooperation community played a key role in the power reform process by providing advisory, technical and financial support. However, one of the key reasons behind Uganda's success was the fact that the government embraced the leadership and implementation of the reform (Kapika & Eberhard, 2013). The position of the government was strongly rooted in actors and stakeholder engagements, which aimed to identify and understand various objectives, as well as build consensus on the reform process among key stakeholders (World

Bank, 2000). Despite the presence of opposing forces, specifically among stakeholders from SOEs and ministries who stood to lose from the process, extensive engagement involving both winners and losers, managed to build a support base for the government's decisions, both among the public and within government (Godhino & Eberhard, 2019a).

Modalities for Restructuring

In 2001, the UEB was unbundled, with generation and distribution privatised under 20-year concession agreements. The transmission network was left under the ownership and control of the state, through the purpose-established Uganda Electricity Transmission Company Limited (UETCL). In accordance with the Electricity Act, the newly established companies were incorporated under the Companies Act, which put them under the control of the MoFPED, further strengthening the Ministry's role in the reform process (Godhino & Eberhard, 2019a). The division of assets was managed by the Privatization Unit, according to the outcomes of a Lahmeyer International-conducted asset valuation study.

Managing the Utility Turnaround

Due to inefficiencies and management issues at the UEB, an expatriate from South Africa's utility, Eskom, was appointed to the position of Managing Director (MD) and was made responsible for the implementation of initial internal reforms leading up to the unbundling of the utility (Godhino & Eberhard, 2019a). He undertook the restructuring of the organisation into separate units of Generation, Transmission, Distribution, Projects, Finance, and Services, each with a designated general manager. The key factor behind the success of the internal reforms was the clear and continuous communication with staff on the need for a utility turnaround, as well as the employment implications of the reform. This was a critical success factor, given that the reform process did not enjoy full support, especially from within the utility. It was emphasised that the policy framework had already established the need for unbundling the utility, and the role of internal reforms was to prepare it for the process (Godhino & Eberhard, 2019a).

Staff rationalisation at UEB was not only focused on reducing staff numbers (through offering generous severance packages for voluntary early retirement, provided by MoFPED through the Privatisation Unit). Rationalisation was also aimed at making sure that the right skills were retained within the company and that the capacity and skills of the existing staff were developed to meet the needs of the process of restructuring. Once the UEB was unbundled, existing staff were offered employment in one of the three new companies. Initially, the lines between the new generation, transmission and distribution entities were not entirely clear, due to the distribution of skills and capacity in the sector. Some of the UETCL employees continued to support the planning and operation of distribution systems even after the separation, as they had previous experience and knowledge in this area (Godhino & Eberhard, 2019a).

The Structure of UETCL

As a result of the restructuring process, UETCL was established as a single buyer of electricity, also responsible for system operations and network maintenance. Its mandate included bulk purchases of electricity, balancing of supply and demand on the power system by dispatching generation

facilities, as well as electricity imports and exports (ERA, 2014 & Mawejje et al., 2012). Despite initial plans to privatise it, UETCL remained under public sector control. Immediate government influence was, however, removed, by giving the company an independent board and a corporate management structure (Meyer et al., 2017). The single buyer business was ring-fenced under a separate unit within the transmission company (Kapika & Eberhard, 2013). The unit would purchase electricity from competing generators through signing long term power purchase agreements. As a result of the reform, Uganda has one of the highest numbers of IPPs (mostly small – i.e. less than 20MW) in Africa and has succeeded in adding 544.7MW of new generation capacity through IPPs between 1999 and 2016 (Meyer et al., 2017).

Key Learnings

Power sector reform in Uganda has resulted in improved power sector performance, including increased levels of professionalism and financial transparency (Kapika & Eberhard, 2013). Transmission was separated from the vertically-integrated utility and given independence from the full control of the government through corporatisation. It was driven by objectives of improved efficiency, increased private participation and investments in the sector. Despite support from external actors, the government showed commitment in leading the reform, which was underpinned by a robust policy framework and the political will of leading actors, such as the President and key Ministers and PSs. A reform champion was instrumental in driving the necessary changes, working closely with the international cooperation community, who provided technical support along the way.

The gradual, but swift implementation of the reform was managed by experienced professionals, and oversight was provided by a well-capacitated lead Ministry, namely MoFPED. The 1999 Electricity Act, which was promulgated early on in the process provided a solid legal foundation for the reform. A new institutional structure was established, in the form of the Privatisation Unit, which provided oversight of the process. Broad stakeholder support was ensured through extensive engagement and consensus building processes and clear communication with affected employees at the utility. External technical and advisory support by the international cooperation community was instrumental in accelerating the sector's learning curve and building the necessary levels of capacity and professionalism (Godhino & Eberhard, 2019a).

Kenya

The case of Kenya provides valuable examples of good practice and lessons in power sector restructuring in the African context. The reform in Kenya is still ongoing and will have important implications for the country's socioeconomic development.

Drivers and Rationale of Power Sector Restructuring

In the early 1990s Kenya emerged from a trade embargo with a focus on reviving its economy. At the same time, the electricity sector in the country was confronted with challenges of high electricity prices, poor system reliability, low access rates and limited public sector funding to invest in new generation and transmission infrastructure. This posed a major obstacle to the socio-economic development of the country. Given the importance of electricity to drive development, a growing recognition emerged of the need to reform the electricity sector as part of the effort to enact economic reform in the country, in a context where globally, power sector reform was gaining momentum (Eberhard et al., 2016; Kapika & Eberhard, 2013).

Governance of the Reform

In 1996, the Government of Kenya released a policy framework paper, developed in collaboration with the World Bank and International Monetary Fund (IMF), which detailed policies and programmes aimed at reviving the Kenyan economy to address pressing development challenges. Part of the economic reform proposed included targeted interventions in the electricity sector to implement restructuring, to separate regulatory and commercial functions and create the conditions for increased private sector participation (Government of Kenya, 1996).

International actors and a reluctant government

Within the Kenyan government there was significant resistance to enacting reforms, and much of the push and support for reforms came from international actors, especially international cooperation partners. As the majority shareholder in Kenya Power and Lighting Company (KPLC), a vertically-integrated utility, the Kenyan government held significant influence through the ownership of assets and involvement in strategic decision-making. Furthermore, influential figures at KPLC such as Samuel Kichuru, the MD of KPLC for 19 years, built up trust and close relationships with various energy ministers as well as with President Moi. However, in 1996, given the pressing need for investment to address challenges in the sector, and the international cooperation partners' conditions to enact reform, Finance Minister Mudavadi entered into a power sector reform agreement with the World Bank. This agreement, with the support consulting support from PricewaterhouseCoopers (PWC), initiated the first steps of power sector reform in Kenya (Godinho & Eberhard, 2019b).

The World Bank Group (WBG) not only played a key role in financing Kenya's power sector reform in the 1990s but also mobilised financing from various other development agencies and banks. The WBG was influential in developing the policy framework paper for economic reform in 1996, as well as the Electric Power Act of 1997. After the unbundling of the vertically-integrated utility was initiated in 1997, the Multilateral Investment Guarantee Agency (MIGA) issued a guarantee of 88.3

million USD to Ormat for a geothermal project. Such guarantees played an important role in attracting private sector participation (Dong & Mori, 2018; Sergi et al., 2018).

Modalities for Restructuring

The Electric Power Act of 1997 was passed to enact the envisaged reforms and one of the first steps was to define the roles of different actors in the sector. Through the Ministry of Energy and Petroleum (MoEP), the Government of Kenya was mandated with the formal policymaking role. A regulatory authority was established to be responsible for regulatory oversight, in the form of the Electricity Regulatory Board (ERB). The Act set in motion the unbundling of the former state-owned, vertically-integrated national utility, KPLC, separating transmission and distribution from generation. KPLC was tasked with focusing on transmission, distribution and system operation, while the state-owned Kenya Electricity Generating Company (KenGen) was established and all state-owned generation assets were transferred to it. KenGen became responsible for public generation activities (Eberhard et al., 2016; Kapika & Eberhard, 2013).

Given that the new MD of KenGen and many of his staff were former members of the KPLC, many of them were cautious about unbundling, and the loyalties of KenGen still lay with the KPLC. Thus unbundling, at least in the short term, did not distance KPLC from KenGen or create the degree of independence of the two organisations that had been envisaged. Furthermore, Samuel Gichuru, the MD of KPLC, opposed the reform ostensibly as it would affect the monopolistic position of the KPLC. Given his connections with former colleagues at the KPLC now at KenGen, he continued to exert influence over KenGen and its role in the sector (Godinho & Eberhard, 2019b). Nevertheless, one of the most successful outcomes of unbundling was stimulating private sector participation in power generation, by attracting IPPs able to invest in much-needed new power generation, relieving the burden on public sector funding. Kenya is a good example of how separating the grid from state-owned generation, removes conflicts of interest and accelerates private investment. Along with Uganda, Kenya has amongst the highest number of IPPs in Africa.

Guarantees for the KPLC

Due to KPLC's weak balance sheet and Kenya's poor credit rating, measures were put in place to reduce the risks for IPPs. For the initial phase of IPP development (1997–1998), the KPLC provided two-tier payment securities consisting of a standby letter of credit (SBLC) and escrow accounts. Subsequent to the initial phase, and given the expense of the two-tier payment securities to procure the medium-speed Diesel generators, from 2010 onwards the KPLC begun to provide International Development Association-backed partial risk guarantees with a government letter of support for an off-taker termination default (Godinho & Eberhard, 2019b).

Contrastingly, there are no guarantees for projects procured via renewable energy feed-in tariffs (FiTs), which were introduced in 2008 and relaunched in 2012. This may be indicative of KPLC building a solid track record, which has improved investor confidence and removed the necessity for guarantees. Although the KPLC has built a reputation of efficiency and reliability, there are concerns about how a potential supply surplus could impact the creditworthiness of the KPLC (Eberhard et al., 2016). The long-term sustainability of the KPLC is important for sustaining the gains made in the sector.

Deepening reforms and domestic champions

The decade from 2003 to 2013 was a key period for enacting deeper reforms, and in contrast to the reforms of the 1990s, was predominantly driven by domestic champions. The election of President Kibaki in 2002 marked the start of this period. President Kibaki's manifesto put a strong emphasis on economic growth, development and infrastructure investment, with a key role for the power sector in driving this vision. President Kibaki, with the Permanent Secretary to the Ministry of Energy, Patrick Nyoike, were pivotal in a domestically-driven power reform agenda. Two years after the election, the National Energy Policy of 2004 was launched, followed by the Energy Act of 2006, both developed through robust consultation processes to engage a wide range of stakeholders and aimed at deepening reforms in the sector (Eberhard et al., 2016; Kapika & Eberhard, 2013).

The reforms enacted under the leadership of Permanent Secretary Nyoike included: i) developing a competitive market structure for the generation, distribution, and supply of electricity; ii) establishing a new energy sector regulator, the Energy Regulatory Commission (ERC) to replace the ERB, which had lacked sufficient autonomy, and; iii) partially privatising KenGen, with 30% of the shares listed on the Nairobi Stock Exchange (Nworie, 2017). Given the challenges with accessing funding to extend the transmission grid, in 2008, the Kenya Electricity Transmission Company Limited (KETRACO) was established to take responsibility for any new transmission infrastructure and to access funding that would otherwise be inaccessible through the mixed ownership model of KPLC. Operation of the grid and ownership of existing transmission networks remained with KPLC.

The earlier separation of generation from KPLC had removed the conflict of interests that was present before unbundling, and the organisation has since built up a reputation of transparent, competitive and efficient procurement processes (Eberhard et al., 2016; Kapika & Eberhard, 2013; Sergi et al., 2018). The Kenyan government owns 50.1% of the shares of KPLC, which is therefore considered to be a state-owned entity (Mburu, 2017). Further unbundling of the KPLC into a state-owned transmission company and private distribution company is planned but is yet to be carried out (Godinho & Eberhard, 2019b). An additional feature of the second wave of reform was investing in capacity building, to enhance managerial capacity at the KPLC, technical capacity at the ERC, and to support technocratic electricity planning, which is well-established in Kenya.

In 2013 President Kenyatta was elected, and as with his predecessors, his election manifesto included major commitments to addressing the problems that continued to characterise the electricity sector, namely addressing the issue of power shortages, achieving universal access to electricity and reducing the electricity tariffs. On the one hand this guaranteed high-level political support for the continued development of the sector. On the other hand, political interference and pressure in the sector have become observable. Programmes such as the 5 000+MW programme committed to over-ambitious targets for expanding generation capacity. This has led to political interference in electricity planning to justify these unrealistic targets, so that the government can be seen to be delivering on its promises. At the same time it was creating the risk of surplus capacity which would compromise the financial sustainability of the sector. The 2016 Energy Bill proposed further reforms to the sector, most notably establishing a competitive wholesale market. However, such changes are yet to be realised. Despite the support from President Kenyatta for further development of the sector, political interference such as in planning as well as reviewing power purchase agreements because

of price concerns, suggests the political challenges to the sustained progress in power sector reform (Godinho & Eberhard, 2019b).

Key Learnings

Power sector reform has been central to Kenyan efforts to stimulate economic recovery starting in the mid-1990s. Reforms have been imperative for addressing the persistent challenges confronting the sector. The first wave of reform illustrated the importance of the role of international actors, in initiating reform particularly in its initial stages, as well as **the limitations to an internationally-driven process which experienced pushback from domestic incumbent actors in the sector**. Despite the opposition, one of the first steps of reform was unbundling generation from transmission and distribution, as stipulated by the 1997 Electricity Act. This was an effort **that enabled the introduction of private sector participation to fund much-needed new build generation capacity**, as well as a first step in addressing the lack of **financial sustainability** of the KPLC.

The second wave of reforms demonstrated the **importance of reform driven by domestic champions** such as the Permanent Secretary to the Minister of Energy and the President, which led to changes in policy and regulation. The experience of reform has demonstrated the importance of a long term approach and the need for the **process to be responsive to the constantly changing context**, the benefits of which are observable in the diversification and tripling of generation capacity since reform efforts were initiated, increase in electricity access rates, the movement to tariffs that support the long-term financial sustainability of the sector and the success of attracting the investment in new generation capacity from IPPs. This has been coupled with a focus on **capacity building initiatives and consultation processes to involve stakeholders** in these processes. Whilst political support has been imperative, political interference continues to be a risk and has been shown to compromise technocratic power planning processes. To build on the progress made and for the sector to continue to contribute to socio-economic development, a sustained commitment to improving the performance of the sector through deepening reform should continue to be a priority for the country. The progress achieved by Kenya provides valuable insights for other countries, particularly those on the African continent, seeking to improve power sector performance and support socio-economic development.

Mexico

In 2013 Mexico embarked on a comprehensive power sector reform process in order to address persistent challenges in the sector.

Drivers and Rationale of Power Sector Restructuring

Leading up to the reform, the energy sector in Mexico was characterised by a lack of competition in generation, along with high transmission and distribution losses and slow implementation of renewable energy projects (Robles, 2016). The lack of competition meant that high costs of electricity impacted on Mexico's economy. The high prices were not only burdening households but also limiting the growth of business and industries (Alpizar-Castro & Rodriguez-Monroy, 2016). Demand for electricity was on the rise and the government projected that 60GW of additional generation capacity would be required to meet energy needs by 2030 (Vietor & Sheldahl-Thomason, 2017). In addition, the power sector lacked an independent regulator, with a few companies monopolising the generation space (Alpizar-Castro & Rodriguez-Monroy, 2016).

The restructuring of the power sector was part of a broader energy sector reform, initiated in 2012 by newly-elected President Peña Nieto. The reform was initially aimed at addressing issues of decreasing production in the oil sector. However, during the reform design process, **key stakeholders took advantage of the momentum in order to drive the restructuring of the electricity sector as well** (CIFF, 2017). The power sector reform, and the establishment of an Independent System Operator (ISO), in particular, was therefore aimed at **reducing the potential conflict of interest** in a newly established competitive generation market **and enhancing the efficiency of a power sector** that had been dominated by a vertically-integrated utility, responsible for generation, dispatch, transmission and distribution for decades (Robles, 2016).

Political Economy and Governance of the Reform

The Political Promise

President Peña Nieto made the broader energy reform his administration's top economic priority (Reuters, 2014). The power sector reform, in turn, became an important factor for the country's economic growth and development. The Energy Minister therefore referred to it as the "economic competitiveness reform" (Robles, 2016). He viewed the reform as an opportunity to improve the competitiveness of local industries and businesses by supplying them with affordable electricity. This, in turn, was expected to create jobs and increase economic growth, particularly in energy-intensive industries such as steel, aluminium, concrete and chemicals, among others, which together contributed 18% of the country's GDP and 79% of its exports (Robles, 2016). The reform was expected to increase disposable income and raise consumption levels by cutting electricity rates for consumers. The promise of lowering electricity tariffs for the residential sector was used as a key mechanism for legitimising a power sector reform which was domestically controversial, due to fear of privatisation of state utilities. In a country which was gripped by monopolies and duopolies in the energy space for decades, resulting in a high cost and poor-quality services, people were sceptical of

the potential of the reform to change this (Morelos & Queretaro, 2014). The reform was also an important step towards furthering implementation of renewable energy projects towards meeting Mexico's climate change mitigation objectives (Robles, 2016).

The reform was framed by the government as **a stimulus for economic growth and development**. The political promises of lower electricity prices for consumers (CIFF, 2017 & Nance, 2018), as well as job creation in the construction sector (Nance, 2018) were a key strategy for building broad public support for the process. The promise of low prices of electricity, however, threatened to put political support at risk, if consumers wrongly linked persisting high prices to a badly implemented reform (CIFF, 2017).

The Policy Framework

A **set of constitutional and legal amendments formed the basis of Mexico's comprehensive reform**. In 2014 President Peña Nieto proposed a package of nine new laws and amendments to twelve existing laws, forming the policy basis of energy sector restructuring and opening up the sector to private participants (CIFF, 2017). One of the key success factors behind this process was the continuous reiteration by government that **"not one nut or bolt" of the energy sector SOEs would be sold** (Nance, 2018, p.56). This ensured that SOEs remained confident in the critical role that they played in the sector by taking their privatisation off the table. The Electricity Industry Law was central to the changes enacted in the power sector. It dictated the transformation of the state-owned Federal Electricity Commission (CFE) into a productive state enterprise and the legal separation of the functions of generation, transmission and distribution (CIFF, 2017). It also guided the establishment of a wholesale electricity market, which enabled competition in generation between CFE and the private sector.

The Key Reform Actors

The Mexican government played a key role in managing the transformation of the electricity sector, by advancing competition, and ensuring transparency (Robles, 2016). Mexico's Ministry of Energy (SENER) and the country's Anti-trust Commission were tasked with overseeing the process of unbundling the CFE and establishing the terms of the legal separation of the new subsidiaries (Bryner, 2016). Their role was to prevent high levels of market concentration, and to promote competition and independence between the power sector segments by ensuring that CFE recognises the legal separation between its different subsidiaries (Robles, 2016). SENER was tasked with planning and expansion of the national grid, while the Ministry of Finance was responsible for overseeing contracting and auditing, under the new structure of the sector (Vietor & Sheldahl-Thomason, 2017).

The capacity of key government and regulatory agencies, including SENER, the Ministry of Finance, the Energy Regulatory Commission (CRE), needed to be strengthened, and they were restructured in an attempt to improve their abilities to promote independence and transparency. They played an important role in reassuring new entrants in the sector that "rules would not be taken on political grounds and would be even for all players" (Vietor & Sheldahl-Thomason, 2017).

Capacity building and knowledge sharing was an important aspect of the success of Mexico's reform process. In order to support the development of specialised skills, leading

institutions in the sector collaborated with international academic and development agencies, including the University of Texas at Austin, Arizona State University, and the University of California at Berkeley (Nance, 2018).

Modalities for Restructuring

The reform entailed significant changes to the structure of the electricity value chain, with generation becoming a fully competitive activity and the establishment of an ISO that would manage a wholesale electricity market and ensure that all participants were granted open access to the national grid (Robles, 2016). After a months-long public consultation process and several drafts, in 2017 SENER published guidelines for the Financial Transmission Rights Auctions, which would govern the auction process for the newly established wholesale market (Vera, 2017). While the state's complete monopoly over the sector was thus removed (Potts, 2017), the CFE continued to hold ownership and to be responsible for transmission and distribution, as well as two-thirds of the existing generation capacity (Gaylord, 2015). Under the new structure, however, CFE was allowed to enter into joint ventures and bilateral agreements for maintenance and expansion of the grid infrastructure.

The New Structure of the CFE

Generation, transmission and distribution and supply were legally separated under subsidiaries of the CFE, as directed by the new Electricity Industry Law. As part of CFE's corporate restructuring, a new board was appointed in 2014, with a more balanced composition, including members independent of the government, although proposed by the President and ratified by the Senate (Robles, 2016). The new board included ten members, of which four were independent, three were from government and one was appointed by the CFE union (Vietor & Sheldahl-Thomason, 2017).

As a way of ending CFE's monopoly, SENER authorised its division into ten separate enterprises: six energy generating companies, one transmission company, one distribution company, a regulated retail firm and a large customer-oriented retail firm (Vietor and Sheldahl-Thomason, 2017). Later, in 2016, distribution was further separated into 16 regional distribution subsidiaries (Robles, 2016). Each of the separate companies was appointed its own board of directors to avoid conflict of interest. However, they all have the same chairperson – the chairperson of the CFE board. The companies all remain under state ownership but were transformed into productive, for-profit enterprises.

In 2016, SENER promulgated the terms of the legal separation of the new CFE subsidiaries. Under the new structure, SENER highlighted specific timeframes after which the new entities, for example CFE generation entities, which participated in the wholesale market, were no longer allowed to share resources and information, in order to prevent conflict of interest (Bryner, 2016).

A New Regulatory Regime

In terms of regulation, SENER took on the responsibility for policy development and implementation, while the CRE became responsible for regulation. The newly established Centro Nacional de Control de Energía (CENACE), formerly a division of CFE, became responsible for managing the wholesale market by ensuring open access to the national transmission and distribution network (Alpizar-Castro & Rodriguez-Monroy, 2016). The independence of CENACE became the "cornerstone of Mexico's power sector reform" (Robles, 2016, p. 13), as its role was

essential in enhancing efficiency in a sector dominated by a vertically-integrated utility for decades. Its financial skills and material capacity were therefore critical to the success of the reform. Shortly after CENACE's creation, human and material resources were transferred from CFE to CENACE, to allow it to fulfil its mandate. These resources included more than a thousand employees, two national control centres, eight regional control areas, information technology infrastructure, real estate, vehicles, service contracts and insurance policies. (Robles, 2016).

The Electricity Industry Law set out the "Market Rules" for the establishment of the wholesale market. According to the Law, CRE became responsible for the design of the fundamental principles for operation of the market, including auctions. CENER, on the other hand, was tasked with setting up market directives, criteria, guidelines and operating procedures (Bryner, 2016).

Under the new regulatory regime, SENER replaced the CFE as the national grid-planning entity. Apart from setting the economic criteria for planning grid expansion, such as energy demand and growth projections, SENER also became responsible for evaluating other aspects, such as opportunities for smart grid technology deployment, renewable energy implementation and proposals for expansion from various stakeholders (Robles, 2016). In addition, SENER was mandated to oversee the performance of CENACE, in collaboration with the CRE. Along with the Secretary of Treasury, SENER was also positioned to preside over the CFE board and therefore play a key role in its management and planning activities, including for its transmission and distribution subsidiaries (Ibarra-Yunez, 2015).

Since the reform, Mexico has launched three long-term auctions for electricity, which have attracted significant interest from private sector investors: a total of 19.8TWh of electricity was procured as a result of the three auctions (Nance, 2018).

Key Learnings

Mexico's reform provides one of the most recent examples of comprehensive, rapid and successful electricity sector restructuring. The ambitious reform was **championed by the newly-elected President** and was designed on the basis of a **solid policy framework, which involved changes to the Constitution, as well as the creation of new laws**. The government ensured that the policy changes were **underpinned by broader public acceptance and support**. This support was built on the basis of promises of lower prices, job creation and economic growth. It is important to note that such socioeconomic benefits take time to materialise and this needs to be communicated in advance to avoid misconceptions about failure of the reform based on its political promises.

A number of key actors played key roles in the success of the reform, including SENER and the CRE. **CFE was brought on board by clarifying from the outset that privatisation of its assets was not on the table and the SOE would maintain its role in the management and planning of the electricity sector**. A **strong regulatory regime** was a critical success factor in Mexico's case. It was designed to ensure accountability, transparency, and prevent the possibility of conflicts of interest. This was important for demonstrating to all stakeholders that decisions would be based on technical expertise and not political bias. Regulatory institutions were restructured accordingly and were **well capacitated** to fulfil this purpose.

Norway

Norway was amongst the first countries globally (after Chile and England) to restructure its electricity sector. It is a fascinating example, as its industry is highly efficient and competitive but large elements of the sector remain in public ownership.

Drivers and Rationale of Power Sector Restructuring

Before power sector reform was initiated in Norway in 1990, the Norwegian state-owned company Statkraft was the main electricity producer, owned 80% of the transmission network and held the rights for power exchange with neighbouring countries. The company used its position to implement social and industrial policy in the country. Regional and local authorities also played significant roles in generation and distribution, increasing the share of public ownership of these activities. In addition to Statkraft there were many vertically-integrated utilities which served customers in their direct territories. Given the central role of Statkraft and vertical integration between generation, transmission and distribution, there was no clear differentiation between these activities. The main motivations for reform of the power sector in Norway, which started in 1990, was to separate generation, transmission and distribution, and by so doing **enhance competition in generation, expand trade in electricity across borders, and improve the efficiency, flexibility and cost effectiveness of system operation** (Gjerde, 2002; Magnus, 1997; Woo, Lloyd, & Tishler, 2003).

Governance of the Reform

The first stage of power sector reform of Norway took place in 1986 when the power utility Statkraftverkene, was separated from the regulator Norwegian Water Resources and Energy Directorate (NVE). But it was in 1990 that the Energy Act, proposing major reform of the sector, was presented to Parliament shortly after the new government came into power. The new Minister of Petroleum and Energy, Eivind Reiten, playing the role as policy entrepreneur along with a team of supporting researchers, made the case for the new Act and for a transition towards a nationwide market-based electricity system. Because of the **timing and the work of policy champions such as the minister, the legislation which represented major reform for the sector was passed quickly, before opponents of reform were able to resist** in an organised way. In 1991 the Energy Act came into force (Askim & Harald, 2011).

To meet reform objectives the Act sought to establish power markets, facilitate third party access in the network, separate market and network activities and enact **deregulation without privatisation** (Ylvisaker, 2001). One of the first steps in the reform process was splitting the state-owned utility Statskraftverkene into two independent state-owned enterprises, Statnett SF and Statkraft SF. Statnett was mandated to own and operate the transmission power grid as a monopoly. State-owned power plants were transferred to Statkraft which became responsible for generation of these power plants in competition with other generators such as municipalities and private companies. In 2004, Statkraft SF, then a state-owned enterprise was converted to a state-owned limited company (Statkraft AS) (Askim & Harald, 2011).

NVE was established as the energy regulator under the Ministry of Petroleum and Energy, and the Energy Act **increased the responsibility and authority of the regulator to oversee the development of the sector specifically to regulate the natural monopolies of transmission and distribution** and to price their services (Gjerde, 2002). The new Act stipulated that the **accounting systems and procedures of companies and utilities were to meet the requirements of the Companies Act.** This included utilities being separated into divisions with separate accounting systems to differentiate monopoly activities and those subject to competition. **NVE also introduced a rate of return regulation on income from transmission activity** (Magnus, 1997). Principles of common carriage to networks and point tariffs were introduced as part of the reforms, which allowed consumers to purchase power in bulk power markets, and transmission tariffs were introduced for producers for the power supplied to the grid, and for consumers for the power taken for the grid (Magnus, 1997).

Modalities for Restructuring

The role of Statnett

The choice of system operator type was one of the key features of reform, with Norway and all other Nordic countries opting for Transmission System Operators (TSOs) rather than ISOs which are popular in other parts of the world, given that **TSOs offer more instruments for control over the operation of the electricity system**. While an ISO has system or ancillary services, as well as transmission pricing, to carry out its mandate, **TSOs have the additional tools of grid utilisation and new grid capacity, giving a TSO more options and better equipping it to respond to long-term changes in production and consumption patterns and to ensure optimal performance of the grid** (Askim & Harald, 2011; Gjerde, 2002; Magnus, 1997).

Statnett SF had the responsiblity to facilitate market efficiency, provide non-discriminatory access to transmission for all market players, to manage system imbalances and losses, to assist in establishing power exchanges and to provide cost-reflective services that support socio-economic objectives (Gjerde, 2002).

Markets for electricity trade

Different marketplaces have been established for the trading of electricity. The spot market is responsible for a growing share of electricity traded and is for immediate deliveries to the grid, which is organised by Statnett Market, a subsidiary Statnett SF. The market for regulated power is mainly **a strategy to respond to the changes that arise in the planned production and consumption** bringing about the need for adjusting the production of the system. The weekly market is a futures market and individually negotiated bilateral contracts are responsible for the majority of electricity exchange in Norway (Magnus, 1997).

Nordpool

A feature of the Norwegian experience was that it was not only focussed on reforming the sector nationally, but was part of a **larger effort with neighbouring countries to establish an efficient power pool**. This has been a key contributing factor to the success of reforms in Norway.

The power pool (Nord Pool) is an integration of Norway, Sweden, Finland and West Denmark markets, with each grid company providing system operation. The TSOs from each country are equal owners of Nordpool (Woo et al., 2003).

Although there are **no plans to privatise state-owned entities, private ownership is found in all segments of the Norwegian electricity industry**. In generation, for example, local and regional authorities own 52% of generation capacity in the country, central government (Statkraft) owns 36%, while private companies 12% (Askim & Harald, 2011).

Key Learnings

Although private participation has increased in the power sector in Norway, utilities are still predominantly publicly owned and privatisation of these is not on the horizon. **Norway has achieved efficiency improvements without privatisation of public utilities although private sector participation has increased in the sector.** The Energy Act provided the legal framework for establishing a **competitive market and attracting private capital**. Establishing a **strong regulator** which was able to develop and enforce new regulation was important for increasing competition and regulating natural monopolies. **Unbundling made competition possible** in generation and retail and **improved the transparency and performance** of transmission and distribution. The TSO, Statnett, ensures **open access to all grids** as well as efficient operation of the grid. Benefits of reform include: **reduction in prices** for consumers, service improvements, a **more cost-efficient and flexible operation** of the power system, and a reduction in over-capacity. Price determination is done through competitive markets for generation and retail, and through the regulator for transmission and distribution networks, which has achieved efficient and cost-reflective tariffs. The shift to a market-based electricity system has led to the restructuring of public utilities out of the necessity to remain competitive (Askim & Harald, 2011; Gjerde, 2002; Magnus, 1997; Woo et al., 2003; Ylvisaker, 2001).

Turkey

Turkey's energy reforms, which began in the 1980s, can be divided into two phases. The first phase involved opening up the electricity sector to private sector involvement in the 1980s and 1990s; the second phase, which began in 2001, instituted major market-based reforms and competition (World Bank, 2015). The Turkish energy sector is characterised by growing demand, one of the fastest among OECD members, and a dependency on imports (Ministry of Foreign Affairs, u.d.).

Key Drivers of Power Sector Restructuring

The first phase of Turkey's energy sector reforms was a result of an **overall macroeconomic policy shift towards a liberal market economy in the early 1980s**, following a period of political turmoil and economic crisis (World Bank, 2015). Other key drivers of the initial power sector restructuring were the government's urgent need for power sector financing, including the latest skills and access to the latest technology, as well as a desire to improve economic efficiency. However, constitutional barriers during the first phase led government to promote **private-sector participation without full privatisation**. Turkey's Constitutional Court upheld the view that electricity was a public service which the state should provide (Cetin & Oguz, 2007).

Central to the view upheld by the Constitutional Court was the court's interpretation of the notion of public interest which was the decisive factor in its rulings on privatisation cases (Ulusoy and Oguz, 2007). While in Economics literature, it is regarded as a dynamic process where society migrates to a higher level of welfare, from a lower state, the legal interpretation uses it in a static manner with a focus on providing basic services (Benli and Benli, 2017). The tension between these opposing interpretations and a lack of a supportive legal framework contributed to some of the delays in Turkey's electricity market reforms.

An external driver of the second phase of the reforms was the aim to liberalise the electricity sector in order to harmonise with European Union (EU) laws and promote international cooperation (Balat, 2006). Liberalisation of the energy sector was a necessary precondition for Turkey's longer-term objective of EU membership (Cetin & Oguz, 2007; Erdogdu, 2007).

The primary domestic drivers were **macro and fiscal issues, as well as the government's desire to ensure energy security**. The economic and financial crisis of 2000-2001 brought to light fiscal problems and an inability, on the part of the government, to raise the necessary public funds for new generation facilities in order to increase the supply of electricity to meet demand. The fiscal issues were partly driven by the poor performance of state-owned companies and the dominance of politically motivated decision making over economic efficiency (Cetin & Oguz, 2007; Erdogdu, 2007; World Bank, 2015). Although the government sought to reduce dependence on imported energy and ensure security of supply and low-cost electricity to consumers (Arkasu, 2014), **the privatisation strategy was also motivated more by potential revenues in the form of investment, rather than the desire to instil healthy competition in the sector** (Reel, 2014).

Governance of the Reform

The Policy Framework

During the early reforms, the Energy Market Law (No. 6446) instituted in 1984 liberalised the energy market and abolished the monopoly held by the Turkish Electricity Authority (TEK) SOE. The government promoted private sector participation for the generation, transmission, distribution and trade of electricity through a set of public private partnership models: the build-operate-transfer (BOT), transfer of operational rights, and auto production models. The BOT model involves the financing, building and operation of an asset (e.g. power plant) by a private company, with the output (electricity) being sold to a public entity under a long-term agreement. The asset is transferred to the State at the end of the contract period. The Transfer of Operational Rights (TOOR) model provides for the transfer of the operational rights of public assets to private management for the duration of a TOOR contract. In the auto-producer model, private industrial companies can own and operate power plants for their own electricity needs (World Bank, 2015).

The same law also split TEK into the Turkish Electricity Generation and Transmission Company (TEAS) and the Turkish Electricity Distribution Company (TEDAS). The law did not, however, provide adequate clarity to investors about how to implement the different models proposed, limiting potential investment.

Subsequent laws, such as the 1994 BOT Law (No. 3996), provided clearer market signals of the government's commitment to the reforms, providing sovereign guarantees for TEAS's payments under power purchase agreements. Both foreign and local investors responded positively. The Ministry of Energy and Natural Resources (MENR) and TEAS received over 200 project proposals from prospective investors, which, if built, would have tripled Turkey's generation capacity. Of these, 24 BOT contracts were finalised, which added a total of 2,450MW of generation capacity to Turkey's electricity market (World Bank, 2015).

However, constitutional barriers remained. The Constitutional Court still held that the generation, transmission and distribution of electricity was a public service. As such, while the BOT Law was able to provide clearer market signals of the government's commitment to the reforms and was met with an overwhelmingly positive response from the private sector, arrangements for the private generation of electricity had to be in the form of a concession under public administrative law. The process of granting a concession can be quite lengthy and involves multiple government agencies, including Turkey's Supreme Administrative Court, which was responsible for approving contracts (Vagliasindi and Besant-Jones, 2013). In addition, because concessions were subject to public law (because they were agreements executed to procure public services), investors who concluded BOT contracts under this legal framework had no recourse to international arbitration (Atiyas and Dutz, 2004). Turkish administrative law also requires the Danistay's (Council of State) opinion on all public service concession contracts prior to their finalisation. The same institution also plays a judicial role in resolving disputes between the government and private investors (Ulusoy and Oguz, 2007).

These issues were addressed through a constitutional amendment passed by the Turkish Parliament in August 1999. The amendment allowed for the provision of public services through private law

contracts, including international arbitration in concession contracts. Further to this, the advisory role of the Danistay was limited to that of offering a non-binding opinion on concession contracts (Ulusoy and Oguz, 2007).

Later reforms, in the second phase of Turkey's energy market restructuring, were underpinned by the Electricity Market Law (No. 4628) of 2001, which established a stronger legal framework for the sector, and defined the institutional structure. For instance, the EML established the Energy Market Regulatory Authority (EMRA), an independent regulatory body, which, together with the Ministry of Energy and Natural Resources provide policy and regulatory oversight for Turkey's energy sector (including electricity, natural gas, liquefied petroleum gas and petroleum markets). EML of 2001 also established the Turkish Electricity Transmission Company, as a successor of TEAS. The Energy Market Regulatory Board was responsible for overseeing the activities of the Turkish Electricity Transmission Company.

Leading and Managing Power Sector Restructuring

For the effective implementation of Turkey's privatisation programme, MENR and EMRA collaborated as administrators while the Ministry of Finance and the Privatisation Administration worked together to effectively implement the privatisation programme. Turkey's Competition Authority also played an important role in the reform process, particularly during the market design and privatisation process (World Bank, 2015). In particular, it contributed to increasing the competitiveness of the electricity sector through its proposals for the unbundling of distribution and retail supply as well as its decisions on market share during the privatisation process.

EMRA, financially and administratively independent from the state budget, is governed by the Energy Market Regulatory Board, consisting of nine members, each appointed by the President to a six-year term by the Council of Ministers. The law prohibits the board members from being dismissed before the expiry of their terms of office. This allows them to exercise their duties freely, with operational autonomy. The regulatory authority funds its activities through licensing fees charged to the energy industry (Erdogdu, 2007; World Bank, 2015).

The Public-Private Infrastructure Advisory Facility (PPIAF), a multi-donor technical assistance facility has been involved in increasing private participation during Turkey's reforms to its energy sector. This was in the form of PPIAF-funded consultants providing regulatory advice to the government on establishing an independent regulator and drafting secondary legislation to support the implementation of the 2001 EML (PPIAF, 2012). In 2003, the PPIAF provided further assistance by developing the Electricity Sector Reform and Privatisation Strategy. The plan was a blueprint for further electricity sector reform and also sought to build consensus among multiple stakeholders, including the Treasury, MENR, EMRA and Privatisation Administration (PPIAF, 2012). A number of stakeholder workshops were held to further consensus-building among the stakeholders as well as disseminate the consultants' findings. Through the plan, the Turkish government also received assistance from a panel of independent international experts.

The New Structure of the Power Sector

Following the initial unbundling of TEK in 1984, into a separate transmission company (TEAS) and a distribution company (TEDAS), the 2001 EML further unbundled TEAS into the components of:

transmission, wholesale and generation (World Bank, 2015). This was in line with the principle of unbundling market activities and was overseen by the Energy Market Regulatory Board. A few years later, TEDAS was restructured into a holding company with 20 regional subsidiaries in order to action the 2004 Electricity Strategy to privatise distribution (World Bank, 2015).

In 2013, a new electricity market law (No. 6446) was enacted which furthered energy sector reforms by separating the market operator from the system operator, establishing an energy exchange and an intra-day power trading platform. This was important because it generated price signals for future investment, an important component of promoting competition. It also privatised generation assets and removed auto producers' status for private generators (Senerdem and Akkemik, 2016). The 2013 EML preserved the transmissions structure put in place by the 2001 EML.

Turkey's energy sector reforms have resulted in a more competitive, largely privately-owned power sector. Approximately 100 percent of the total population had access to electricity in 2016, compared to 62 percent in 1990. The number of connections doubled from 13 million to 27 million between 1990 and 2009 (Vagliasindi and Besant-Jones, 2013; World Bank, 2019).

Key Learnings

Turkey's energy sector reform highlighted the importance of having a functioning legal system and an independent judiciary, along with government commitment and support, to establish and support a robust legal and regulatory framework necessary for reforms. A key lesson from the first phase of the reforms was that **a strong legal basis is an important prerequisite for comprehensive reform**s (World Bank, 2015). A strong legal framework is also important for ensuring that property rights are protected and that potential investors have adequate clarity to inform their decision-making.

In addition, collaboration and risk-sharing between successive governments, public institutions and state-owned energy companies as well as Turkish investors and financiers was crucial. Turkey's energy reforms were initiated in the early 1980s and the country's energy sector is still undergoing transformation today, over 40 years later**. Energy reform can be a drawn out iterative process that requires sustained determination and a long term vision on the part of its implementers.** Stakeholder engagements and other participatory processes can be used as tools to build consensus among relevant stakeholders during the reform process.

The existence of influential external reform drivers was also key. In the case of Turkey, **the prospect of accession to the EU acted as an anchor to Turkey's modernisation process**. In addition to the domestic driving forces for energy reform, external reform drivers provided further impetus to spur on change.

Ultimately, Turkey's energy sector, as envisioned by the EML, would be one where the government plays a supervisory and regulatory role, with a competitive electricity market with private players, except in the case of transmission.

India

The Indian power sector has a complex structure, with electricity falling under the jurisdiction of the central government, as well as the 29 state governments (Eberhard & Godinho, 2017). Power sector reform has been implemented to varying degrees in different states, with varying levels of success, resulting in several permutations of electricity sector structures between states across the country (Eberhard & Godinho, 2017; Mishra & Chaturvedi, 2017).

Drivers and Rationale of Power Sector Restructuring

Post-independence India was characterised by an increased role of government in economic decision-making, resulting in the **power sector becoming a key symbol and mechanism of government-led development policy** (Dubash & Rajan, 2002). However, following an economic recession in the 1980s, a **rethink of government's central role in economic planning stimulated a broad set of macroeconomic reforms**. Power sector reforms were driven by a highly problematic system that was bureaucratic, inefficient, and riddled with corruption, non-payment and electricity theft.

Under centralised governance, large infrastructural projects, such as dams, which Nehru declared "temples of India", were the main focus in terms of investment in the power system (Tongia, 2003). Underinvestment in other parts of the system lead to inadequate transmission capacity and increasing power outages (Mishra & Chaturvedi, 2017). In 1995 and 1996, transmission and distribution losses stood at 21% (Srivastava & Shahidehpour, 2002). The transmission sector, which was responsible for balancing the supply from regions with excess supply to those facing shortages, was failing to fulfil this objective and lacked the capacity to extend supply to areas not yet connected to the national grid (Chib, 2019).

The performance of SOEs, including State Energy Boards (SEBs), was heavily subsidised through government transfers, making SEBs "bastions of political patronage rather than true business enterprises" (Tongia, 2003, p. 6-7). However, the SOEs that dominate the Indian power system collectively were losing 5 billion dollars per year (Tongia, 2003). Three decades of below cost of supply tariffs compounded the financial insolvency of the power system (Tongia, 2003). The tariffs were often used as a political tool under the argument that electricity is a basic public good, which is critical for socioeconomic development. In reality, however, the majority of the population continued to lack access to the grid (Tongia, 2003).

High tariff subsidies and provision of free electricity, as well as the lack of metering in the agricultural sector, were also key drivers of the challenges faced by the power system. Providing affordable electricity for irrigation was an important component of India's Green Revolution support package, aimed at increasing agricultural productivity (Dubash & Rajan, 2002). This was a highly political decision in a sector which increasingly became a tool for populist politics, especially after the 1970s (Dubash & Rajan, 2002). Despite yielding some important lessons and significant successes, the power sector reform in India is not yet complete and challenges remain, with persisting shortages and the absence of full electrification (Chib, 2019).

Governance of the Reform

Power sector reforms were implemented in **three phases. The first phase resulted in the creation of rules by the central government encouraging IPPs, which was followed by the second phase that included the establishment of independent Electricity Regulatory Commissions (ERCs). The third phase of reforms emerged as the central government coordinated a national reform strategy** (Tongia, 2003).

First Wave of Reform: Introducing IPPs

Following the 1991 financial crisis, a newly elected minority government led reforms through a period of "disinvestment", which was politically more appealing than "privatization" (Tongia, 2003). This process was later institutionalised through the creation of a Ministry of Disinvestment.

The solutions pursued were immediate but partial, as they only focused on encouraging investment in additional generation capacity through IPPs, while addressing the inefficiencies of the SEBs was viewed as a long-term solution and politically unviable (Tongia, 2003). While the reform managed to attract some new generation projects, support for it was temporary and many projects were mired in controversy (Bhattacharyya, 2007). Though interest was expressed by IPPs for the addition of 95 GW of new capacity, only 6.5 GW was actually added to the grid between 1992 and 2002 (Singh, 2006). **The implementation of more significant changes to the sector were hampered by the political environment,** as significant legislative changes were largely dependent on receiving consensus support for such (Bhattacharyya, 2007), which was difficult to achieve by a minority government.

Second Wave of Reform: Restructuring of SEBs & Independent Regulation

In view of the persisting challenges of SEBs, several states then undertook steps to make them more efficient and self-sustaining. This period of reform was **largely driven at the state level, with no overarching plan by the central government**. **In this intellectual leadership vacuum, outside consultants, the World Bank in particular, assumed a large role**. The reform was focused on reorganising SEBs and creating independent regulatory bodies. The previously vertically-integrated utilities would be broken into generation, transmission and distribution entities. Privately-owned enterprises would be created where possible that would respond to commercial incentives to invest in sector growth.

In Orissa State, the first to commence reforms, restructuring was undertaken with financial and technical support from the World Bank and the UK development agency (DFID). The **reforms were strongly supported by the Chief Minister of the state, but the World Bank remained the key driver of the process** (Dubash & Rajan, 2002).

An assessment conducted by the consultants, reported **low underlying technical, institutional and commercial capacity** of the system, and recommended that a single-buyer model be implemented as opposed to a model of wholesale competition (Dubash & Rajan, 2002). In developing the approach to unbundling, the consultants also had to take into account the impact on employment, in order to ensure that unions did not oppose the reform (Dubash & Rajan, 2002). Despite **some opposition to the dominant external influence**, due to the international consultants' perceived inability to understand the local context, their proposals were not

substantially modified by national stakeholders, mainly due to a lack of local experience with private ownership and competitive electricity markets (Dubash & Rajan, 2002). The reform was **managed by a number of working committees, overseen by a steering committee, which reported to the state Secretary of Power**. The management structure aimed to bring together stakeholders from government, the SEB and the international cooperation community. Stakeholder consultation processes were undertaken in order to **raise awareness and support for the reform among the public**. These processes were criticised for aiming to reduce tensions and solidify support for the proposed model, as opposed to evolving a model through a process of consultation (Dubash & Rajan, 2002).

Driving the reform model was the need to address the **independent operation of a highly politicised sector, which had been captured by vested interests.** The establishment of a regulatory commission was therefore a key aspect of the reform. The Orissa ERC was the first to be established, and one which set a high standard for transparency in the sector, taking specific measures to disseminate information through its website and hold public consultations, in which members of labour and consumer groups took part (Dubash & Rajan, 2002).

Despite some concerns around the perceived lack of transparency in designing the reform model, **Orissa became an example for other states in India in terms of implementing electricity sector reform, and learnings from the process were integrated in the restructuring of SEBs in other states** (Singh, 2006). The World Bank continued to play a key role in supporting states which wanted to undertake restructuring following Orissa's example (Dubash & Rajan, 2002).

In Andhra Pradesh an ERC was established and the SEB was unbundled. However, due to political reasons, privatisation was kept out of the reform model. Still, the state closely followed the World Bank model of restructuring and rapidly passed the necessary legislation, despite protests from the opposition (Tongia, 2003). Following these experiences, many states unbundled and corporatised their SEBs, but had to postpone any intentions of privatisation, as these were not politically acceptable (Singh, 2006).

Third Wave of Reform: Consolidation of State Level Reforms

In the late 1990s and early 2000s, **the central government took initiative to consolidate and coordinate the ongoing restructuring of electricity sectors at the state level**. The objective of this stage of the reform was to make generation, transmission and distribution more efficient and competitive by introducing organizational changes, regulation, private sector participation and giving the power sector independence from government control (Chib, 2019). During this phase, the Government of India (GoI) worked closely and in consultation with the states in establishing a national reform framework, acknowledging the difficulties that they faced in implementing reform (Mishra & Chaturvedi, 2017).

In 2003 the central GoI developed the **Electricity Act** to ensure competition at a wholesale and retail level in the electricity market, establishing the Central Electricity Regulatory Commission (CERC) (Mishra & Chaturvedi, 2017). The CERC was given the responsibility of increasing efficiency and promoting competition in the sector through regulating tariffs, interstate transmission and

advising on national tariff and electricity policies and planning (Sood & Sharma, 2014; Srivastava & Shahidehpour, 2002). The Act also aimed to promote efficient policies and make the sector financially viable (Chib, 2019).

The development of this Act was the **single most significant effort of the national government to coordinate the reform process and, contrary to the state-level reforms, was not driven by external forces but was very much a domestic initiative** (Dubash & Rajan, 2002). The Act required states to restructure SEBs, establish regulatory commissions and guarantee open access to transmission, while giving them some freedom in deciding on the ownership set up of their restructured sectors (Dubash & Rajan, 2002).

The restructuring model was then **scaled up through the provision of federal level legislation and initiatives focused on improving outcomes**, such as the Accelerated Power Development and Reform Program (APDRP). The APDRP was a funding mechanism which rewarded states based on performance in the electricity sector and as such caused shifts in the political economy of reform, "**offering visible carrots to actors within the states who sought reform but faced political opposition**" (Tongia, 2003, p. 50).

The provision of competition through open access to transmission was central to the Act. As such it was subject to an extensive consultation process in itself. CERC developed and published a concept paper on the open access regulations and held public hearings, which were attended by 45 interested entities, including State Electricity Regulatory Commissions, State Governments, Central Transmission Utility, Non-Government Organizations, industries and individuals (Khaparde, 2004).

In addition, the GoI undertook an **"aggressive" public participation process** in an effort to sensitise the public to the need for power sector reform, including web postings, media outreach campaigns and public hearings with a wide range of stakeholders totalling 2,100 roadshows (Tongia, 2003). Despite significant efforts by GoI to promote the awareness and understanding of the need for power sector reform, its **acceptability was hampered by political instability and opportunistic behaviour by political powers** (Bhattacharyya, 2007). The lack of political continuity in government was a key issue: the main share of governments which drove reform did not come back to power in following elections.

Modalities for Restructuring

Despite challenges in managing the reform process, as a result of the three waves of reform, all 29 states created independent energy regulators, 23 states undertook tariff reforms, **20 states implemented unbundling and/or corporatisation**, and 2 states privatised distribution (Eberhard & Godinho, 2017).

When the SEB was unbundled in Orissa, the restructuring resulted in two generation companies, one transmission company and four distribution companies (Bhattacharyya, 2007; Yadav & Jhala, 2016). This model was replicated in a number of other states. In many of these, a **separate transmission company was created**, which played the role of a state-owned single buyer. While licensing for generation activities was removed, transmission and distribution remained regulated as they were seen as naturally monopolistic activities (Bhattacharyya, 2007). One company was responsible for bulk supply and transmission, while distribution was divided up between several companies, which all held monopoly rights of supply in their areas (Bhattacharyya, 2007).

The Aspiration of Open Access

One of the key objectives of the 2003 Electricity Act was the **enhancement of competition and improvement of efficiency in the sector through the introduction of open access to transmission and distribution**. According to the Act, any licensee, consumer or a person who partakes in electricity generation must be granted non-discriminatory access to the national transmission or distribution grid (Khaparde, 2004). Despite full competition being the highest aspiration of the process, the reforms have resulted in a system which is more aligned with the single buyer model, with state-owned transmission companies at its heart (Tongia, 2003). **Open access continues to be hampered by technical feasibility in some transmission areas, as well as a lack of political will to fully implement it** (Mishra & Chaturvedi, 2017). The presence of a high cross-subsidy charge is another obstacle, making open access economically non-viable (Mishra & Chaturvedi, 2017). Transmission continues to be plagued by a lack of investment, which threatens the development of a wholesale market in India and puts open access at risk of remaining an aspiration on paper only (Singh, 2006).

Transmission at the National Level

Private companies have played a very small role in electricity transmission in India, despite private participation being allowed through the 1998 Electricity Laws Amendment Act (Singh, 2006). Only on one occasion, the state-owned Central Transmission Utility (the PowerGrid Corp. of India Limited), went into a joint venture with the private sector under a project aimed at importing power from the Tala hydroelectric project in Bhutan. **Transmission continues to be operated under a monopolistic model, with the Central Transmission Utility being responsible for the network at the national level**.

Key Learnings

Electricity sector reform in India was **driven as much by objectives to improve management, technical and commercial efficiency and financial viability** in the context of persisting challenges, as by contesting the politicisation of the sector and the government's full monopoly over decision-making. An economic recession followed by a financial crisis, triggered a rethink of the significant role of government in economic planning and drove a set of reforms, including in the power sector.

Political factors and public opinion took central stage in implementing the reform and were decisive factors throughout all three phases. Opposition to privatisation was a key barrier to full energy reform. This points to the **importance of obtaining positive public perception and support** at the outset of reforms. The possibility of implementing ambitious reforms during the first phase was hampered by the political environment, in which a minority government was not able to create consensus over significant legislative changes. The second wave of reforms was largely driven at the state level, with no overarching plan by the central government. In the absence of leadership by national government, outside consultants, the World Bank in particular, played a significant role in designing the reforms, which raised doubts about the transparency of the design process but provided crucial technical capacity.

The gradual, state-level reforms allowed for lessons from the reform of one state to be transferred to other states that subsequently undertook the reform process. Using Orissa as a pilot or testing ground helped reforms gain traction in other areas. During the third phase of reform, the **central government was the main driver of consolidating and coordinating the restructuring** through the introduction of the 2003 Electricity Act. The **legislation was a critical factor** in avoiding inconsistencies in state-level reform and establishing a national consensus on a unified process. The government utilised a strong legislative framework, as well as performance-based incentives, combined with an aggressive public consultation process to establish support for the reform process.

5

Key Lessons

In this section, we draw key lessons from the country case studies presented in Section 4. Noting that governance and modalities for restructuring are context specific, with different countries demonstrating varying experiences and outcomes, these lessons carry important learnings for South Africa in terms of designing, planning and implementing the restructuring of the national power utility and establishing an ITSO.

Drivers of the Reform

As the case studies reveal, while key drivers of reform vary between countries, there is a clear differentiation between the main factors in high-income countries, compared to developing ones. In high income countries, such as Norway, the process was driven by the understanding that separating generation, transmission and distribution, will enhance competition in generation, expand trade in electricity across borders, and improve the efficiency, flexibility and cost effectiveness of system operation. Power sector reform in low and middle-income countries, in contrast, was driven by poor performance of the electricity utility, characterised by underinvestment, corruption and financial instability, leading to supply crises and making the sector unsustainable in the medium to long term. Despite some differences, in all countries the unbundling of vertically-integrated utilities was seen as an important pre-condition for enhanced competition in power generation and improved transparency and performance of transmission and distribution.

In many cases, such as in the example of India and Mexico, electricity reform formed part of a broader set of macroeconomic reforms, often driven and supported by development cooperation partners. In India, the electricity sector was a highly politicised space, which was often used as a tool in the government's populist decision-making. The reform was therefore driven by an overall rethink of the role of government in economic and infrastructure sectors, including electricity sector development. In Mexico, renewable energy objectives also played a key role in the introduction of power sector reform, which was also seen as a key driver of the country's economic development and competitiveness. In Turkey, the aim to liberalise the electricity market in order to harmonise with European Union (EU) laws and promote international cooperation was an important driver of the second phase of reforms.

Across all countries, the need for reform of governance of the electricity sector and the lack of independent regulatory bodies was a common characteristic, which spurred a drive for introducing independent regulators as well as management autonomy in national utilities and competition, especially into the generation space.

Institutional Capacity and Sequencing of the Reform

Power sector reform is a long-term undertaking, which takes years to implement and institutionalise, and for outcomes to become visible. In many countries, such as Kenya and India, the process was undertaken in several phases and has not yet been fully completed. The case studies demonstrate a clear need for a coherent framework for implementation, with clear steps and timelines to guide the sequencing of the reform. This is especially necessary in countries such as India, where the institutional and technical capacity needed to implement a full reform, including the introduction of a wholesale market for electricity, was not initially in place. The experience of reform in Kenya has demonstrated the importance of a long-term approach and the need for the process to be responsive to the constantly changing context. In such cases, capacity assessments were an important starting point, which assisted in setting viable and realistic objectives of the reform. The political and socioeconomic context are also important factors, which need to be taken into consideration during the reform design process, noting that "one-size-fits-all" approaches, such as the World Bank Standard Reform Model, are not applicable to all country contexts.

The unbundling of state utilities and the creation of an ITSO was often the first and most important structural step towards introducing competition into the sector and stimulating investments in new generation capacity. This is because it guarantees open access to the national grid for both public and private actors, who engage in electricity generation. A gradual implementation of the reform enables a learning-by-doing approach, such as the case of India, where the first experience of state-level reforms served as a pilot and yielded many important lessons for other states to take into consideration when undertaking the process.

The Role of Government & Champions of the Reform

The international experience as presented by the six case studies shows that unbundling processes require a proactive government. Even in cases where external international cooperation partners have driven or were deeply involved in the design and implementation of the reform, the government played a critical role in driving the restructuring and ensuring political and public buy-in. In both Mexico and Uganda, the President and Ministers of Energy played a key role in reinforcing commitment to reform and demonstrating political will for transformation. The role of the government is especially crucial in terms of developing the underlying policy and legal framework to guide the reform. This has been an important first step in the experience of all countries studied in this report. In the case of India, the central government was instrumental in consolidating and coordinating the process of restructuring through introducing the 2003 Electricity Act. The role of the government was instrumental in ensuring that inconsistencies are avoided in how reform is implemented across different states. There are a number of mechanisms which the government can utilise in order to build a solid foundation for the implementation of power sector reform, including a coherent legislative framework, a comprehensive stakeholder engagement process, which aims to take into consideration the views and concerns of all key stakeholders from the onset of the reform, and performance-based incentive programmes, such as the APRDP in India.

A number of countries have benefitted from having a champion as a driving force behind the reform process. In Uganda, the reform champion, in the form of the Permanent Secretary of MoFPED was instrumental in implementing the necessary changes and ensuring that the country's domestic objectives in terms of power sector development were met. At the same time, he worked closely with the international cooperation community, which provided important technical support along the way. The second wave of reform in Kenya reinforces the importance of a reform process driven by a domestic champion, especially with regards to making the necessary changes in policy and regulation. In Mexico, it was the driving force of the President that ensured the development of a solid policy framework, which involved Constitutional changes and the creation of new laws.

The Role of External Actors

The lack of leadership from national government risks creating a vacuum for external actors to become important drivers of the reform, such as in the case of India in the earlier stages of reform. The learnings from the six case studies show the potential usefulness of the involvement of external actors, especially as providers of financial and technical support, especially in cases where local capacity is low. However, their role in the process needs to be carefully managed. In Uganda, the international cooperation community was instrumental in building the capacity of the domestic electricity sector to implement the restructuring process through providing technical support. Kenya's experience, however, highlights the limitations of a process driven by international actors. While they were instrumental in putting the reform on the political agenda, in line with global electricity sector reform, the process was met with pushback from local actors, due to the fact that it was seen as imposed by external forces. Where external actors are involved in the design of the reform, it is important that this process is carefully managed, with a comprehensive public consultation process, which ensures that domestic objectives and perspectives take priority. The Indian experience clearly demonstrates that imported solutions are not a recipe for success. While it is important to take into consideration global trends in energy sector reform, it is also critical to establish locally acceptable solutions, which take into account the local context and capacity.

Policy, Legislative and Institutional Reform Framework

All country experiences indicate the importance of a coherent policy framework which underpins and guides the process as a critical pre-condition for successful reform. This is the first and critical step towards creating an enabling institutional environment for the reform process. In many of the country examples, the creation of a legal framework which stipulates the need for reform and guides the process emerges as a key success factor of the reform. Following the establishment of a legal framework, which stipulates the selected reform model, an implementation plan should be put in place, which provides clear, viable steps for taking the reform forward and defines timelines. This is illustrated by Turkey's experience, where initially potential investment in generation was limited due to the lack of clear implementation steps within the legal framework and a resulting lack of clarity among investors about how to take advantage of the different models proposed. A coherent policy framework, which also sets out a clear implementation plan, is critical for policy certainty and

sending the correct market signals to attract private investment. Once Turkey was able to establish a comprehensive policy framework, this was met by great interest from the private sector.

In addition, several countries have either created new institutional bodies which were responsible specifically for overseeing implementation or assigned existing institutions to this task, after strengthening their capacity to play such a role. In some cases, such as the case of Uganda, where the electricity reform was part of a broader macroeconomic reform, these structures were linked to the government's overall push for private sector participation. In Uganda the oversight role was played by the newly established Privatisation Unit at MoFPED.

The establishment of independent regulatory institutions, to oversee the performance of the sector during and post reforms emerges as an important factor for success. A strong independent regulator is critical for increasing competition and regulating the natural monopoly activities of transmission and distribution post unbundling of vertically-integrated utilities. Norway's focus on increasing the responsibility and authority of the regulator to oversee the development of the sector and fulfil these responsibilities demonstrates this clearly. A strong regulatory regime was also a critical success factor in Mexico's reform experience. A well-capacitated regulator was seen as central to ensuring accountability, transparency and to prevent the possibility of a conflict of interest. It was also the main mechanism for ensuring that decision making in the electricity sector would be based on technical expertise and the sector would not be used as a tool for politically driven actions.

Building Political and Public Support

The electricity sector is a highly politicised space, where political factors often become major drivers or barriers of power sector reform, while good governance is essential for reform implementation. Political support for the reform process is imperative, while political interference compromises technocratic power planning processes. The case studies have provided several examples of experiences where the reform process can be impeded by political conflict or lack of political support. In India, political factors took central stage and were decisive factors throughout the reform process. During the first phase of the reform, the extent to which the government was able to implement the necessary legislative changes was impacted negatively by the presence of a minority government, which struggled to reach consensus over critical underlying issues. India's experience also speaks of the negative implications of a lack of continuity of the reform process when governments change after elections. Turkey's example illustrates the importance of collaboration and risk-sharing between successive governments.

The prospect of privatisation of state-owned utilities, which provide basic public services, emerged as an especially contentious issue. Opposition to privatisation from within government, SOEs and the public has been a key barrier for the full implementation of planned reforms. Even in cases where privatisation was not the intended outcome, the lack of clear communication of the objectives of the reform brought opposition to privatisation into play. India's experience has demonstrated the importance of communicating and managing perceptions and expectations in order to ensure political and public support from the outset of the reform process. In Mexico, the CFE was brought on board the process by clarifying from the very beginning that privatisation of its assets was off the table and the SOE would maintain its key role in the management and planning of the sector.

Raising public awareness and ensuring public support for the reform process has proven to be another critical success factor. Open processes, which include all key stakeholders, both from potential 'winners' and 'losers' in the reform process, are key to building broad-based support, ensuring feasibility and legitimacy of the reform. This requires that key actors be able to clearly articulate the benefits of the reform. In Mexico, the government ensured that the policy changes were underpinned by broader public acceptance and support, built on the basis of promises of lower prices, job creation and economic growth. It is important to note that such socioeconomic benefits take time to materialise and this needs to be communicated in advance to avoid misconceptions about failure of the reform based on its political promises.

At the same time, public support requires a comprehensive process of consultation and consensus building. If the importance of public support is underestimated, this can often lead to deadlocks in the reform process. Key stakeholders from across the power sector and beyond it, need to be brought into the conversation, including during the design process, and the objectives need to be clearly communicated. It is especially important to engage with affected employees at the level of the public utility, as the example of Uganda illustrates. Electricity sector reform is a process of transition which has far-reaching consequences, which need to be carefully managed, in collaboration with key stakeholders. Understanding the importance of this aspect, Turkey developed a specific transition plan for electricity sector reform, which became a blueprint for implementation and sought to build consensus among multiple stakeholder groups.

Structure of the New Entities

Out of the six countries studied in this report, five countries (Uganda, Kenya, Turkey, Norway and India) established ITSOs and only Mexico went further to create a separate ISO. In the case of Uganda, the single-buyer unit within the ITSO was ring-fenced under a separate unit. Predominantly, transmission assets and operation were left under the control of the state, with only one instance of a private transmission concession in India. In Mexico, the new entity was allowed to enter into bilateral agreements and joint ventures with the private sector, as needed, which intended to ensure that investment in the maintenance and operation of grid infrastructure would be maximised. Transmission is considered a naturally monopolistic activity and as such, the introduction of private sector participation is not seen as a viable option. The corporatisation and establishment of an independent board of directors for the new entities emerged as an important factor in ensuring the independence of the new transmission entities and their ability to promote competition. Oversight by the Ministry of Energy and the regulator was instated in many of the example country cases.

6

Recommendations

In this section, the report makes recommendations for the restructuring process of South Africa's national power sector, based on the key lessons from the case studies. The recommendations take into consideration the country's socioeconomic and political context, as well as its previous experiences in power sector reform, as outlined in Section 3. The recommendations propose concrete next steps that South Africa needs to undertake in the short to medium term, noting that the reform process should be an incremental and iterative process, and learnings from experience should be reintegrated into the implementation as the reform unfolds.

Clarify the Drivers and Goals of the Reform Process

The first and most important step in the entire reform process will be to clearly articulate what the drivers and goals of power sector reform are. In the South African context, the reform process is driven as much by the operational and financial crisis at Eskom, as by the need to ensure transparency and competition in order to attract investment in electricity generation and to embrace the innovations apparent in the global energy transition. **Setting out the reform drivers and goals from the outset and communicating these clearly with key stakeholders and the public will lay the foundations for increased awareness around the need for reform**. Clarifying these drivers and goals will also help in identifying the concrete and politically feasible steps which need to be taken in the short to medium term in order to achieve the desired objectives. It will contribute towards building political will and support, which is instrumental in establishing the policy framework for reform.

Build Political and Public Support

Active stakeholder engagement from the very outset of the restructuring process is recommended. Beginning with raising awareness about the drivers and objectives of the reform, both political and public support are contingent upon the clear communication of all of its aspects. **We recommend that a team of communications and stakeholder engagement specialists is assigned to the task of running a campaign, which will actively advocate for the reform and manage media relations, communications and engagements with the key impacted stakeholders.** This team will need to be involved throughout the process of the reform, starting with its design and will need to be well resourced and embedded into the process early on. The team will engage stakeholders across all social partner groups - government, business, labour and civil society – and with Eskom, the broader electricity sector and beyond. It will communicate reform plans, while at the same time consulting with stakeholders and feeding back to the Reform Team the public's main concerns and priorities so that these can be taken into account during the process.

Positive engagement with utility employees around the employment impact of the reform and how these will be managed will be a critical success factor.

Create the Policy and Legislative Framework

Creating an enabling policy environment and putting in place the necessary legal foundations for restructuring will be important. Government needs to articulate its policies clearly and then create the legislative basis for institutional reform. The core framework for power sector reform is already present in the 1998 Energy Policy White Paper. It can, therefore, be used as a policy basis for initiating the reform. In addition, a series of statements from government that update the sector reform objectives, highlighting the urgency, and detailing how aspects of the reform will be implemented, is necessary. The policy framework and statements will be important in setting out the sequencing of reforms, especially around unbundling and the initial focus of creating an ITSO. It would clarify the functions of the ITSO, including the power generation planning, procurement and contracting functions, as well as open access provisions in the grid code. It will create an enabling environment and provide policy certainty which is a critical precondition for increasing investment in the generation space, which is an important objective of the proposed restructuring. Key drivers and objectives need to be clearly articulated in the underlying policy and legal framework.

The current proposed model for restructuring is largely in line with the one detailed in the 1998 Energy Policy White Paper. It is important for South Africa to consider updating the 1998 Energy Policy White Paper to incorporate learnings from previous attempts at reform (see Section 3), as well as learnings from international experience (see Section 4 and 5), as outlined in this report. A supporting legal framework is a crucial success factor, as has emerged from the reform experiences of various countries. However, such institutional changes often take time and it is clear that the need for restructuring the sector in South Africa is now urgent. **Given the risks posed by the lack of legislation, an incremental and iterative approach could be considered, which creates a momentum for reform and allows for undertaking the first steps immediately, in line with the President's announcements around splitting Eskom into three entities, starting with Transmission. With this in mind, policy and legal changes can be driven in parallel with the initial steps of reform, as they are expected to solidify the ongoing process**.

Reform Champion and Institutional Support

Clearly emerging from the case studies is that the role of a proactive government (or individual government leaders) is a key success factor for the reform process. A vertically-integrated utility with a monopoly over the electricity value chain does not have any incentive to drive restructuring of the electricity sector. **It is therefore crucial for the South African government to be a main driver of the reform process** and provide clear direction on the way forward. Continuing support by the President will play an important role as the process is initiated.

It is recommended that a reform champion, with a strong mandate from the President, be assigned to take the role of driving through the reform process. This role could be played by the **Chief Reorganisation Officer**, announced in the Minister of Finance's Budget

speech. The main responsibility of the CRO will be to ensure that the stakeholders are aligned and that the restructuring process is implemented in a timely and efficient manner and the key outcomes, as outlined by the government, are achieved. The CRO should report to the President and should preside over an Eskom Restructuring Committee which seeks to coordinate and align key government actors: e.g. the DGs of National Treasury, Public Enterprises, Energy as well as the CEO and CFO of Eskom, and the NERSA CEO. The CRO will also be supported by a well resourced army of legal, financial and management consultants, with dedicated workstreams to implement the reforms.

Strengthen the Role and Capacity of the National Energy Regulator

Emerging clearly as a learning from international experience is the key role played by independent electricity regulators in consolidating the reform process and its outcomes, in the medium to long term, through ensuring transparency, cost-reflectivity, open-access on the grid and competition in generation. **NERSA needs to be represented as a key stakeholder in the reform process.**

Electricity transmission is a natural monopoly which requires regulation. Therefore, NERSA will play an important role in ensuring the sustainability of the reform process and the sector as a whole in the medium to long term. The regulator will also be instrumental in ensuring effective competition at the generation level, by overseeing compliance with procurement and licensing processes. Another important aspect of NERSA's work will be to reduce the lack of information around the cost of electricity and tariff setting. In the longer term, later in the reform process, NERSA's role with regards to this aspect will become critical when distribution is subjected to restructuring as well. In order for NERSA to effectively play this role, its capacity needs to be significantly strengthened, with a focus on ensuring its support for the reform process.

The Process of Creating an ITSMO

The following recommendations refer to concrete steps in implementing the reform, with a specific focus on establishing an Independent Transmission System and Markets Operator (ITSMO).

Structure of the New Enterprises

As per the Eskom Sustainabilty Task Team recommendations and the President's announcements, the immediate first step towards structural changes in the electricity sector is unbundling transmission. **We recommend establishing an ITSMO that will manage an independent, state-owned transmission grid, combined with a systems operator and functions to include power planning, procurement and contracting.** The long-term electricity planning functions already sit within Eskom. **We recommend that the IPP office, which currently falls under DoE, be transferred into the ITSMO, in order to fulfil the contracting functions.** As a system operator, the ITSMO will also be responsible for developing medium term adequacy of supply reports. The combination between medium- and long-term electricity generation (and transmission) planning functions within the same entity will ensure a continuum in planning across the sector.

An independent transmission company is an important step towards ensuring open access to the national grid, as well as fair competition in generation (the conflict of interest of Eskom being both

a generator and single-buyer of power from IPPs will be removed). Transmission is also the obvious component of the electricity value chain to begin with, as the cost basis of the services provided is the most straightforward to establish and regulate. An independent transmission company will soon return to investment grade and access to private bond markets.

Governance of the New Enterprises

As stated previously, electricity transmission is considered to be a natural monopoly. With few exceptions, international experience indicates that despite restructuring of the utility, transmission assets and operations remain under public ownership and control. It is therefore **recommended that the proposed ITSMO remains a state-owned** and operated enterprise. Country reform experiences also tell us that the key to reduced costs of electricity lies in introducing competition in the generation space. **It is therefore recommended that mixed public and private ownership and operation is stimulated in electricity generation through furthering IPP procurement. We recommend that electricity distribution remains in public ownership and operation as well**.

Sequencing of the Reform

Given the operational and financial crisis currently looming over Eskom, the reform process needs to be carefully sequenced. For example, creating an ITSMO is likely to require several key steps. First, a shell subsidiary company needs to be incorporated under Eskom Holdings. A new Memorandum of Incorporation (under the Companies Act) can be established for this subsidiary company within days. This is a straightforward first step and will ensure that the reform momentum is under way. The ITSMO will have its own board of directors, which will be its main governance structure. **We recommend that the board reports directly to the shareholder as opposed to the Eskom board, in order to guarantee its independent operation and reduce the possibility of a conflict of interest**. Initially, this will be a shell company; systems, people, assets and debt will be migrated into the company over time. This process should be coordinated with the proposals for Eskom debt restructuring and re-financing.

External Support and Resources

External support will be required in the form of legal and management consulting during the setup of the new ITSMO. We recommend that clear Terms of Reference are drawn up immediately, detailing the aspects of the support required, so that the procurement process can be got underway as soon as possible.

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