



Policy Harmonisation, Regional Integration and Energy Security: The Participation of Independent Power Producers in the Sub-Saharan African Energy Sector

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Abstract

The United Nations Sustainable Development Goal Seven (SDG 7) promotes access to ‘affordable, reliable, sustainable and modern energy for all’. Sub-Saharan Africa is however characterised by high levels of energy insecurity. Regional integration is a way in which energy security in the region can be achieved through the sharing of resources, infrastructure and expertise. Electricity trade in Sub-Saharan takes place primarily through the Southern African Power Pool. The Power Pool consists of 13 member countries that import and export electricity across transmission infrastructure. Regional integration is however hampered by unreliable state-owned centralised grids. Many grids in sub-Saharan Africa do not have sufficient energy generation capacity for regional trade. Independent Power Producers (IPPs) promote regional integration and energy security by increasing a country’s energy generation capacity and diversifying its energy mix through renewable energy sources. Sub-Saharan Africa currently lacks a harmonised policy framework on the participation of IPPs in national energy markets. This thesis argues that a harmonised policy framework on IPP participation on a national level can increase electricity trade and energy security regionally.

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List of Abbreviations

ACER: Agency for the Cooperation of Energy Regulators

DRC: Democratic Republic of Congo

EU: European Union

IPP: Independent Power Producer

MDGs: United Nations Millennium Development Goals

SADC: Southern African Development Community

SDG 7: United Nations Sustainable Development Goal Seven.

Chapter One: Introduction

1.1 Introduction

The United Nations Sustainable Development Goal Seven (SDG 7) envisions the accessibility of ‘affordable, reliable, sustainable and modern energy for all’.¹ Sub-Saharan Africa is, however, plagued by high levels of energy insecurity and inaccessibility, notwithstanding the region’s abundant energy resources.² As a result, 607 million people in sub-Saharan Africa are without electricity access.³ Moreover, the percentage of the population with access to electricity often face an unreliable electricity supply.⁴

Regional integration is a means by which a reliable energy supply can be achieved.⁵ Regional integration in this context refers to the sharing of expertise and infrastructure through cross-border trade.⁶ Cross-border trade of electricity can assist countries to benefit from the region’s energy resource wealth.⁷

Over the past two decades, sub-Saharan Africa has made significant strides in regional energy trade, particularly with the inception of the Southern African Power Pool (hereafter referred to as ‘Power Pool’) in 1995.⁸ The Power Pool, created by the Southern African Development Community (SADC), aims to provide rural communities with electricity, while promoting a competitive and sustainable trade market within the SADC region.⁹ However, cross-border trade has been hampered by internal political instability and electricity shortages in centralised grids.¹⁰

¹ United Nations *Sustainable Development Goals* (2015) available at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> date accessed 20 March 2018.

² World Bank ‘State of Electricity Access Report’ (2017) 17.

³ Ibid.

⁴ World Energy Council ‘World Energy Trilemma’ (2017) 25.

⁵ Gaylor Montmasson-Clair & Bhavna Deonarain ‘Regional Integration in Southern Africa: A Platform for Electricity Sustainability’ (2017) Working Paper 5.

⁶ Ibid.

⁷ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 5.

⁸ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 5.

⁹ Southern African Development Community ‘Energy Monitor’ (2016) 43.

¹⁰ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al ‘The Energy Challenge in sub-Saharan Africa: A guide for Advocates and Policy Makers’ (2017) Oxfam 8.

The energy insecurity experienced through centralised electricity supply in sub-Saharan Africa gave rise to the emergence of Independent Power Producers (IPPs).¹¹ IPPs are privately-owned power projects which generate off-grid energy; and upon entering into contractual agreements with governments, transmit this energy to the grid.¹² While state-run energy networks in sub-Saharan Africa primarily utilise fossil fuels as energy resources, IPPs present an opportunity for renewable energy to contribute towards a more diversified energy mix.¹³

Unlike renewable energy, fossil fuel energy production emits greenhouse gasses into the atmosphere which results in global warming.¹⁴ Renewable energy promotes a sustainable energy supply.¹⁵ The diversification of renewable energy IPP participation can further enhance energy security by increasing a country's energy generation capacity.¹⁶ Energy generation capacity in this context refers to the maximum output of electricity that a country can produce.¹⁷ Countries with increased generation capacity can effectively engage in regional trade by exporting excess electricity through the Power Pool.¹⁸

This thesis aims to illustrate that the emergence of IPP's in sub-Saharan Africa, together with the benefits of regional integration, can serve as a potential pathway for the achievement of energy security in the region.¹⁹ The question at the heart of the current research project is: how energy security, as envisioned by SDG 7, can be achieved through the harmonisation of policies facilitating IPP participation in sub-Saharan Africa. It is argued that IPP participation can improve regional trade and therefore energy security by creating an increased energy generation capacity which can then be exported in the Power Pool.

¹¹ Anton Eberhard, Katherine Gratwick, Elvira Morella *et al* 'Independent Power Projects in Sub-Saharan Africa: Lessons From 5 Key Countries' (2016) 1.

¹² *Ibid* at 6.

¹³ Anton Eberhard, Katherine Gratwick, Elvira Morella *et al* *op cit* note 11 at 17.

¹⁴ Bharat Raj Singh & Onkar Singh 'Global Trends of Fossil fuel Reserves and Climate Change in the 21st Century' (2012) 174.

¹⁵ Elizabeth Gachenga 'Legal and Policy Frameworks for Climate-Friendly Energy Generation in Africa: Energy Security for Future Development' in Oliver C Ruppel & Bernd Althusmann (Eds) *Perspectives on Energy Security and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges* (2015) 131.

¹⁶ Southern African Power Pool 'SAPP Annual Report' (2005) 5.

¹⁷ Paul Breeze 'The Cost of Power Generation: The Current and Future Competitiveness of Renewable and Traditional Technologies' (2010) Business Insights Report 32.

¹⁸ Gaylor Montmasson-Clair & Bhavna Deonarain *op cit* note 5 at 13.

¹⁹ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw *et al* *op cit* note 10 at 9, 30.

1.2 Background

As stated above, sub-Saharan Africa often experiences unaffordable and intermittent electricity supply.²⁰ To mitigate the electricity crisis faced in sub-Saharan Africa, it is necessary to understand the role that SDG 7, the Southern African Power Pool and IPPs play in promoting energy security. SDG 7 provides countries in sub-Saharan Africa with a broad objective of striving towards a reliable energy supply. To achieve the goal set out in SDG 7, the Power Pool seeks to foster energy security through regional trade. Furthermore, the need for IPPs in promoting energy security has been catalysed by increased energy demand in sub-Saharan Africa. The section below discusses the above elements, providing a background to the concept of energy security envisioned in this dissertation.

1.2.1 Sustainable Development Goal 7

In 2015, the United Nations launched 17 Sustainable Development Goals (SDGs) in accordance with the 2030 Development Agenda.²¹ The primary aim of these goals is to create meaningful global targets for the eradication of poverty and combatting various socio-economic and environmental challenges currently faced across the world.²² The SDGs are the successors of the UN's Millennium Development Goals (MDGs). However, they provide targets for a wider range of global issues and place greater obligations on developing countries to make these goals realisable.²³ The SDGs are not legally binding, but various stakeholders including both the public and private sector are expected to take practical steps in implementing these goals.²⁴ Governments are tasked with achieving the SDGs through policy and legislative reform.²⁵

²⁰ World Energy Council op cit note 4 at 25.

²¹ United Nations *Sustainable Development Goals* (2015) op cit note 1.

²² Isabella Alloisio 'SDG 7 as an Enabling factor for Sustainable Development: The Role of Technology and Innovation in the Electricity Sector' (2018) 3.

²³ United Nations *Sustainable Development Goals* (2015) op cit note 1.

²⁴ Ricardo Pavoni & Dario Piselli 'The Sustainable Development Goals and International Environmental Law: Normative Value and Challenges for Implementation' (2016) 13 *Veredas Do Directo* 24.

²⁵ United Nations *Sustainable Development Goals* (2015) op cit note 1.

SDG 7 primarily concerns energy affordability, sustainability and security.²⁶ Energy affordability refers to the ability of a household to pay for energy services to meet their basic needs.²⁷ A sustainable energy supply involves the provision of energy services to present and future generations in a manner that is least detrimental to the environment.²⁸ This thesis focuses on the element of energy security, which refers to the availability of a continuous and sustainable energy supply.²⁹

1.2.2 Energy security and the Southern African Power Pool

This thesis endorses the idea that energy security can be achieved by regional trade through the establishment of interconnected networks, involving the sharing of expertise and infrastructure as well as the equitable allocation of costs and benefits amongst countries.³⁰ Countries with an excess electricity supply, as is the case of South Africa, can export electricity to other countries within the region.³¹ Similarly, countries with a supply deficit can import from other countries without having to rely solely on their domestic production capacities.³²

Regional electricity trade in the sub-Saharan African region occurs primarily through power pooling.³³ Power pooling is defined as co-operative relationships between members with respect to both energy generation and transmission activities.³⁴ Power pooling was created to minimise costs and ensure reliable energy supply.³⁵ There are currently four power pools in sub-Saharan Africa: The Central African Power Pool; West African Power Pool; East African and Southern African Power Pool.³⁶ This thesis focuses on the Southern African Power Pool given that it is the only fully operational power pool in sub-Saharan Africa.³⁷

²⁶ United Nations *Sustainable Development Goals* (2015) op cit note 1.

²⁷ Koen Rademaekers, Jessica Yearwood, Alipio Ferreira et al 'Selecting Indicators to Measure Energy Poverty' (2016) Trinomics Final Report 9.

²⁸ Marc A Rosen 'Energy Sustainability: A Pragmatic Approach and Illustrations' (2009) 1 *Sustainability* 58.

²⁹ International Energy Agency 'Energy Security' (available at <https://www.iea.org/topics/energysecurity/>), accessed on (2018/07/03) 27.

³⁰ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

³¹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 13.

³² Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 13.

³³ Southern African Development Community op cit note 9 at 19.

³⁴ Agathe Maupin 'Building a Regional Electricity Market: SAPP Challenges' (2013) Perisa Case Study 3.

³⁵ Ibid.

³⁶ Amy Rose 'The Role of Power Pools in Regional Energy Integration' (2015) 2.

³⁷ Southern African Power Pool 'SAPP Annual Report' (2015).

The Power Pool consists of 16 members from 14 countries.³⁸ The Power Pool facilitates electricity trade through the establishment of interconnected energy transmission power infrastructures.³⁹ Electricity is traded by national utilities across transmission lines between members of the Power Pool.⁴⁰ The primary aim of the Power Pool is to provide a platform for an organized energy network, which promotes reliability, stability and efficiency.⁴¹ Notwithstanding the establishment of the Power Pool, regional integration has yet to yield the desired results in terms of ensuring energy security within sub-Saharan Africa.⁴² The current inability of regional integration to achieve energy security can, in part, be attributed to the instability of centralised electricity supply within a country.⁴³

Electricity in sub-Saharan Africa is primarily supplied through centralised grid networks.⁴⁴ This model involves a state-run monopoly generating and transmitting power to a central national grid which then distributes electricity to the consumer.⁴⁵ However, national grids in the region currently have insufficient generation capacity and transmission networks to meet the region's growing electricity demand.⁴⁶ At the beginning of 2018 sub-Saharan Africa's collective generation capacity, consisting of 49 countries, was 100 gigawatts.⁴⁷ This can be compared to Spain, a single country, boasting a generation capacity of 104 gigawatts.⁴⁸

While state-owned grids have traditionally been the main source of investment for power generation, governments are increasingly unable to provide the finances needed to meet their countries' energy needs.⁴⁹ It has been estimated that it will cost \$40.8 billion a year to supply the electricity needed in sub-Saharan Africa.⁵⁰ Energy insecurity experienced in one central

³⁸ Southern African Power Pool 'SAPP Annual Report' (2017) 4. Member states: Angola; Botswana; Democratic Republic of Congo; Lesotho; Mozambique; Malawi; Namibia; South Africa; Swaziland; Tanzania; Zambia; Zimbabwe.

³⁹ Southern African Development Community op cit note 9 at 19.

⁴⁰ Southern African Development Community op cit note 9 at 19.

⁴¹ Southern African Power Pool op cit note 38 at 2.

⁴² Peace A Jiboku 'The Challenge of Regional Economic Integration in Africa: Theory and Reality' (2015) 5.

⁴³ Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 14.

⁴⁴ Paul L. Lucas, Anteneh G. Dagnachew & Andries F. Hof 'Towards Universal Electricity Access in sub-Saharan Africa: a Quantitative analysis of Technology and Investment Requirements' (2017) at 6.

⁴⁵ John O. Ifediora "Solving the Energy Poverty Problem in sub-Saharan Africa" Council on African Security and Development (2017) 1.

⁴⁶ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al op cit note 10 at 8.

⁴⁷ Jeremy E J Streatfeild 'Low Electricity Supply in Sub-Saharan Africa: Causes, Implications and Remedies' (2018) *Journal of International Commerce and Economics* 3.

⁴⁸ Red Electrica de Espana 'The Spanish Electricity System' (2017) 30.

⁴⁹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 5.

⁵⁰ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 5.

grid can have a ripple effect on trade across the region, as a country is no longer able to export electricity to members of the Power Pool.⁵¹

1.2.3 Increased energy demand and the rise of Independent Power Producers

SADC Ministers have acknowledged the need for an increased generation capacity, given the rapid growth in energy demand in the region.⁵² It is estimated that between 2000 and 2012, energy demand increased by approximately 35 per cent.⁵³ Furthermore, it is predicted that energy demand in the region will continually increase at an annual rate of four per cent.⁵⁴ The increasing trend in energy demand in sub-Saharan Africa can be attributed to various factors, including expanding economies as well as increasing urbanisation and industrialisation.⁵⁵

The participation of Independent Power Producers (IPPs) in the regional energy market has the potential of increasing grid capacity through the transmission of new power to the grid.⁵⁶ There are presently 126 IPPs in sub-Saharan Africa operating in 18 countries.⁵⁷ Collectively, the generation capacity of IPPs is 11.01 gigawatts and IPP investment in energy generation currently amounts to \$25.6 billion.⁵⁸ Of these 18 countries, South Africa alone has 67 IPPs with a generation capacity of 4.21 gigawatts.⁵⁹ While IPPs in sub-Saharan Africa are currently subsidiary to national utilities in respect of power supply, they have nevertheless in certain instances contributed significantly in meeting energy demand. For example, in Togo the first IPP in the country increased generation capacity by 67 per cent and in Uganda, the online launch of an IPP raised the generation capacity by approximately 30 per cent.⁶⁰

IPPs are now allowed to become members of the Power Pool,⁶¹ even though membership of the Power Pool previously had only been available to national utilities. The extension of Power Pool membership to IPPs is illustrative of SADC's commitment to increase regional generation capacity, and thus trade, through IPP participation.⁶² At present, only two IPPs are members of

⁵¹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

⁵² Agathe Maupin op cit note 34 at 4.

⁵³ Nkiruka Avila, Juan Pablo Carvalho, Brittany Shaw et al op cit note 10 at 25.

⁵⁴ Southern African Power Pool op cit note 16.

⁵⁵ Nadia S Ouedraogo 'Africa Energy Future: Alternative Scenarios and their Implications for Sustainable Development Strategy' (2017) 106 *Energy Policy* 457.

⁵⁶ Nkiruka Avila, Juan Pablo Carvalho, Brittany Shaw et al op cit note 10 at 8.

⁵⁷ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 14.

⁵⁸ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 14.

⁵⁹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 14.

⁶⁰ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 14.

⁶¹ Southern African Development Community op cit note 9 at 46.

⁶² Southern African Power Pool 'SAPP Annual Report' (2006) 5.

the Power Pool.⁶³ Other IPPs in the region participate in varying degrees in energy trade by selling electricity to national utility members of the Power Pool.⁶⁴

Thus far, a binding legal framework governing the harmonisation of regulatory frameworks, which facilitate the participation of IPPs in the energy sector, has yet to be developed.⁶⁵ Given the existing incoherent policy frameworks governing IPP participation in the Sub-Saharan African energy sector, there have been calls to re-establish the mandate of the Power Pool as not only a facilitator of regional integration but also a watchdog for policy harmonisation in the region.⁶⁶

Notwithstanding the provision made for the entrance of IPPs in the regional market, these entities are mostly governed by the internal laws of a country.⁶⁷ Sub-Saharan Africa thus lacks a harmonised regulatory system for IPP participation in regional cross-border transactions.⁶⁸ Policy harmonisation in this thesis entails the establishment of a legally certain framework across national policies to facilitate IPP participation in the sub-Saharan energy market.⁶⁹

1.3 Research Question and Motivation

While the Power Pool presently plays a key role in providing a platform for regional energy trade, it lacks the authority to enforce policy harmonisation at a national level.⁷⁰ The Power Pool merely serves as a facilitator and advisor on issues regarding cross-border electricity trade by creating regional policy objectives which members should endeavour to achieve.⁷¹ It is largely at the discretion of member states to determine whether and how these regional policies are to be incorporated into their national frameworks.⁷² As a result, the level of IPP participation within the regional energy market has differed from country to country.⁷³

⁶³ Southern African Power Pool op cit note 38 at 4. Hidroelectric De Cohora Bassa (Mozambique) and Lunsemfwa HydroPower Company (Zambia).

⁶⁴ Southern African Power Pool op cit note 38 at 4.

⁶⁵ Southern African Development Community op cit note 9 at 43.

⁶⁶ Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 40.

⁶⁷ Southern African Development Community op cit note 9 at 45.

⁶⁸ Southern African Development Community op cit note 9 at 30.

⁶⁹ Jose Angelo Estrella Faria 'Legal Harmonisation through Model Laws: The Experience of the United Nations Commission on International Trade Law (UNCITRAL)' (2005) 13.

⁷⁰ Southern African Development Community op cit note 9 at 20.

⁷¹ Agathe Maupin op cit note 34 at 4.

⁷² Agathe Maupin op cit note 34 at 4.

⁷³ Southern African Development Community op cit note 9 at 20.

This thesis seeks to evaluate how the harmonisation of policies facilitating IPP participation in the Power Pool will assist in achieving energy security in sub-Saharan Africa, as envisioned by SDG 7. Policy harmonisation in this respect refers to the standardisation of common regulatory frameworks pertaining to IPP's access and contribution to the regional energy market.⁷⁴

The motivation for this study is to ascertain how harmonised IPP participation in the sub-Saharan African sector can enhance regional energy trade and thereby alleviate energy insecurity in the region. As previously stated, a key challenge currently facing regional trade is unreliable electricity supply in central grids.⁷⁵ This can largely be attributed to a mismatch between energy demand and grid capacity.⁷⁶ IPPs serve as an important source of increased generation capacity, which can assist in ensuring that the Power Pool has a continuous excess generation capacity.⁷⁷ IPPs may also assist in mitigating energy insecurity through the diversification of the region's energy mix, particularly by introducing renewable sources of energy.⁷⁸ An incorporation of renewables into the energy mix can enhance energy security by mitigating the risks associated with fossil fuels.⁷⁹ Such risks include resource depletion and volatile price fluctuations.⁸⁰

1.4 Methodology

To ascertain whether policy harmonisation regarding IPP participation in the Power Pool will enhance energy security in the region, this thesis assesses the existing *status quo* regarding IPP participation and regulatory harmonisation within the Power Pool. The current regulatory framework in the Power Pool is examined, particularly the impact of the extension of the Power Pool's membership to IPPs. Furthermore, the Electricity Regulators Association of South Africa ('Regulators Association'), is evaluated with respect to the efficacy of the organisation in ensuring policy harmonisation across National Regulatory Authorities. Given that the Power Pool comprises various sub-Saharan African countries,⁸¹ it is beneficial to draw comparisons

⁷⁴ Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 4.

⁷⁵ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al op cit note 10 at 8.

⁷⁶ World Energy Council op cit note 4 at 4.

⁷⁷ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al op cit note 10 at 8.

⁷⁸ Power for All 'Decentralized Renewables: The Fast Track to Universal Energy Access' (2016) 1.

⁷⁹ Amy Michelle Rose 'Improving the Performance of Regional Electricity Markets in Developing Countries: The Case of the Southern African Power Pool' (Doctoral Thesis: Massachusetts Institute of Technology, 2017) 124.

⁸⁰ Ibid.

⁸¹ Southern African Power Pool op cit note 38 at 4.

between countries in respect of the rate and level at which IPPs are integrated into national energy markets. In turn, the impact of national IPP participation on regional trade is discussed.

The second part of this thesis seeks to establish whether policy harmonisation of IPP participation in fact has the effect of mitigating energy insecurity. This is answered by way of a comparative study with the European Union (EU). The EU is an apt case study in that just as SADC, the union serves as a regional trade block between several countries.⁸² Over the last three decades, the EU energy regulation market has made significant strides in energy market liberalisation.⁸³ Market liberalisation refers to the freeing of the energy market from national utility monopolies, allowing IPP's to enter the market.⁸⁴

This thesis analyses the EU's legal framework and the manner in which IPP participation in the energy market is regulated and overseen. Thereafter, the relationship between energy liberalisation and energy security in the EU is assessed. Lastly, the thesis draws on lessons learnt from the EU model and provides suggestions for potential reform in the context of the Power Pool.

1.5 Thesis Structure

Chapter One of this thesis serves as an introduction to the UN's SDG 7 and the energy insecurity crises currently plaguing sub-Saharan Africa. The chapter provides motivation for the manner in which regional trade can serve as a useful tool in mitigating energy insecurity in the region. The regulatory framework underpinning the Power Pool is discussed. It is however illustrated that due to unreliable state owned utility networks, regional trade has not yet produced the desired results in respect of the accessibility to reliable and affordable energy for all. The chapter thus suggests that IPP participation within regional trade can assist in enhancing energy security through increased energy capacity and diversification of the electricity mix.

Chapter Two focuses on IPP participation in sub-Saharan African sector both regionally and nationally. The regulatory framework underpinning the Power Pool is discussed. It is illustrated that due to unreliable state-owned utility networks, regional trade has not yet produced the

⁸² Livia Ilie, Alexandra Horobet & Corina Popescu 'Liberalization and Regulation in the EU Energy Market' MPRA Paper No 6419 (2007) 1.

⁸³ Ibid.

⁸⁴ Livia Ilie, Alexander Horobet & Corina Popescu op cit 82 at 15.

desired results in respect of the accessibility to reliable and affordable energy for all. The Chapter highlights the current regulatory framework regarding IPP membership in the Power Pool, particularly the Inter-Governmental Memorandum of Understanding. The chapter discusses regulatory authorities and the extent to which policy harmonisation takes place on a regional and national level. The way countries' policies assist IPP participation, and the impact of these policies on facilitating regional trade will be evaluated. The Chapter then concludes with recommendations regarding how policy harmonisation regarding IPP participation in the Power Pool can be achieved.

Chapter Three seeks to answer the primary legal issue raised in this dissertation, namely how policy harmonisation can assist in achieving energy security within sub-Saharan Africa. To achieve this, a comparative study with the EU will be conducted. The chapter will illustrate how the EU has liberalised its energy market through IPP participation. A focus will be placed on policy harmonisation in EU countries and the role of regional regulation agencies in this regard. Importantly, the chapter will critically analyse the relationship between policy harmonisation of IPP participation, regional integration and energy security in the EU. These findings will be applied to the sub-Saharan African context.

Chapter Four provides conclusions and recommendations regarding the future regulatory framework for the Power Pool pertaining to IPPs. It will address potential avenues in which policies can be harmonised considering challenges currently experienced within the Power Pool, as well as lessons learned from the EU model.

Chapter Two: Regulatory Framework

2.1 Introduction

The Southern African Power Pool ('Power Pool') was established in 1995 as a means of promoting energy security through electricity trade amongst member states.⁸⁵ The Power Pool aims to provide a mechanism for the establishment of an effective and reliable electricity network within sub-Saharan Africa.⁸⁶ Furthermore, one of the Power Pool's primary objectives is to harmonise regional regulatory frameworks in respect of energy trade.⁸⁷ In terms of the participation of Independent Power Producers (IPPs) in the regional energy market, the Power Pool aims to be an attractive investment opportunity for prospective investors.⁸⁸

The Power Pool was previously only reserved for national grid utilities.⁸⁹ Subsequently Power Pool membership has been extended to include IPPs.⁹⁰ IPP members of the Power Pool can engage in regional trade indirectly by selling electricity produced to national grids.⁹¹ National grids can then trade electricity which flows along transmission lines between Power Pool member states.⁹² Notwithstanding the inclusion of IPP membership in the Power Pool, the participation of IPPs in the energy sector is largely dependent on national policies which differ from country to country.⁹³ However, there have been efforts to create a harmonised regulatory framework among member states, particularly with the formation of the Regional Electricity Regulators Association of Southern Africa ('Regulators Association').⁹⁴ More recently the Market & Investment Framework for Southern African Development Community Power Projects ('M&I Framework') has been established which seeks to better integrate IPPs into the energy market.⁹⁵

⁸⁵ Lisa Rothkegel 'Regime Dynamics and the Southern African Power Pool' (Master's Thesis, Stellenbosch University, 2013) 30.

⁸⁶ Southern African Power Pool op cite note 38 at 2.

⁸⁷ Ibid.

⁸⁸ Southern African Power Pool op cit note 38 at 2.

⁸⁹ Southern African Development Community op cit note 9 at 46.

⁹⁰ Economic Commission for Africa 'Assessment of Power-Pooling Arrangements in Africa' (2004) 39.

⁹¹ Southern African Development Community op cit note 9 at 46.

⁹² Donal T O'Leary, Jean-Pierre Charpentier and Diane Minogue 'Promoting Regional Power Trade- The Southern African Power Pool' (1998) 1.

⁹³ Southern African Development Community op cit note 9 at 20.

⁹⁴ Agathe Maupin op cit note 34 at 30.

⁹⁵ Agathe Maupin op cit note 34 at 47.

This chapter highlights the *status quo* pertaining to IPP participation within the regulatory framework of the Power Pool. In particular, the impact of the extension of IPP membership to the Power Pool as well as the efficacy of the Regulators Association and the M&I Framework is evaluated. Furthermore, the national regulatory framework regarding IPP participation is discussed using three case studies. Zambia, South Africa and the Democratic Republic of Congo (DRC) have been selected in this regard. The purpose of the case studies is to illustrate the different stages of IPP integration into national energy markets and the impact of IPP participation on enhancing regional trade.

2.2 Legal Framework Governing Independent Power Producers in the Southern African Power Pool

The participation of IPPs in the sub-Saharan African regional energy market is governed by the Power Pool's Inter-Governmental Memorandum of Understanding, serving as its founding document.⁹⁶ The presence of IPPs in both regional and national energy market is also influenced by the powers of regulatory authorities tasked with setting rules for entry and participation in the market.⁹⁷ The section below discusses IPP membership in the Power Pool in accordance with the Inter-governmental Memorandum of Understanding. The regulatory framework governing renewable energy IPPs in particular will also be discussed. In terms of energy regulation, the role of National Regulatory Authorities and the Regulators Association of the Power Pool is evaluated. The new M & I Framework for the incorporation of IPPs into the energy market is also discussed.

⁹⁶ Southern African Development Community op cite note 9 at 20.

⁹⁷Anton Eberhard, Katherine Gratwick, Elvira Morella et al 'Independent Power Producers in Sub-Saharan Africa: Investment Trends and Policy Lessons' (2017) 108 *Energy Policy* 393.

2.2.1 Membership of Independent Power Producers in the Southern African Power Pool

The Inter-Governmental Memorandum of Understanding of the Power Pool consists of twelve member state signatories.⁹⁸ Initially, membership in the Power Pool was exclusive to national utilities.⁹⁹ However, in 2006 the Inter-Governmental Memorandum of Understanding was revised to extend membership to IPPs.¹⁰⁰ Any electricity supply enterprise within the SADC region can now acquire membership in the Power Pool.¹⁰¹ An electricity supply enterprise is defined in the amended Inter-Governmental Memorandum of Understanding to include IPPs.¹⁰²

The revision of the Inter-Governmental Memorandum of Understanding was prompted the diminishing generation surplus capacity faced by the Power Pool.¹⁰³ Surplus capacity refers to a utility's ability to meet increasing energy demand.¹⁰⁴ During the time at which the Inter-Governmental Memorandum of Understanding underwent revision, energy demand was increasing at a rate of 3 percent annually.¹⁰⁵ The peak in demand can be attributed to increasing populations in sub-Saharan Africa coupled with economic expansion in new industrial industries which require additional power supply.¹⁰⁶ Notwithstanding the increasing energy need, a lack of investment in new power-generation facilities resulted in a mismatch between supply and growing demand.¹⁰⁷ This was evident during the 2008 load-shedding crisis in South Africa when state-run monopoly Eskom lacked sufficient generation capacity to meet electricity demand.¹⁰⁸ As a result, load-shedding was implemented across the country, leaving grid end users with intermittent electricity supply.¹⁰⁹

Considering the above, the founding members of the Power Pool deemed it necessary to restructure the membership of the Power Pool to include IPPs.¹¹⁰ This was in line with the

⁹⁸ Southern African Development Community op cit note 9 at 20.

⁹⁹ Economic Commission for Africa op cit note 90 at 39.

¹⁰⁰ Southern African Development Community op cit note 9 at 20.

¹⁰¹ Article 6.1 of the Southern African Power Pool Inter-Governmental Understanding (2006).

¹⁰² Article 3.3 of the Southern African Power Pool Inter-Governmental Understanding (2006).

¹⁰³ Southern African Power Pool op cit note 38 at 5.

¹⁰⁴ Laurence Musabe, Alison Chikova & Pat Naidoo 'The impact of Diminishing Generation Surplus Capacity on Integrated Energy Plans for Southern Africa' (2007) 4.

¹⁰⁵ Southern African Power Pool op cit note 16 at 5.

¹⁰⁶ Southern African Power Pool op cit note 16 at 5.

¹⁰⁷ Southern African Power Pool op cit note 16 at 5.

¹⁰⁸ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

¹⁰⁹ Gaylor Montmasson-Clair & Bhavna Deonarain op cite note 5 at 14.

¹¹⁰ Southern African Power Pool op cit note 16 at 5.

global trend towards private participation in the energy sector to increase the electricity generation capacities of countries.¹¹¹ While membership of the Power Pool is now available to IPPs, to date only two IPPs are members of the Power Pool.¹¹² They are: Hidroelectric de Cahora Bassa from Mozambique and Lunsemfwa HydroPower company in Zambia.¹¹³ National utilities still comprise 95 per cent of the Power Pool's current generation capacity, with Eskom being a dominant player in this regard.¹¹⁴ The dominance of national utilities in the Power Pool restricts meaningful participation of IPPs in terms of electricity production.¹¹⁵ IPPs represent a minority in the Power Pool and therefore key decision-making still primarily takes place between national utilities.¹¹⁶

Notwithstanding the important role played by the Power Pool in creating a conducive environment for regional integration, there are no binding obligations upon its members to enable IPPs to enter the regional market.¹¹⁷ As stated in chapter one, Renewable Energy IPPs in particular can promote regional integration and energy security by diversifying the energy mix.¹¹⁸ The participation of renewable energy IPPs in the Power Pool is discussed below.

2.2.2 Participation of Renewable Energy Independent Power Producers in the Southern African Power Pool

As illustrated above, the Power Pool does not have a binding regulatory framework governing IPP participation in the sub-Saharan Africa energy sector.¹¹⁹ In terms of renewable energy IPPs specifically, coal produced by national utilities still constitutes 62.05 per cent of the Power Pool's current generation capacity.¹²⁰ However, the Power Pool has advocated that renewable energy should play a greater role in its future energy generation mix.

¹¹¹ Economic Consulting Associates 'The Potential of Regional Power Pool Sector Integration: The Southern African Power Pool (SAPP) Transmission and Trading Case Study' (2009) 32.

¹¹² Southern African Power Pool op cit note 38 at 4.

¹¹³ Southern African Power Pool op cit note 38 at 4.

¹¹⁴ LT Kapolo & J Lalk 'Lack of Investment in Large Scale Generation Plants in the Southern African Power Pool: A Question of Policy, Political Will, Pricing or Planning?' (2012) 6.

¹¹⁵ Ibid.

¹¹⁶ LT Kapolo & J Lalk op cit 114 at 6.

¹¹⁷ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹¹⁸ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 17.

¹¹⁹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹²⁰ Johnson Maviya 'Overview of the SAPP Power Pool Plan and The Role of Renewables in the Regional Electricity Energy Mix' (2018) 4.

In 2017 the Southern African Power Pool Plan ('Power Pool Plan') was finalised.¹²¹ It sets targets for 2040 in respect of increased generation capacity within the Power Pool.¹²² It is envisioned that renewable energy will contribute 50.5 per cent of the Power Pool's new generation capacity by 2040.¹²³ Despite these targets, there is no binding frameworks in the Power Pool to ensure that renewable IPPs are incorporated into the energy market.¹²⁴

SADC has developed various policy documents which seek to promote renewable energy in SADC member states, including members of the Power Pool.¹²⁵ The SADC Protocol on Energy¹²⁶ serves as a policy framework which sets a mandate for sustainable energy production.¹²⁷ The SADC Protocol on Energy is legally binding on member states who have ratified the Protocol.¹²⁸ All member states of the Power Pool except for the DRC have ratified the SADC Protocol on Energy.¹²⁹

Various energy plans have been adopted to achieve the goals established in the SADC Protocol on Energy. In 2000 the SADC Energy Sector Activity Plan¹³⁰ was enacted containing objectives for increasing the production of renewable energy within the SADC region.¹³¹ In 2011 SADC initiated a Renewable Energy and Energy Efficiency Strategy and Action Plan¹³² which aims at setting realistic targets for the achievement of renewable energy production.¹³³

Notwithstanding the above initiatives, SADC Frameworks on renewable energy contain broad provisions and give member states significant discretion in their implementation.¹³⁴ There is also no Tribunal in place which can deal with matters relating to the implementation of the

¹²¹ Ibid.

¹²² Johnson Maviya op cit note 120 at 9.

¹²³ Johnson Maviya op cit note 120 at 9.

¹²⁴ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹²⁵ Southern African Development Community op cit 9 at (2016) 54.

¹²⁶ Southern African Development Community Protocol on Energy, 1996.

¹²⁷ RL Angwe 'Energy Efficiency: The Regulatory Framework for SADC and South Africa' (Masters Thesis, North West University, 2014) 30.

¹²⁸ Tapiwa Shumba 'Revisiting Legal Harmonisation Under the Southern African Development Community Treaty: The Need to Amend the Treaty' (2015) 19 *Law Democracy and Development* 140.

¹²⁹ Southern African Development Community Protocol on Energy, 1996.

¹³⁰ Southern African Development Community Energy Sector Activity Plan, 2000.

¹³¹ RL Angwe op cit note 127 at 31.

¹³² Southern African Development Community Renewable Energy and Energy Efficiency Action Plan, 2011.

¹³³ Southern African Development Community op cit note 9 at 55.

¹³⁴ RL Angwe op cit note 127 at 33.

SADC Protocol.¹³⁵ Importantly, the SADC framework deals with renewable energy production generally, but does not specifically create a binding framework for renewable energy IPPs.¹³⁶

To evaluate the level at which IPPs can effectively participate in the energy market, it is important to ascertain how IPPs are regulated both nationally and regionally. Energy regulation in the Power Pool is therefore discussed in the next section.

2.3 Energy Regulation

National Regulatory Authorities serve an important function in managing and overseeing a country's electricity regulation market.¹³⁷ These authorities are tasked with creating an environment whereby IPPs can access and effectively participate in national energy sectors.¹³⁸ On a regional level, the Regulators Association was established to harmonise policies regarding energy regulation and the participation of IPPs in the energy market.¹³⁹ Energy regulation in sub-Saharan Africa is still fragmented and lacking a harmonised framework for the roles and responsibilities of National Regulatory Authorities.¹⁴⁰ The regulatory environment for IPP participation in the energy market is discussed below.

2.3.1 National Regulatory Authorities

National Regulatory Authorities serve an important function in managing and overseeing the regulation of electricity in a country.¹⁴¹ These authorities are responsible for ensuring that IPPs can access and effectively participate in the energy sector.¹⁴² National Regulatory Authorities have been established in all member states of the Power Pool, with the Democratic Republic of Congo (DRC) and Botswana being the most recent members of the Power Pool to enact enabling legislation creating these bodies.¹⁴³ Prior to 2014 the DRC did not have an independent regulator.¹⁴⁴ This severely impacted the entrance of IPPs into the energy market

¹³⁵ Erika De Wet 'The Rise and Fall of the Tribunal of the Southern African Development Community: Implications for Dispute Settlement in Southern Africa' (2013) 3.

¹³⁶ Southern African Development Community op cit note 9 at 55.

¹³⁷ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹³⁸ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit 97 at 393.

¹³⁹ Southern African Development Community op cit note 9 at 22.

¹⁴⁰ Amy Michelle Rose op cit note 79 at 226.

¹⁴¹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁴² Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁴³ See the DRC Electricity Act of 2014 (Law no: 14/011) and Botswana Energy Regulatory Authority Act of 2016.

¹⁴⁴ Promethium Carbon 'Report: Electricity Market Reform in Southern Africa' (2016) 16.

and dissuaded private investment in energy generation and transmission.¹⁴⁵ In 2014, the DRC passed the Electricity Act which established an National Regulation Authority to oversee the electricity market and better facilitate IPP access and participation.¹⁴⁶ Similarly, the Botswana Energy Regulatory Act that created the country's National Regulatory Authority was only promulgated in 2017. Prior to the Energy Regulation Act, Botswana had only one IPP operating in the country's energy sector.¹⁴⁷

The presence of National Regulatory Authorities is important for IPP participation in the Power Pool's member countries.¹⁴⁸ However, the existence of a National Regulatory Authority is not sufficient for creating an IPP-friendly regulatory environment.¹⁴⁹ It is rather the standard of regulation and enforcement in a country that influences the manner in which an IPP can effectively operate nationally and regionally.¹⁵⁰ The duties and authority of regulators tend to differ in each country.¹⁵¹ For example, in Namibia, Mozambique and Angola, National Regulatory Authorities do not have the power to make and enforce rules but merely act in an advisory capacity to the respective energy ministries.¹⁵² In South Africa, the National Energy Regulator of South Africa has the authority to set tariffs and grant licences.¹⁵³ However, the Ministry of Energy Resources still has the primary authority of setting rules pertaining to licensing of IPP participation in the energy sector and tariffs applicable to IPPs.¹⁵⁴

2.3.2 The Regional Electricity Regulators Association of Southern Africa

To create regional harmonisation on the roles and responsibilities of National Regulatory Authorities, the Power Pool's Regulators Association was created in 2002 consisting of ten National Regulatory Authorities.¹⁵⁵ The objectives of the Regulators Association is to facilitate capacity building, to regulate policies and to ensure co-operation and implementation of

¹⁴⁵ Ibid.

¹⁴⁶ Democratic Republic of Congo Electricity Act of 2014 (Law no: 14/011).

¹⁴⁷ Promethium Carbon op cit note 144 at 15.

¹⁴⁸ African Development Bank 'Electricity Regulatory Index for South Africa' (2018) 2.

¹⁴⁹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁵⁰ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁵¹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁵² Amy Michelle Rose op cit note 79 at 226.

¹⁵³ Amy Michelle Rose op cit note 79 at 226.

¹⁵⁴ Amy Michelle Rose op cit note 79 at 226.

¹⁵⁵ Southern African Development Community op cit note 9 at 22.

regulations.¹⁵⁶ To achieve the abovementioned objectives, the Regulators Association has created guidelines to promote efficient and sustainable energy trade by establishing the roles and duties of National Regulatory Authorities.¹⁵⁷ The Regulators Association furthermore advocates transparency and accountability in decision making.¹⁵⁸ Legal certainty in this respect is especially beneficial to IPPs entering the market.¹⁵⁹ It is important for IPP's to know the requirements for entering the energy market as well as the conditions for participation in the market.¹⁶⁰

The Regulators Association provides helpful guidelines in creating an efficient and equitable trading environment for IPPs, however these guidelines are not legally binding.¹⁶¹ In the instance where members of the Regulators Association choose not to adhere to these guidelines, policy regulation still differs from country to country.¹⁶² The guidelines issued by the Regulators Association can only be legally binding if National Regulatory Authorities implement these standards in their national policies and legislation.¹⁶³ This can often be a difficult task for regulators who, although classified as independent, must often defer to the mandate set by government, especially in respect of tariff rates.¹⁶⁴

Tariffs have been held to be either a significant catalyst for investment or a disincentive for future private sector participation in the energy sector.¹⁶⁵ The latter is particularly due to the political influence on tariffs and the disjuncture between tariff rates and the actual cost of energy generation.¹⁶⁶ Cost reflectivity serves as an imperative for effective private sector participation in electricity production activities.¹⁶⁷ Cost reflective tariffs provide an accurate depiction of the actual cost of energy supply and are not distorted by external subsidies.¹⁶⁸ This tariff structure is beneficial in attracting new investment in generation and transmission to meet

¹⁵⁶ Southern African Development Community op cit note 9 22.

¹⁵⁷ Eng M Ndovorwi 'RERA Initiatives on Standards and Challenges' (2017) 4.

¹⁵⁸ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 37.

¹⁵⁹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al 'Independent Power Producers in Sub-Saharan Africa: Investment Trends and Policy Lessons' (2017) *Energy Policy* 108 390 at 393.

¹⁶⁰ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 8.

¹⁶¹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹⁶² Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹⁶³ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

¹⁶⁴ Amy Michelle Rose op cit note 79 at 226.

¹⁶⁵ Regional Electricity Regulators Association of Southern Africa 'RERA Publication on Electricity Tariffs & Selected Performance Indicators for the SADC region' (2014) 11.

¹⁶⁶ Amy Michelle Rose op cit note 79 at 226.

¹⁶⁷ Regional Electricity Regulators Association of Southern Africa op cit note 165 at 11.

¹⁶⁸ Regional Electricity Regulators Association of Southern Africa op cit note 165 at 11.

energy demand.¹⁶⁹ More investment in the electricity sector is vital for promoting energy access, particularly to communities that have yet to be electrified.¹⁷⁰ While several countries within SADC have agreed to create cost-reflective tariffs, to date only Namibia and Tanzania have effectively reformed their tariff structures accordingly.¹⁷¹

2.4 The Market and Investment Framework for the Southern African Development Community

From the above it is evident that the Power Pool currently lacks a coherent framework in respect of the regulation of IPP entrance and participation on a both a national and regional level. Recognising the need for the harmonisation of IPP participation in the energy sector, the Regulators Association with the assistance with the assistance of the auditing firm Deloitte, has developed the M&I Framework (previously termed the SADC IPP Framework).¹⁷²

The M&I Framework was developed during 2014 and 2015, considering the perspectives of various stakeholders from the public and the private sector.¹⁷³ Finally approved in 2016, the M& I Framework serves as a promising attempt to accelerate regional integration through IPP participation.¹⁷⁴ The framework is underpinned by a harmonised set of rules and regulations to which each member of SADC and its National Regulatory Authorities are expected to adhere.¹⁷⁵ Its design focuses on the unbundling of national utilities by standardising IPP's access to and regulation of the regional energy market.¹⁷⁶ While the M&I framework is not legally binding, SADC Ministers of Energy have urged Member States to review and amend their domestic regulations accordingly.¹⁷⁷

Despite the presence of the Regulators Association and attempts to harmonise national policies, the regulation of IPP participation in the energy market is still largely determined by the political will and policies of each country.¹⁷⁸ In light of the above, the next section below evaluates IPP participation in the Power Pool by discussing the regulatory frameworks of three

¹⁶⁹ Economic Consulting Associates op cit note 111 at 18.

¹⁷⁰ Regional Electricity Regulators Association of Southern Africa op cit note 165 at 11.

¹⁷¹ Southern African Development Community op cit note 9 at 32.

¹⁷² Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 51.

¹⁷³ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 51.

¹⁷⁴ European Union Technical Assistance Facility 'Action Plan for Harmonized Regulatory Framework for the Electricity Market in Africa' (2016) 3 and Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 51.

¹⁷⁵ Ibid.

¹⁷⁶ European Union Technical Assistance Facility op cit note 174 at 3.

¹⁷⁷ European Union Technical Assistance Facility op cit note 174 at 3.

Power Pool member states. The purpose of these case studies is to illustrate the different stages countries are in, concerns the incorporation of IPP's into national energy markets and the impact of national policies on regional trade.

2.5 IPP Participation in National Regulatory Frameworks

The national regulatory environment in a country is key in either facilitating IPP participation in the regional energy sector or dissuading private investment.¹⁷⁹ Over the past decade there has been a national and regional policy trend towards the privatisation of electricity production.¹⁸⁰ However, the level of IPP participation and the rate at which IPPs are integrated into the regional energy market differs from country to country.¹⁸¹

Three case studies highlighting the manner in which IPP participation varies between countries. The level of IPP participation in Zambia, South Africa and the DRC is discussed next. Zambia and South Africa have made positive strides towards the inclusion of IPPs in the energy market through energy policy reform. The DRC still faces significant challenges in respect of the manner in which IPPs are regulated within the energy market. The case studies below seek to illustrate the relationship between IPP participation and regional trade within the Power Pool.

2.5.1 Zambia

There are three primary participants in the Zambian electricity sector namely: The Zambian Electricity Supply Corporation (ZESCO), Lunsemfwa Hydropower Company and the Copperbelt Energy Corporation.¹⁸² ZESCO is a state-owned utility which is responsible for 90% of Zambia's energy generation capacity.¹⁸³ Lunsemfwa Hydropower Company is a prominent IPP in the region, which generates hydroelectricity that is sold to ZESCO.¹⁸⁴ Copperbelt Energy Corporation is an Independent Transmission Company which serves as the first private utility to operate within the Zambian energy market.¹⁸⁵ ZESCO,

¹⁷⁹ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 393.

¹⁸⁰ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 97 at 390.

¹⁸¹ Amy Michelle Rose op cit note 79 at 226.

¹⁸² Zambia Development Agency 'Energy Sector Profile' (2013) 3.

¹⁸³ Promethium Carbon op cit note 144 at 49.

¹⁸⁴ Promethium Carbon op cit note 144 at 50.

¹⁸⁵ Promethium Carbon op cit note 144 at 50.

Lunsemfwa Hydropower Company and Copperbelt Energy Corporation are all current members of the Power Pool.¹⁸⁶

Significant regulatory strides have been made in promoting better access and participation for IPPs in the Zambian energy market.¹⁸⁷ In 1994, the National Energy Policy¹⁸⁸ was enacted, which sought to increase energy access through increased IPP participation.¹⁸⁹ To implement the goals envisaged by the National Energy Policy, the government created a regulatory environment where the private sector would gain entrance to the industry, thereby diminishing the monopoly on the industry, previously held by ZESCO.¹⁹⁰ In 1995, the Electricity Act¹⁹¹ was promulgated, repealing the Zambia Electricity Act, which was the main legislative framework establishing ZESCO as a monopoly.¹⁹² The Electricity Act enables the private sector to participate in the energy market in both the upstream and downstream phases of an energy project.¹⁹³ During 1995, the state also enacted a law that established the Electricity Regulation Board as a means of regulating the energy market.¹⁹⁴ In terms of electricity tariff prices, the Energy Regulation Board has approved a 75 per cent tariff in Zambian residential areas.¹⁹⁵ Finally, the Zambia Grid Code (not yet in force), was drafted 2006 to facilitate better entrance for IPPs and ITCs onto the market.¹⁹⁶

As previously discussed, Zambia currently serves as one of only two countries which are members of the Power Pool.¹⁹⁷ Zambia is currently the third largest exporter of electricity in the Power Pool with the country's net exports amounting to 768 GWH.¹⁹⁸ It is expected that Zambian IPPs will contribute 300 MW towards the Power Pool's new generation capacity.¹⁹⁹

¹⁸⁶ Promethium Carbon op cit note 144 at 50.

¹⁸⁷ Besa Chimbaka 'Electricity Sector Market Reforms: Getting It Right in Developing Countries-SADC' (2016) Energy Regulation Board Conference Paper 18.

¹⁸⁸ Republic of Zambia National Energy Policy 1994.

¹⁸⁹ Besa Chimbaka op cit note 187 at 18.

¹⁹⁰ Besa Chimbaka op cit note 187 at 18.

¹⁹¹ Republic of Zambia Electricity Act Chapter 433 of 1995.

¹⁹² Charles M Haanyika 'Rural Electrification in Zambia: A Policy and Institutional Analysis' (2008) 36 *Energy Policy* 1044.

¹⁹³ Besa Chimbaka op cit note 187 at 18.

¹⁹⁴ Besa Chimbaka op cit note 187 at 18.

¹⁹⁵ David Mabumba 'Ministerial Statement on the Migration of Electricity Tariffs to Cost Reflectivity' (2017) 1.

¹⁹⁶ Besa Chimbaka op cit note 187 at 18.

¹⁹⁷ Promethium Carbon op cit note 144 at 50.

¹⁹⁸ Southern African Power Pool op cit note 38 at 44.

¹⁹⁹ Southern African Power Pool op cit note 38 at 15.

It is evident that the favourable regulatory environment in Zambia regarding IPPs has contributed positively towards regional trade.²⁰⁰

2.5.2 South Africa

The South African energy regulatory framework has sought to liberalise its energy market through policy reform.²⁰¹ While 95% of the country's energy supply (primarily relying on coal) is generated by the state-owned utility Eskom, there is an increasing move towards the inclusion of IPP participants in the energy market.²⁰² South Africa is currently the leading Power Pool member in terms of IPP participation in the energy generation market.²⁰³ As of 2017, the state has procured 6422 MW of electricity from 112 IPPs.²⁰⁴ The majority of IPPs in South Africa have been procured through the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).²⁰⁵ The REIPPPP was created against the backdrop of various policy and legislative initiatives to liberalise South Africa's energy market.²⁰⁶

The inclusion of IPPs in South Africa's energy sector was initiated by the 1998 White Paper on Energy Policy.²⁰⁷ The policy advocates for the unbundling of Eskom, IPP participation in the energy market and the use of renewable energy sources.²⁰⁸ To implement this policy, the Electricity Regulation Act²⁰⁹ and the National Energy Act²¹⁰ were passed. The Electricity Regulation Act established the National Energy Regulator of South Africa (NERSA) as an independent juristic entity which is tasked with regulating and overseeing South Africa's electricity supply industry.²¹¹ The National Energy Act promotes the diversification of energy supply by obliging the Minister of Energy Resources to create an Integrated Energy Plan indicating the future of South Africa's energy mix.²¹² The Integrated Resource Plan 2010-2030

²⁰⁰ Promethium Carbon op cit note 144 at 50.

²⁰¹ Agathe Maupin op cit note 34 at 4.

²⁰² Promethium Carbon op cit note 144 at 32.

²⁰³ Promethium Carbon op cit note 144 at 32.

²⁰⁴ Department of Energy 'Independent Power Producer Procurement Programme (IPPP): an overview' (2017) 2.

²⁰⁵ Ibid.

²⁰⁶ Department of Energy op cit note 204 at 5.

²⁰⁷ Promethium Carbon 'Report op cit note 144 at 39.

²⁰⁸ White Paper on Energy Policy, 1998 para(s) 7.1.6 and 7.7.

²⁰⁹ Act 4 of 2006.

²¹⁰ Act 34 of 2000.

²¹¹ Electricity Regulation Act section 3.

²¹² National Energy Act section 6.

was therefore enacted with the goal of ensuring the energy security and sustainability in South Africa's long term energy supply.²¹³

NERSA has also played a key role in assisting IPP participation in South Africa's electricity industry. This is evident from the fact that prior to NERSA, South Africa had one of the lowest energy tariffs globally.²¹⁴ However, since the establishment of NERSA South Africa's energy tariffs have increased by 147 per cent.²¹⁵ In *National Energy Regulator of South Africa and Another v Borbet SA (Pty) Ltd and Others*²¹⁶ an appeal was brought against a review application concerning a 1.4 per cent annual tariff increase approved by NERSA. This increase was in addition to an eight percent tariff increase already applied by Eskom to consumers during 2013/2014.²¹⁷ The Court noted that during this time it was necessary for Eskom to increase tariffs so that the utility could *inter alia* finance the Power Purchase Agreements entered into with IPPs costing R 580 million.²¹⁸ It was further noted by the Court that a diversified energy mix through IPP participation is crucial in ensuring a reliable energy supply.²¹⁹

In 2016, South Africa contributed 83 per cent of the Power Pool's regional electricity production.²²⁰ South Africa's connection to the Power Pool totals seven gigawatts and consists of interconnections with Zimbabwe, Mozambique, Swaziland and Namibia.²²¹ However, in 2008 Eskom experienced a shortage of energy supply, which resulted in intermittent energy cuts known as "load-shedding".²²² This had a profound impact on regional trade as South Africa, traditionally an exporter of low-cost electricity, could no longer export electricity to other Power Pool members during that time.²²³ The energy capacity deficit experienced in South Africa, as discussed above, led to the emergence of IPPs in the South African energy

²¹³ Promethium Carbon op cit note 144 at 41.

²¹⁴ Deloitte 'An Overview of Electricity Consumption and Pricing in South Africa' (2017) 55.

²¹⁵ Ibid.

²¹⁶ 2017 3 All SA 559 SCA.

²¹⁷ Ibid para 17.

²¹⁸ *National Energy Regulator* supra note 216 para 46.

²¹⁹ *National Energy Regulator* supra note 216 para 46.

²²⁰ Southern African Development Community op cit note 9 at 33.

²²¹ Lawrence Musaba & Musara Beta 'SAPP Experience in Regional Integration and Power Pooling' (2009) 12.

²²² Ariel Goldberg 'The Economic Impact of Load Shedding: The Case for South African Retailers' (Master's Thesis, Gordon Institute of Business Science, University of Pretoria, 2015) 1.

²²³ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

market.²²⁴ South African IPPs, the majority of which produce energy from renewable sources, constitute 37 per cent of the Power Pool's new generation capacity.²²⁵

2.5.3 The Democratic Republic of Congo

The electricity supply industry in the DRC is dominated by the state-owned utility Société Nationale d'Électricité (SNEL).²²⁶ The majority of SNEL's electricity production takes place at Inga I and Inga II hydropower stations.²²⁷ Given the age of these power stations, they require constant repair and upkeep, resulting in a decrease in the available electricity generation capacity.²²⁸ The DRC has one of the lowest levels of electrification in sub-Saharan Africa, with only nine per cent of the total population having access to electricity.²²⁹ Furthermore, only two percent of rural citizens and 19 per cent of the urban citizens have access to electricity.²³⁰ Those citizens who do have access to electricity experience intermittent electricity supply and constant power shortages.²³¹ In 2014, it was estimated that businesses in the DRC experienced profit losses amounting to 19.3 per cent due to power cuts.²³²

Prior to 2014, the DRC lacked policies and legislation relating to IPP participation in the energy market.²³³ However, in 2014 The DRC's Electricity Act was passed which served as a significant reform in the DRC in terms of IPP participation in the energy market.²³⁴ The Act allows for IPPs to enter the market and establishes an independent regulator to oversee the energy supply industry.²³⁵ Notwithstanding policy reforms in allowing IPPs to enter the market, there has only been a gradual incorporation of IPPs.²³⁶ While the Act provides for the creation of an independent National Regulatory Authority, several ministries are still currently responsible for rule-making within the country's energy sector.²³⁷ The Ministry of Hydraulic

²²⁴ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

²²⁵ Southern African Power Pool op cit note 38 at 15.

²²⁶ Promethium Carbon op cit note 144 at 16.

²²⁷ Promethium Carbon op cit note 144 at 16.

²²⁸ Promethium Carbon op cit note 144 at 17.

²²⁹ USAID Energy Efficiency for Clean Development Program 'Project Summary: Transmission and Distribution in the Democratic Republic of Congo' (2017) 1.

²³⁰ Ibid.

²³¹ Agathe Maupin op cit note 34 at 7.

²³² Agathe Maupin op cit note 34 at 7.

²³³ Promethium Carbon op cit note 144 at 17.

²³⁴ Democratic Republic of Congo Electricity Act of 2014 (Law no: 14/011). See USAID Energy Efficiency for Clean Development Program 'Project Summary: Transmission and Distribution in the Democratic Republic of Congo' (2017) 1.

²³⁵ USAID Energy Efficiency for Clean Development Program op cit note 229 at 1.

²³⁶ Promethium Carbon op cit note 144 at 16.

²³⁷ Amy Michelle Rose op cit note 79 at 227.

Resources and Electricity, for example, has the primary responsibility for carrying out the country's energy policy reform.²³⁸ Notwithstanding the important mandate of this Ministry, there are numerous conflicting policy documents that divide the same energy management responsibilities amongst other ministries.²³⁹ This inconsistency has created confusion amongst investors as to who the responsible authorities are for decision-making and which rules should be followed.²⁴⁰ The conflicting policy documents have also restricted the Ministry of Hydraulic Resources and Electricity from adequately carrying out its responsibilities.²⁴¹ Furthermore, SNEL is responsible for evaluating its own functioning which results in a lack of oversight with respect to the incorporation of IPPs in the national grid.²⁴² In terms of the energy tariff regulation, SNEL currently employs electricity tariffs that are below the cost of recovery.²⁴³

In terms of regional trade, the DRC occasionally exports electricity to Zambia and Rwanda.²⁴⁴ The DRC has entered into a bi-lateral agreement with South Africa to construct the Inga III dam project.²⁴⁵ This project intends to construct transmission lines that will export hydroelectricity to South Africa.²⁴⁶ The DRC also imports electricity from ZESCO, Zambia's national utility, providing 100 megawatts of import capacity.²⁴⁷ Notwithstanding the DRC's current and prospective trading activities, the country was the second lowest net importer at 778 gigawatt hours and the lowest net exporter at 50 gigawatt hours in 2017.²⁴⁸ It has been held that the DRC currently lacks the generation capacity to adequately sustain future short term exporting activities within the region.²⁴⁹

²³⁸ Agathe Maupin op cit note 34 at 12.

²³⁹ Agathe Maupin op cit note 34 at 2.

²⁴⁰ Agathe Maupin op cit note 34 at 12.

²⁴¹ Agathe Maupin op cit note 34 at 12.

²⁴² Amy Michelle Rose op cit note 79 at 227.

²⁴³ World Bank 'Combined Project Information Documents: Integrated Safeguards Data Sheet' (2017) 3.

²⁴⁴ Agathe Maupin op cit note 34 at 7.

²⁴⁵ Agathe Maupin op cit note 34 at 9.

²⁴⁶ Agathe Maupin op cit note 34 at 9.

²⁴⁷ Promethium Carbon op cit note 144 at 16.

²⁴⁸ Southern African Power Pool op cit note 38 at 44.

²⁴⁹ Agathe Maupin op cit note 34 at 7.

2.6 Conclusion

In conclusion, it is evident that despite the restructuring of the Power Pool to extend membership to IPPs, the way in which IPPs can participate on the regional electricity market is largely determined by national policies.²⁵⁰ While the Regulatory Authority and the M&I framework have attempted to harmonise policies in respect of IPP participation in the Power Pool, political influence still plays a significant role in determining the manner in which national regulatory agencies regulate the energy sector.²⁵¹

The case studies of Zambia, South Africa and the DRC are illustrative of the different stages at which countries' regulatory policies incorporate IPPs into the electricity market. Zambia and South Africa have made impressive strides towards the incorporation of IPPs, and this has had a significant impact on regional trade.²⁵² South Africa remains the largest exporter of electricity in the Power Pool and Zambia's IPP Lunsemfwa Hydropower Company is one of two IPPs belonging to the Power Pool.²⁵³ The DRC has only recently enacted legislation pertaining to IPP entrance in its electricity market and the regulatory framework governing its energy sector remains incoherent, dissuading private participation.²⁵⁴ The lack of private participation in the DRC's energy sector has furthermore impacted negatively on the country's regional trade capacity in the Power Pool.²⁵⁵

The lack of standardisation regarding IPP participation and regulation in the Power Pool necessitates a harmonised framework to assist regional integration and mitigate energy insecurity. Chapter 3 discusses policy harmonisation and energy security, using a comparative study with the European Union (EU).

²⁵⁰ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

²⁵¹ Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 38.

²⁵² See Southern African Power Pool op cit note 5 at 44 and Southern African Development Community op cit note 9 at 33.

²⁵³ See Southern African Development Community op cit note 9 at 33 and Promethium Carbon op cit note 144 at 50.

²⁵⁴ Promethium Carbon op cit note 144 at 16.

²⁵⁵ Southern African Power Pool op cit note 38 at 44.

Chapter Three: Case Study: Liberalisation of the Energy Market in the European Union

3.1 Introduction

Chapter two highlights that the current regulatory framework regarding Independent Power Producer (IPP) access and participation in national markets lacks harmonisation among members of the Southern African Power Pool ('Power Pool').²⁵⁶ Where adequate IPP policies are lacking, a country's ability to engage in regional trade can be severely hampered by fossil fuel dependent utilities with an insufficient capacity to produce electricity.²⁵⁷ This dissertation proposes in chapter one that regional trade can promote energy security as envisaged in the United Nations Sustainable Development Goal Seven (SDG 7), through the sharing of expertise and resources.²⁵⁸ The benefits of regional trade for energy security are, however, severely hampered by national utilities who monopolise the market. These utilities are predominantly characterised by unreliable and unsustainable energy production.²⁵⁹ Currently, there is no regulatory body in the Power Pool with the authority to make binding decisions regarding policy harmonisation on the incorporation of IPPs into national markets.²⁶⁰

This chapter serves as a case study on energy liberalisation and policy harmonisation within the European Union (EU). Similar to the Power Pool, the EU serves as a regional trading block currently consisting of 28 member states.²⁶¹ The EU offers an apt case study for this dissertation because it has seen a significant shift towards market liberalisation in the EU's energy industry since the 1990s.²⁶²

²⁵⁶ Southern African Development Community op cit note 9 at 43.

²⁵⁷ See for example the DRC who was the lowest net exporter in the SAPP in 2017. Southern African Power Pool op cit note 38 at 44.

²⁵⁸ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 5.

²⁵⁹ World Energy Council op cit note 4 at 25.

²⁶⁰ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

²⁶¹ Daniel Kenealy, John Peterson & Richard Corbett *How the European Union Works* 4 ed (2012) 72.

²⁶² Lukas M Rathke 'The Effects of Electricity Market Liberalisation in the European Union' (Bachelor Thesis, University of Twente, 2015) 9.

Market liberalisation in this context refers to the freeing of the energy market from state-owned monopolies, allowing IPP's to enter the market.²⁶³ This chapter illustrates how the increased participation of specifically renewable energy IPPs in the energy market has impacted positively on regional trade and energy security. Furthermore, the chapter discusses the regulatory development of energy liberalisation in the EU through the lens of the 'Three Energy Packages'.²⁶⁴ These packages comprise directives and regulations issued by the EU regarding market liberalisation.²⁶⁵ The impact of the Third Energy Package on regulation is evaluated in this chapter. An appraisal is then given of the consequences of liberalisation on regional trade and energy security. Lastly, Southern Africa's renewable energy and regional trade potential is discussed in light of the EU case study.

3.2 Development of the EU Energy Liberalisation Packages

Prior to the 1990s, the EU energy market consisted primarily of vertically integrated state-owned monopolies.²⁶⁶ Vertically integrated monopolies are utilities which exclusively control energy production, transmission and distribution networks.²⁶⁷ Given that the ownership structures of electricity grids were dominated by governments, IPPs were significantly restricted from entering the energy market.²⁶⁸ The physical infrastructure of these networks, consisting of fixed grids and transmission lines, prevented IPPs from accessing the grid.²⁶⁹ The shift towards market liberalisation in the EU was driven by a myriad of economic, social and political agendas, one of which was the promotion of energy security.²⁷⁰ The rationale for market liberalisation stemmed from the assertion that energy security would be advanced by diversifying energy sources through private-sector participation in the energy market.²⁷¹

²⁶³ Livia Ilie, Alexander Horobet & Corina Popescu op cit note 82 at 15.

²⁶⁴ Julia Black 'European Union Energy Regulation' (2013) 2 *International Regulatory Co-operation: Case Studies* 23.

²⁶⁵ Daniel J Tulloch, Ivan Diaz-Raineyb & LM Premachandra 'The Impact of Regulatory Change on EU Energy Utility Returns: The Three Liberalization Packages' (2018) 1.

²⁶⁶ Rafael Merino *Liberalisation of the Electricity Sector in the European Union* (Master's Thesis, University of Iceland, 2013) 9.

²⁶⁷ Daniel J Tulloch, Ivan Diaz-Raineyb and LM Premachandra op cit note 265 at 1.

²⁶⁸ Matthias Heddenhausen 'Privatisations in Europe's Liberalised Electricity Markets-The Cases of the United Kingdom, Sweden, Germany and France' 5.

²⁶⁹ Burcak Tatli 'The Liberalisation of European Energy Markets: The Use of Competition Law as a Regulatory Tool' (Doctoral Thesis, University of East Anglia, 2014) 1.

²⁷⁰ Julia Black op cit note 264 at 23.

²⁷¹ Livia Ilie, Alexandra Horobet & Corina Popescu op cit note 82 at 5.

The EU thus sought to liberalise its energy market through three legislative stages collectively known as the ‘Three Energy Packages’.²⁷² These packages comprise directives and regulations which are aimed at unbundling vertically integrated monopolies.²⁷³ Unbundling involves the separation of energy production activities from transmission and distribution.²⁷⁴ Transmission and distribution activities are regarded as ‘natural monopolies’ due to their dependence on specific infrastructure and capital-intensive investments.²⁷⁵ Therefore, IPP access to these networks is regulated.²⁷⁶ As a result of unbundling, energy production activities are considered to be part of the competitive sector, enabling IPPs to enter and participate in the market.²⁷⁷

To ensure fairness and effectiveness in the competitive market, the EU has made substantial progress in terms of energy market regulation.²⁷⁸ The first and second energy packages resulted in the establishment of independent National Energy Regulators.²⁷⁹ The Third Package established the Agency for the Cooperation of Energy Regulators (ACER), an agency with overarching powers to regulate the EU energy market.²⁸⁰ The efforts made by the Three Energy Packages pertaining to regulation is discussed below.

3.2.1 The First Energy Package and the Council for European Energy Regulators

The first efforts towards a harmonised system of electricity market liberalisation in the EU began with the issuance of the Electricity Directive in 1996,²⁸¹ which formed part of the First Energy Package.²⁸² This directive contains provisions relating to the unbundling of national utilities as well as network access systems for new entrants into the electricity market.²⁸³

Notwithstanding this package’s attempts at creating a uniform system for market liberalisation, the legislation merely created common principles for market access.²⁸⁴ Member states were

²⁷² Daniel J Tulloch, Ivan Diaz-Raineyb and LM Premachandra op cit note 265 at 1.

²⁷³ Joseph Dutton ‘EU Energy Policy and the Third Package’ Energy Policy Group Working Paper (2015) 7.

²⁷⁴ *Ibid.*

²⁷⁵ Joseph Dutton op cit note 273 at 2.

²⁷⁶ Lucus M Rathke op cit note 262 at 9.

²⁷⁷ Lucus M Rathke op cit note 262 at 9.

²⁷⁸ Julia Black op cit note 264 at 37.

²⁷⁹ Mehmet Kayikci ‘The European Third Energy Package: How Significant for Liberalisation of Energy Markets in the European Union?’ (2011) *SSRN Electronic Journal* 4.

²⁸⁰ Julia Black op cit note 264 at 33.

²⁸¹ Directive 96/92/EC.

²⁸² Mehmet Kayikci op cit note 279 at 1.

²⁸³ Julia Black op cit note 264 at 27.

²⁸⁴ Mehmet Kayikci op cit note 279 at 3.

given significant discretion in how they sought to legislate market access on a national level.²⁸⁵ This led to discrepancies between member states in the implementation of these principles, with some countries creating more effective access frameworks than others.²⁸⁶ The directives did not provide sufficient guidance with regard to regional electricity trade.²⁸⁷

In response to the lack of policy harmonisation in the First Energy Package, the European Commission created a forum in Florence, Italy, where National Regulatory Authorities could engage on matters including market access and regional integration.²⁸⁸ The Florence Forum subsequently led to the creation of the Council for European Energy Regulators, consisting of various National Regulatory Authorities in the EU.²⁸⁹ The Council was responsible for issuing guidelines on *inter alia* the conditions on which private producers can enter the energy market and engage in cross-border trade.²⁹⁰ As discussed in chapter two, the Regional Electricity Regulators Association of Southern Africa ('Regulators Association') plays a similar role in issuing guidelines to National Regulating Agencies in sub-Saharan Africa.²⁹¹ The Council for European Energy Regulators' guidelines were not binding, as is the case with the Regulators Association in sub-Saharan Africa.²⁹² The non-binding nature of the guidelines gave rise to differing national interests and often led to a lack of consensus amongst national regulators.²⁹³ The First Package and the creation of the Council for European Energy Regulators did not yield the desired results in terms of harmonisation and regional integration.²⁹⁴

²⁸⁵ Julia Black op cit note 264 at 27.

²⁸⁶ Eugene Cross, Bram Delvaux & Leigh Hancher *et al* 'EU Energy Law' in Martha Roggenkamp (Ed), Catherine Redgwell & Anuta Ronne *et al* *Energy Law in Europe: National, EU and International Regulation* 2 ed (2007) 343.

²⁸⁷ Julia Black op cit note 264 at 28.

²⁸⁸ Jaques de Jong 'The Regional Approach' In *Establishing the Internal EU Electricity Market* (2004)13.

²⁸⁹ *Ibid*.

²⁹⁰ Julia Black op cit note 264 at 20.

²⁹¹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 28.

²⁹² Julia Black op cit note 264 at 20.

²⁹³ Julia Black op cit note 264 at 20.

²⁹⁴ Ricardo Serena *The European Electricity Market Liberalisation: Motives Problems and Benefits for Consumers* (Master's Thesis, Tilburg University, 2014)

3.2.2 The Second Energy Package

In 2003, the European Commission issued a new set of directives to repeal the first, known as the Second Energy Package.²⁹⁵ These directives were aimed at mitigating the inadequacies of the First Energy Package by promoting the unbundling of national utilities.²⁹⁶ The Second Energy Package stipulated that each member state establish National Regulatory Authorities in charge of the regulation of the energy market.²⁹⁷ The directives required that National Regulatory Authorities co-operate with the European Commission and with one another.²⁹⁸ In Sub-Saharan Africa, there is no legal obligation in the Power Pool for national regulators to co-operate with each other or with the Southern African Development Community (SADC) .

While the Second Energy Package attempted to minimise national discretion in respect of the EU energy market, implementation of legislation remained a challenge.²⁹⁹ The European Commission thus conducted an enquiry into the functioning of the energy market, particularly with respect to cross-border trading.³⁰⁰ The enquiry found that many IPPs were not afforded adequate market access.³⁰¹ Furthermore, regional integration was hampered by a lack of cross-border capacity coupled with a lack of policy harmonisation between member states with respect to market design.³⁰² The Second Energy Package, although a legislative improvement on the first, did not achieve the liberalisation of the EU energy market.³⁰³

3.2.3 The Third Energy Package and the Agency for Co-operation of Energy Regulators

The Third Energy Package was introduced in 2007 and serves as the most comprehensive legislative framework in respect of policy harmonisation and market regulation.³⁰⁴ The package

²⁹⁵ Julia Black op cit note 264 at 30.

²⁹⁶ Rafael Merino op cit note 266 at 38.

²⁹⁷ Mehmet Kayikci op cit note 279 at 4.

²⁹⁸ Mehmet Kayikci op cit note 279 at 4.

²⁹⁹ Julia Black op cit note 264 at 31.

³⁰⁰ Commission of the European Communities 'Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European Gas and Electricity Sectors' (2007).

³⁰¹ Ibid.

³⁰² Commission of the European Communities op cit note 300 at 10.

³⁰³ Julia Black op cit note 264 at 31.

³⁰⁴ Julia Black op cit note 264 at 33.

includes directives that increase the powers of national regulatory agencies and enhance their independence from national governments.³⁰⁵

The most significant feature of the third package is the establishment of the ACER which became effective in January 2011.³⁰⁶ The rationale for the creation of ACER was the need for the EU to have a body with significant powers to regulate and harmonise the energy market.³⁰⁷ ACER serves as an EU regulatory body, with the role of monitoring the implementation of legislative measures towards liberalisation of the energy market.³⁰⁸ In instances where the ACER finds that National Regulatory Authorities are not adequately implementing directives and regulations in national legislation, these matters are reported to the European Commission.³⁰⁹ ACER also has the power to settle cross-border disputes, particularly in instances where National Regulatory Authorities are unable to reach consensus on matters relating to regional trade.³¹⁰ In respect of IPP access and participation in the energy market, ACER has developed network codes, including binding rules on enabling competition in electricity production activities.³¹¹

By developing binding network codes, private producers are provided with more transparent avenues for accessing and participating in the regional energy market.³¹² A harmonised system for network access and trade minimises the risk of discriminatory practices in granting IPPs access to the grid.³¹³ Furthermore, ACER has the authority to intervene in disputes where private investors are arbitrarily excluded from participating in the regional energy market.³¹⁴

In instances where national governments have failed to implement the Third Energy Package, ACER has the responsibility to inform the European Commission of such non-compliance.³¹⁵ The European Commission can then institute legal proceedings against non-complying member states.³¹⁶ As of May 2014, proceedings against nine member states were instituted for

³⁰⁵ Julia Black op cit note 264 at 33.

³⁰⁶ Mehmet Kayikci op cit note 279 at 23.

³⁰⁷ Mehmet Kayikci op cit note 279 at 23.

³⁰⁸ Alberto Pototschnig 'ACER's Functions and Responsibilities in the European Union' (2018) 9.

³⁰⁹ Joseph Dutton op cit note 273 at 10.

³¹⁰ Alberto Pototschnig op cit note 308 at 10.

³¹¹ Commission Regulation (EU) 2016/631 Establishing a Network Code on Requirements for Grid Connection of Generators.

³¹² Charikleia Vlachou 'New Governance and Regulation in the Energy Sector: What Does the Future Hold for EU Network Codes' (2018) 18 *European Journal of Risk Regulation* 269.

³¹³ Ibid.

³¹⁴ Alberto Pototschnig op cit note 308 at 10.

³¹⁵ Alberto Pototschnig op cit note 308 at 10.

³¹⁶ Joseph Dutton op cit note 273 at 10

failure to implement third-package directives into national law.³¹⁷ By September 2014, due to the pressure of impending proceedings, all but two member states had adopted the directives into national law.³¹⁸

While a few member states of the EU initially did not comply with binding obligations related to IPPs, ACER had the authority to intervene and report the matter to the European Commission.³¹⁹ The Power Pool does not have a body that can institute infringement proceedings.³²⁰ While SADC did have a Tribunal where proceedings could be issued against member states, in 2012 the Tribunal was suspended due to the unenforceability of its decisions.³²¹

In addition to ACER's current role in setting network codes on IPP participation and referring infringement cases to the EU Commission, it is anticipated that ACER will play a future role in harmonising tariffs among Member States.³²² Chapter two highlights that tariffs paid by consumers can either incentivise or dissuade IPP investment.³²³ Cost-reflective tariffs, which reflect the actual cost of energy production, are beneficial to a region which seeks to enhance IPP participation in the energy sector.³²⁴ It was proposed in the Third Energy Package that tariffs in the EU should be reflective of the actual costs of production.³²⁵ ACER has yet to produce network codes on cost reflective tariffs.³²⁶ Similar to Sub-Saharan Africa, National Regulatory Authorities in the EU are currently at liberty to impose differing tariffs in their respective countries.³²⁷ In 2014 the EU Commission gave a Decision stating that harmonisation of tariffs is an issue of high priority which ACER must address.³²⁸ ACER has subsequently conducted workshops and called for submissions from member states to develop an appropriate cost reflective network code for EU electricity tariffs.³²⁹

³¹⁷ Joseph Dutton op cit note 273 at 10.

³¹⁸ Joseph Dutton op cit note 273 at 10.

³¹⁹ Joseph Dutton op cit note 273 at 10.

³²⁰ Gaylor Montmasson-Clair and Bhavna Deonarain op cit note 5 at 38.

³²¹ Erika De Wet op cit note 135 at 3.

³²² Agency for Cooperation of Energy Regulators (ACER) 'Harmonised Transmission Tariff Structures' (2015) available at https://acer.europa.eu/en/Electricity/FH_and_network_codes/Pages/Harmonised-transmission-tariff-structures.aspx, accessed on (2019/01/18).

³²³ Regional Electricity Regulators Association of Southern Africa 'RERA Publication on Electricity Tariffs & Selected Performance Indicators for the SADC region' (2014) 11.

³²⁴ Ibid.323

³²⁵ Article 8 of Regulation (EC) 714/2009.

³²⁶ Agency for Cooperation of Energy Regulators op cit note 322 at 4.

³²⁷ Agency for Cooperation of Energy Regulators op cit note 322 at 4.

³²⁸ European Commission Decision 2014/713/EU1.

³²⁹ Agency for Cooperation of Energy Regulators op cit note 322 at 4.

As discussed in chapter two, in Sub-Saharan Africa there is no regulatory body such as ACER which has the authority to ensure that private producers are granted access to the energy market.³³⁰ There are also no binding network codes, but merely guidelines issued by the Regulators Association which place no legal obligations on the Power Pool's member states.³³¹ This has resulted in a lack of policy harmonisation of IPP access and participation in the sub-Saharan African energy market.³³²

Taking the above into consideration, it is evident that the Three Energy Packages established by the EU have had a significant impact on regulation and policy harmonisation.³³³ The development of the Three Energy Packages resulted in increased market liberalisation and the creation of effective regulatory bodies that promote uniform policy-making across EU member states.³³⁴ As stated above, one of the primary rationales for energy market liberalisation in the EU was the improvement of energy security in the region.³³⁵ The section below discusses energy security through the lens of increased number of IPPs harnessing renewable energy in the market as well as the impact of regional trade on energy security.

3.4 Renewable Energy, Regional Trade and Energy Security in the European Union

Given the EU's efforts in unbundling vertically integrated utilities, IPPs are allowed to access and participate in the European energy market.³³⁶ While both renewable and non-renewable energy IPPs can enter the market, there has been an increasing trend towards incentivising renewable energy generation in the EU.³³⁷ This has largely been driven by the EU's goal of reducing greenhouse gas emissions by 20 per cent and having 20 per cent of renewables in its energy mix by 2020.³³⁸ In addition to the Three Energy Packages, the European Commission has also issued a Renewable Energy Directive in 2009, which promotes the non-discrimination

³³⁰ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

³³¹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 28.

³³² LT Kapolo and J Lalk op cit note 114 at 6.

³³³ Julia Black op cit note 264 at 37.

³³⁴ Lucus M Rathke op cit note 262 at 9.

³³⁵ Julia Black op cit note 264 at 23.

³³⁶ Livia Ilie, Alexander Horobet & Corina Popescu op cit note 82 at 15.

³³⁷ International Renewable Energy Agency (IRENA) 'Renewable Energy Prospects for the European Union' (2018) 54.

³³⁸ European Commission 'Energy 2020: A Strategy for Competitive, Sustainable and Secure Energy Supply' (2011) 5.

of independent power producers of renewable energy in gaining access to the central grid.³³⁹ The Directive stipulates that the criteria for accessing the grid must be transparent and clear.³⁴⁰ In 2018 a recast of the Renewable Energy Directive came into force as part of the Clean Energy Package for all Europeans.³⁴¹ The Clean Energy Package is the successor to the Third Energy Package and places binding targets on member states for renewable energy consumption.³⁴² The targets set in the recast Renewable Energy Directive must be transposed into national law by 30 June 2021.³⁴³

The recast Renewable Energy Directive notes that renewable energy support schemes are an important mechanism for promoting renewable electricity production.³⁴⁴ The recast Directive places a duty on EU member states to provide a minimum amount of renewable energy support schemes to other member states on an annual basis.³⁴⁵ The recast Directive also allows member states to voluntarily enter into joint support schemes, where countries can collaborate to facilitate renewable energy production.³⁴⁶ In instances where member states voluntarily enter into joint support schemes, renewable energy produced by one member state may contribute towards the renewable energy share of another member state.³⁴⁷ The recast Directive places an obligation on member states to publish a report three years in advance stating their plans regarding renewable energy support schemes.³⁴⁸

Thus far, EU member states have transposed principles from the Third Package and 2009 Renewable Energy Directive into national policies by implementing feed-in tariffs and issuing green certificates.³⁴⁹ Feed-in tariffs incentivise green energy production by ensuring that power producers receive a fixed remuneration over and above the market price for every unit of electricity produced.³⁵⁰ Green certificates, in contrast, impose obligations on producers to

³³⁹ Directive 2009/28/EC of the European Parliament and of the Council on the Promotion of the Use of Energy from Renewable Sources.

³⁴⁰ Directive 2009/28/EC Article 16.

³⁴¹ Directive 2018/2001 of the European Parliament and the Council on the Promotion of the Use of Energy from Renewable Sources (Recast).

³⁴² Alex Benjamin Wilson 'Promoting Renewable Energy Sources in the EU After 2020' (2017) Briefing Paper: EU Legislation in Progress 1.

³⁴³ *Ibid* at 12.

³⁴⁴ Recast Renewable Energy Directive op cit note 341 Preamble.

³⁴⁵ Alex Benjamin Wilson op cit note 342 at 6.

³⁴⁶ Recast Renewable Energy Directive op cit note 341 Article 13.

³⁴⁷ Recast Renewable Energy Directive op cit note 341 Article 13

³⁴⁸ Alex Benjamin Wilson op cit note 342 at 6.

³⁴⁹ Gregor Erbach 'Promotion of Renewable Energy Sources in the EU: EU Policies and Member State Approaches' (2016) European Union 1.

³⁵⁰ Joan Canton & Asa Johannesson Linden 'Support Schemes for Renewable Energy in the EU' *Economic Paper* 408 (2010) 11.

produce a certain level of renewable energy and are issued by the government once these levels are met.³⁵¹ Both schemes have encouraged the entrance of renewable energy IPPs in the EU energy market and have assisted in increasing energy capacity in member states.³⁵² For example, during 2014 and 2015, renewable energy support schemes in France resulted in the one gigawatt of new installed capacity.³⁵³ Furthermore, renewable energy support schemes in Germany primarily focussed on solar and wind power which resulted in a 20 per cent increase in renewable energy production between 2014 and 2015.³⁵⁴

A low-carbon energy future in the EU is inextricably linked with energy security, ensuring less reliance on imports from fossil fuels.³⁵⁵ The EU is particularly at risk of experiencing periods of energy insecurity due to its significant reliance on energy imports from non-EU countries.³⁵⁶ To date, the EU imports approximately 53 per cent of its energy supplies and relies on Russia for all its gas resources.³⁵⁷ The EU's reliance on energy from outside of the Union makes member states vulnerable to energy insecurity in instances of external power shortages or political instability.³⁵⁸ For example, an ongoing gas dispute between Russia and the Ukraine, is currently impacting the EU's ability to access Russian gas through a Ukraine transmission line.³⁵⁹

Regional integration has been considered by EU policy-makers as a key tool in achieving energy security amongst member states.³⁶⁰ Energy security in the EU encompasses a reliable, accessible and sustainable energy supply.³⁶¹ To mitigate against an over reliance on external imports, regional integration serves as an avenue by which EU member states can engage in

³⁵¹ Ibid at 9.

³⁵² European Commission 'Energy 2020: A Strategy for Competitive, Sustainable and Secure Energy Supply' (2011) 6.

³⁵³ Council for European Energy Regulators 'Status Review for Renewable Energy Support Schemes in Europe' (2017) 13.

³⁵⁴ Ibid at 13.

³⁵⁵ Rafael Leal-Arcas, Valentina Caruso and Raphaela Leupuscekn 'Renewables, Preferential Trade Agreements and EU Energy Security' (2015) 4 *Laws* 514.

³⁵⁶ Ibid at 219.

³⁵⁷ Rafael Leal-Arcas Valentina Caruso & Raphaela Leupuscekn op cit note 355 at 219.

³⁵⁸ Chloé Le Coq 'Russia-Ukraine Gas Conflict-Implications for the EU' (2008) 1.

³⁵⁹ Ibid.

³⁶⁰ European Court of Auditors 'Improving the Security of Energy Supply by Developing the Internal Energy Market: More Efforts Needed' (2015) 11.

³⁶¹ Iana Dreyer and Gerald Stang 'What Energy Security for the EU' (2013) 1.

efficient internal trade, sharing expertise and infrastructure.³⁶² In this way, energy shocks from external sources can be minimised, resulting in a more reliable energy supply.³⁶³

The German transition to renewable energy '*Energiewende*' is an apt example of the manner in which increased renewable energy production can promote regional trade.³⁶⁴ The *Energiewende* in Germany began in the 1980s and gained momentum through the implementation of the EU Energy Packages and Renewable Energy Directives into national law.³⁶⁵ The energy transition envisages that renewable sources will constitute 80 per cent of Germany's energy mix by the year 2050.³⁶⁶ In 2018, renewables accounted for 40.3 per cent of Germany's total electricity production and 58 per cent of the country's installed capacity.³⁶⁷ Renewable energy IPPs have been given incentives to enter the German energy market primarily through feed-in tariffs.³⁶⁸ Given the rise of renewable energy electricity production in Germany, the country has an excess electricity generation capacity.³⁶⁹ This excess capacity has resulted in Germany's increased participation in the regional trade market with an export electricity surplus in 2017 of 54.9 terawatt hours.³⁷⁰ Increased regional trade in the EU enhances energy security by ensuring less reliance on imports from fossil fuels, while promoting a competitive renewable energy trading market.³⁷¹

Notwithstanding the positive impact of renewable energy regional trade on energy security, the intermittent nature of renewable energy has been a concern in terms of reliable energy supply.³⁷² Given that renewable sources like sunlight and wind are not always available, energy security is dependent on storage facilities to ensure continuous electricity supply. The European Commission has advocated for the regulation and utilisation of energy storage facilities in the

³⁶² European Court of Auditors op cit note 360 at 11.

³⁶³ European Commission 'Communication from the Commission to the European Parliament and the Council: EU Energy Security Strategy' (2014) 10.

³⁶⁴ Craig Morris & Martin Pehnt *The German Energiewende* (2016) 16.

³⁶⁵ Annika Hedberg 'Germany's Energy Transition: Making it Deliver' (2017) 4.

³⁶⁶ Rainer Quitzow, Sybille Roehrkasten & Martin Jaenicke 'The German Energy Transition in International Perspective' (2016) 3.

³⁶⁷ See ISE Fraunhofer 'Net Public Electricity Generation in Germany' (2018) available at https://www.energy-charts.de/energy_pie.htm, accessed on 10 November 2018 and ISE Fraunhofer 'Net Installed Electricity Generation Capacity in Germany' (2018) available at https://www.energy-charts.de/power_inst.htm, accessed on 10 November 2018.

³⁶⁸ Rainer Quitzow, Sybille Roehrkasten & Martin Jaenicke op cit note 366 at 3.

³⁶⁹ ISE Fraunhofer Institute for Solar Energy Systems 'Power Generation in Germany- assessment of 2017' (2018) 7.

³⁷⁰ Ibid.

³⁷¹ Rafael Leal-Arcas, Valentina Caruso & Raphaela Leupuscekn op cit note 355 at 514.

³⁷² Andreas Poullikkas 'Integrating Intermittent Renewables Sources into the EU Electricity System by 2020: Challenges and Solutions' (2010) 7.

EU.³⁷³ Current EU legislation is silent on the issue of energy storage, however the proposed 2016 Recast Electricity Directive³⁷⁴ seeks to regulate these facilities.³⁷⁵ In the EU, Italy has made significant strides in the regulation of energy storage and implementation of pilot projects to promote energy security within the renewables sector.³⁷⁶ Belgium has also enacted legislation that regulates when and how energy storage facilities can be utilised.³⁷⁷

From the above it is evident that market liberalisation has facilitated the access and participation of renewable energy IPPs in the EU energy market. The trade of electricity produced from renewables results in a diversification of energy sources, thereby promoting energy security.³⁷⁸ Given that energy security also encompasses sustainable energy, the use of renewable energy sources is key in the EU.³⁷⁹

3.5 Sub-Saharan Africa's Renewable Energy Potential and EU Market Liberalisation

The unbundling of national utilities in the EU through the Three Energy Packages, lead to an increase in IPP participation in the European energy sector.³⁸⁰ Market liberalisation also resulted in more renewable energy production, creating a capacity surplus for regional trade in the EU.³⁸¹ Unlike the EU, sub-Saharan Africa is still dominated by vertically integrated utilities which control electricity production, transmission and distribution.³⁸² These utilities source their electricity largely from fossil fuels.³⁸³

The gradual incorporation of IPPs in the sub-Saharan African market has not resulted from regional legislative intervention, as in the case of the EU, but rather individual national measures.³⁸⁴ Certain countries such as Zambia and South Africa have incorporated IPPs into

³⁷³ See European Commission 'Energy Storage- the role of Electricity' Commission Staff Working Document (2017).

³⁷⁴ European Commission 'Proposal for a Directive of the European Parliament and of the Council on the Common Rules for the Internal Market on Electricity' (2016).

³⁷⁵ EASE-EERA 'Recommendations for a European Energy Storage Technology Development RoadMap Towards 2030- Update' (2017) 14.

³⁷⁶ EURO BAT 'Battery Energy Storage in the EU: Barriers, Opportunities, Services and Benefits' (2016) 26.

³⁷⁷ Ibid.

³⁷⁸ Rafael Leal-Arcas, Valentina Caruso & Raphaela Leupuscekn op cit note 355 at 514.

³⁷⁹ Rafael Leal-Arcas, Valentina Caruso & Raphaela Leupuscekn op cit note 355 at 514.

³⁸⁰ Lucas M Rathke op cit note 262 at 9.

³⁸¹ Julia Black op cit note 264 at 23.

³⁸² Paul L. Lucas, Anteneh G. Dagnachew & Andries F. Hof op cit note 44 at 6.

³⁸³ World Energy Council op cit note 4 at 25.

³⁸⁴ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

the energy market at a greater pace than other countries like the Democratic Republic of Congo (DRC).³⁸⁵ There is currently no legally binding regional framework ensuring the incorporation of IPPs and renewable energy into the energy market.³⁸⁶ The lack of policy harmonisation in sub-Saharan Africa can be contrasted with the unbundling regime of the EU which provides member states with prescribed avenues for unbundling vertically integrated utilities and enabling competition.³⁸⁷ Furthermore, ACER serves as a watchdog in ensuring liberalisation.³⁸⁸ The Three Energy Packages together with the Renewable Energy Directive place binding obligations on member states to incorporate renewable energy IPPs into the European energy market. In sub-Saharan Africa, SADC has produced energy frameworks providing guidelines on increasing renewable energy production.³⁸⁹ These guidelines are however broad and give countries significant leeway as to how they are to be implemented.³⁹⁰

Despite the lack of harmonisation regarding renewable energy IPPs in the energy market, sub-Saharan Africa has significant renewable energy potential.³⁹¹ The region's geographic location and climate results in sunshine on an average of 325 days a year.³⁹² Due to these optimal weather conditions, the annual solar generation capacity potential of sub-Saharan Africa is 20000 terawatt hours.³⁹³ With regard to wind power, while most energy is harnessed specifically in coastal areas, the generation capacity of wind sources is still substantial at 800 terawatt hours every year.³⁹⁴ Notwithstanding the region's renewable energy potential, it has been estimated that only one per cent of sub-Saharan Africa's wind and solar potential has been realised.³⁹⁵ Hydropower currently produces 20 per cent of the regions total energy generation capacity at 350 gigawatts of electricity and it is estimated that it has the potential of contributing 650 gigawatts towards sub-Saharan Africa's future energy generation capacity.³⁹⁶ Lastly in terms of geothermal energy, the Rift Valley area in sub-Saharan Africa running along

³⁸⁵ See Promethium Carbon op cit note 144 at 16, 32, 50.

³⁸⁶ Southern African Development Community op cit note 9 at 43.

³⁸⁷ Alexis Meletiou, Carlo Cambini & Marcelo Masera 'Regulatory and Ownership Determinant of Unbundling regime Choice for European Electricity Transmission Utilities' (2018) 50 *Utilities Policy* 13.

³⁸⁸ Mehmet Kayikci op cit note 279 at 23.

³⁸⁹ Southern African Development Community op cit note 9 at 54.

³⁹⁰ RL Angwe *Energy Efficiency* op cit note 127 at 33.

³⁹¹ B Batinge, J K Musango & A C Brent 'Leapfrogging to Renewable Energy: The Opportunity for Unmet Electricity Markets' (2017) 28 *South African Journal of Industrial Engineering* 40.

³⁹² *Ibid* at 40.

³⁹³ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 12.

³⁹⁴ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 12.

³⁹⁵ International Renewable Energy Agency 'Renewable Energy Auctions: Cases from Sub-Saharan Africa' (2018) 12.

³⁹⁶ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al op cit note 10 at 8,20.

Zimbabwe, Mozambique, Malawi and Tanzania has the potential of producing 4000 megawatts of geothermal power generated by steam.³⁹⁷

While sub-Saharan Africa has significant renewable energy potential, the intermittent nature of renewables can threaten energy security in the region.³⁹⁸ However, the sub-Saharan African climate as well as the availability of new storage facilities contribute to the achievement of energy security through renewable energy.³⁹⁹ The frequent sunshine in the region assists in mitigating the intermittent nature of renewables, thereby promoting energy security.⁴⁰⁰ The sub-Saharan African climate has also given rise to the use of Concentrated Solar Power (CSP) technologies which can store electricity.⁴⁰¹ CSP technology operates on radiation from the sun to generate power and can store additional thermal energy.⁴⁰² South Africa is a leader in CSP technology with seven CSP plants boasting a collective energy capacity of 600 megawatts.⁴⁰³

Battery storage also serves as an important mechanism in which renewable energy can be stored. In 2017 a pilot project was conducted by Swansea University in Zambia for the installation of off-grid solar energy and energy storage in lead-acid batteries.⁴⁰⁴ The project illustrated that lead-acid batteries is a viable option for energy storage in rural sub-Saharan Africa due to their availability, durability and affordability.⁴⁰⁵ Lastly, hydro-storage currently serves as the largest form of storage in sub-Saharan Africa with 1.4 gigawatts of stored energy.⁴⁰⁶

Energy security through renewables and storage can be enhanced through regional integration. As with the EU, regional trade can assist in promoting energy security in sub-Saharan Africa by the sharing of resources, infrastructure and expertise.⁴⁰⁷ Renewable energy currently constitutes 29.03 per cent of the Power Pool's installed generation capacity.⁴⁰⁸ However, it has been forecasted that increased renewable energy production could lead to renewable energy

³⁹⁷ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 12.

³⁹⁸ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al op cit note 10 at 38.

³⁹⁹ Alex Eller & Dexter Gauntlett 'Energy Storage Trends and Emerging Markets' (2017) 32.

⁴⁰⁰ B Batinge, J K Musango & A C Brent op cit note 391 at 40.

⁴⁰¹ OO Craig, AC Brent & F Dinter 'The Current and Future Economics of Concentrating Solar Power (CSP) in South Africa' (2017) 28(3) *South African Journal of Industrial Engineering* 2.

⁴⁰² Anjaneyulu Krochapalli & Brenton Greska 'Concentrated Thermal Power' (2015) 1.

⁴⁰³ OO Craig, AC Brent & F Dinter op cit note 401 at 3.

⁴⁰⁴ Rhys G Charles, Matthew Davies & Peter Douglas et al 'Sustainable Solar Energy Storage for Rural Africa' (2017) Conference on Sustainable Energy and Environmental Protection 1.

⁴⁰⁵ Ibid.

⁴⁰⁶ Alex Eller & Dexter Gauntlett op cit note 399 at 32.

⁴⁰⁷ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

⁴⁰⁸ Southern African Power Pool op cit note 38 at 14.

contributing 44 per cent towards the Power Pool's new installed generation capacity from 2017-2022.⁴⁰⁹ When countries diversify their energy production mix through the incorporation of renewables, this could lead to an excess export capacity, facilitating regional trade.⁴¹⁰ This is evident in both the EU and Sub-Saharan Africa, with Germany and South Africa as leaders in their respective regions.⁴¹¹ The incorporation of renewable energy IPPs in the South African energy sector has resulted in South Africa having an excess generation capacity.⁴¹² This energy surplus has enabled South Africa to effectively engage in regional trade by exporting its excess electricity.⁴¹³

3.6 Conclusion

The liberalisation of the EU Energy Market has had a significant impact on regulation, harmonisation, regional trade and energy security in member states. The First and Second Energy Packages sought to harmonise liberalisation policies through the creation of national regulatory bodies as well as councils and forums.⁴¹⁴ These bodies and councils however did not possess any binding powers, leaving the implementation of directives largely to the discretion of national governments.⁴¹⁵ In order to ensure policy harmonisation, the Third Energy Package created the Agency for Co-operation of Energy Regulators which has binding decision-making powers.⁴¹⁶

The liberalisation efforts of the Three Energy Packages together with EU legislation aimed at addressing climate change, resulted in an increased presence of renewable energy IPPs in the electricity market.⁴¹⁷ Renewable Energy IPP participation has enhanced energy security in the region by diversifying the EU's energy mix and decreasing the EU's reliance on fossil fuel imports.⁴¹⁸ Increased renewable energy production furthermore has increased EU member

⁴⁰⁹ Southern African Power Pool op cit note 38 at 15.

⁴¹⁰ European Commission op cit note 363 at 10.

⁴¹¹ See ISE Fraunhofer Institute for Solar Energy Systems op cit note 369 at 7 and Southern African Development Community op cit note 9 at 33.

⁴¹² Eskom 'Integrated Report' (2018) 29.

⁴¹³ Southern African Development Community op cit note 9 at 33.

⁴¹⁴ Julia Black op cit note 264 at 27-32.

⁴¹⁵ Julia Black op cit note 264 at 20.

⁴¹⁶ Mehmet Kayikci op cit note 279 at 23.

⁴¹⁷ International Renewable Energy Agency (IRENA) op cit note 337 at 54.

⁴¹⁸ Rafael Leal-Arcas; Valentina Caruso & Raphaela Leupuscekn op cit note 371 at 514.

states' ability to engage in regional trade as seen in the case of the German *Energiewende*.⁴¹⁹ Regional trade promotes energy security through the sharing of expertise and infrastructure.⁴²⁰

In sub-Saharan Africa, there is no binding policy frameworks in place to facilitate IPP participation in the energy market.⁴²¹ Unlike ACER, The Regulatory Authority does not have the authority to issue mandatory guidelines for IPP participation, nor does it have oversight powers in this regard.⁴²² In terms of renewable IPPs in particular, SADC also does not have the power to give binding guidelines concerning the incorporation of these IPPs in the energy market.⁴²³ Sub-Saharan Africa nevertheless has a significant renewable energy potential.⁴²⁴ Renewable energy production can achieve energy security in the region due to its climate and the possibilities for energy storage.⁴²⁵ An increased energy capacity through renewable energy IPP production can also promote energy security through the regional trade of excess electricity.⁴²⁶

The EU model serves as an apt example of the manner in which policy harmonisation of IPP participation can enhance regional trade and promote energy security as envisaged in SDG 7. Chapter four will conclude this thesis by discussing the relationship between policy harmonisation, regional integration and energy security in sub-Saharan Africa. The chapter will also provide recommendations drawing lessons from the EU model.

⁴¹⁹ Craig Morris & Martin Pehnt op cit note 364 at 16.

⁴²⁰ European Court of Auditors op cit note 360 at 11.

⁴²¹ Southern African Development Community op cit note 9 at 43.

⁴²² Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

⁴²³ RL Angwe op cit note 390 at 33.

⁴²⁴ B Batinge, J K Musango & A C Brent op cit note 391 at 40.

⁴²⁵ Alex Eller & Dexter Gauntlett op cit note 399 at 32.

⁴²⁶ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 14.

Chapter Four: Conclusion and Recommendations

4.1 Summary of Challenges and Opportunities

This thesis explored the achievement of energy security in sub-Saharan Africa through the lens of IPP participation and regional integration. Energy is a basic human need, essential for activities such as cooking and the heating, cooling and lighting of homes.⁴²⁷ Energy security is a goal embodied in the United Nations Sustainable Development Goal Seven (SDG 7) and refers to the availability of continuous and sustainable energy supply.⁴²⁸ Regional integration can promote energy security by enabling countries to share infrastructure and trade electricity.⁴²⁹ Regional integration is currently hindered by state owned grids with insufficient generation capacities and an overreliance on fossil fuels.⁴³⁰

Energy production from Independent Power Producers (IPPs) can increase a country's energy generation capacity and diversify its energy mix.⁴³¹ Increased IPP participation supports regional trade as surplus energy produced can be transmitted regionally through the Southern African Power Pool ('Power Pool').⁴³² There is a need for a harmonised framework amongst Power Pool member states for the incorporation of IPPs in the sub-Saharan Africa energy market.⁴³³ The European Union (EU) case study in chapter three illustrates that policies promoting IPP participation are vital for the achievement of energy security.⁴³⁴ Renewable energy IPPs in particular play an important role in diversifying a country's energy production and promoting a reliable energy supply.⁴³⁵ The case study also illustrates the important role that regulation plays in harmonisation.⁴³⁶

⁴²⁷ World Health Organisation 'The Energy Access Situation in Developing Countries: A Review Focussing on Least Developed Countries in sub-Saharan Africa' (2009) 3.

⁴²⁸ International Energy Agency op cit note 29.

⁴²⁹ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 5.

⁴³⁰ Nkiruka Avila, Juan Pablo Carvallo, Brittany Shaw et al 10 at 8.

⁴³¹ Southern African Power Pool op cit note 16 at 5.

⁴³² Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 13.

⁴³³ Southern African Development Community op cit note 9 at 43.

⁴³⁴ Livia Ilie, Alexandra Horobet & Corina Popescu op cit note 82 at 5.

⁴³⁵ International Renewable Energy Agency op cit note 337 at 54.

⁴³⁶ Mehmet Kayikci op cit note 279 at 23.

Taking the above into consideration, this chapter provides reflections and recommendations on policy harmonisation and regulation concerning IPPs. The chapter also identifies the future role of regional integration and renewable energy in the achievement of energy security in sub-Saharan Africa. Lastly, a brief explanation of policy harmonisation in the context of this thesis is provided.

4.2 Policy Harmonisation and Regulation of Independent Power Producers: Reflections and Recommendations

It is highlighted in chapter two that there is presently no binding legal framework within the Power Pool that governs the participation of IPPs in the sub-Saharan African energy sector.⁴³⁷ The Power Pool's founding document the Inter-Governmental Memorandum of Understanding, permits but does not ensure IPP participation in the energy market.⁴³⁸ This is because IPPs participate indirectly in regional trade through national utilities and are therefore subject to the national laws of a country.⁴³⁹ Without a harmonised framework across sub-Saharan Africa governing IPPs, countries in the region are at liberty either to promote IPP participation or restrict their access to the market.⁴⁴⁰ The case studies of South Africa and Zambia illustrate that there is a greater presence of IPPs in an energy sector when there are coherent policy frameworks in place to enable their participation in energy production.⁴⁴¹ The case study of Democratic Republic of Congo (DRC) shows that incoherent policies governing IPPs can severely restrict their access and involvement in the energy sector.⁴⁴²

A key factor influencing the harmonisation of IPP policies in sub-Saharan Africa is the roles and responsibilities of National Regulatory Authorities. This is because these authorities are responsible for the management and oversight of IPPs.⁴⁴³ The duties of National Regulatory Authorities in sub-Saharan Africa differs between countries.⁴⁴⁴ The independence of National Regulatory Authorities is also compromised when political agendas, rather than binding policy frameworks, influence the way in which these authorities grant IPPs access to the energy

⁴³⁷ Southern African Development Community op cit note 9 at 43.

⁴³⁸ LT Kapolo & J Lalk op cit note 114 at 6.

⁴³⁹ Southern African Development Community op cit note 9 at 20.

⁴⁴⁰ Amy Michelle Rose op cit note 79 at 226.

⁴⁴¹ Southern African Power Pool op cit note 38 at 44 and Southern African Development Community op cit note 9 at 33.

⁴⁴² Promethium Carbon 'Report: Electricity Market Reform in Southern Africa' (2016) 16.

⁴⁴³ Anton Eberhard, Katherine Gratwick, Elvira Morella et al op cit note 11 at 393.

⁴⁴⁴ Amy Michelle Rose op cit note 79 at 226.

market.⁴⁴⁵ The Regional Electricity Regulators Association of Southern Africa (‘The Regulators Association’) does not have the authority to provide a harmonised framework for the manner in which National Regulatory Authorities enable IPP participation nationally.⁴⁴⁶ There is also no body in the Southern African Development Community (SADC) that can initiate proceedings against members of the Power Pool who do not facilitate IPP participation.⁴⁴⁷

It is recommended that the Regulators Association is given the mandate by the Power Pool to become a regional regulatory body, similar to the Agency for the Co-operation of Energy Regulators (ACER) in the EU.⁴⁴⁸ To facilitate policy harmonisation, SADC should establish policies which empower the Regulators Association to create binding guidelines on IPP participation in Power Pool member states. The network codes developed by ACER on enabling a competitive environment in energy production can serve as a framework in this respect.⁴⁴⁹ To achieve harmonisation, the Regulators Association should also clarify the roles and responsibilities of National Regulatory Authorities.

Similar to ACER, the Regulators Association should be able to handle disputes between National Regulators and refer matters of non-compliance to SADC.⁴⁵⁰ Non-compliance in this respect is premised on a failure of Power Pool members to incorporate IPPs into the energy market, as required by the Regulators Association’s binding guidelines. As discussed in chapter three, the SADC Tribunal was suspended due to the unenforceability of its decisions.⁴⁵¹ For SADC to hear matters of non-compliance, it is necessary that a new tribunal be established in which matters of non-compliance can be heard. To ensure that decisions are enforced, it is suggested that after the Tribunal’s decision is handed down, non-complying parties provide quarterly reports to SADC showing what steps have been taken to facilitate IPP market access. In the event that Power Pool members are still not compliant with the guidelines, financial penalties can be imposed on these countries, proportional to the country’s ability to pay.

⁴⁴⁵ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

⁴⁴⁶ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

⁴⁴⁷ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 38.

⁴⁴⁸ Mehmet Kayikci op cit note 279 at 23.

⁴⁴⁹ Commission Regulation (EU) 2016/631 op cit note 311.

⁴⁵⁰ Joseph Dutton op cit note 7 at 10.

⁴⁵¹ Erika De Wet op cit note 135 at 3.

4.3 The future of Regional Integration, Renewable Energy and Energy Security in Sub-Saharan Africa

This thesis proposes that more IPP participation in the energy market can promote regional integration and energy security. Energy security is enhanced when a country has sufficient energy generation capacity to engage in regional trade. Generation capacity refers to the maximum output of electricity that a country can produce.⁴⁵² Excess energy generated can be transmitted between members of the Power Pool, thereby enhancing cross-border trade.⁴⁵³ The benefit of increased generation capacity in the Power Pool was recognised by SADC Ministers as a way of meeting energy demand.⁴⁵⁴ As a result, voluntary membership of the Power Pool was extended to IPPs.⁴⁵⁵

The present research does not suggest that IPP membership of the Power Pool be made mandatory through policy harmonisation. It is rather asserted that increased IPP participation on a national level can impact positively on regional trade, irrespective of Power Pool Membership. Excess electricity produced by IPPs can be sold to national utilities who can then trade the electricity on the Power Pool.⁴⁵⁶ This is illustrated in the Zambian and South African case studies, where increased IPP participation resulted in greater regional trade.⁴⁵⁷

Energy security is also promoted through the diversification of energy resources. As stated in chapter one and three, energy security encompasses not only reliability but also sustainability.⁴⁵⁸ The EU is an example of a trading block which has made substantial strides in the incorporation of renewable IPPs into the energy market.⁴⁵⁹ Regional policies in the EU not only liberalised the market to allow IPP participation but also incentivised the energy production from renewables specifically.⁴⁶⁰

Sub-Saharan Africa has significant renewable energy potential, particularly due to its climate.⁴⁶¹ The harnessing of wind, solar, hydropower and geothermal energy can assist in

⁴⁵² Paul Breeze op cit note 17 at 32.

⁴⁵³ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 13.

⁴⁵⁴ Southern African Power Pool op cit note 38 at 5.

⁴⁵⁵ Southern African Power Pool op cit note 16 at 5.

⁴⁵⁶ Donal T O'Leary, Jean-Pierre Charpentier and Diane Minogue op cit 92 at 1.

⁴⁵⁷ Southern African Power Pool op cit note 38 at 44 and Promethium Carbon op cit note 144 at 32.

⁴⁵⁸ International Energy Agency 'Energy Security' op cit note 29 at 27.

⁴⁵⁹ Livia Ille, Alexandra Horobet & Corina Popescu op cit note 82 at 1.

⁴⁶⁰ International Renewable Energy Agency (IRENA) op cit 337 at 54.

⁴⁶¹ B Batinge, J K Musango & A C Brent op cit note 391 at 40.

providing a secure energy supply within the region.⁴⁶² However, regional guidelines by SADC promoting renewable energy production are too broad and do not place substantive obligations on countries to incorporate renewable IPPs into their energy production mix.⁴⁶³ It is proposed that SADC establish coherent policies for Power Pool members on incentivising renewable energy IPPs to participate in the market. These incentives can be premised on feed-in tariffs and green certificates, such in the case of the EU.⁴⁶⁴ The South African example of procurement bid windows through the Renewable Energy Independent Power Producer Program (REIPPP) can also benefit the rest of the Power Pool Member States.⁴⁶⁵ The program enabled IPPs to enter the energy market and contributed towards South Africa achieving an excess generation capacity.⁴⁶⁶ Energy produced from South African renewable energy IPPs has also contributed significantly to the Power Pools energy generation capacity.⁴⁶⁷ National policies should be harmonised to incentivise IPPs, thereby promoting regional integration and energy security.

4.4 Harmonisation not Uniformity

This thesis proposes a harmonisation of national policies in the Power Pool rather than the complete uniformity of these policies. Harmonisation in this thesis entails the setting of a legally certain framework across national policies to facilitate IPP participation in the sub-Saharan Energy Sector.⁴⁶⁸ Harmonisation does not however presume that the countries in sub-Saharan Africa should enact the exact same policies with respect to IPPs.⁴⁶⁹ Harmonisation is preferred over uniformity because each country has different national circumstances which dictate the manner in which regional frameworks are implemented.⁴⁷⁰

Policies should be harmonised to set a minimum standard which must be met by National Regulatory Authorities and governments. As stated above, it is necessary that the roles and responsibilities of National Regulatory Authorities are clearly defined. It is also important for regional policies to give clear guidelines and potential incentive schemes concerning the

⁴⁶² International Renewable Energy Agency op cit note 395 at 12 and Nkiruka Avila, Juan Pablo Carvalho, Brittany Shaw et al op cit note 10 at 8, 12.

⁴⁶³ RL Angwe op cit note 127 at 33.

⁴⁶⁴ Gregor Erbach op cit 349 at 1.

⁴⁶⁵ Department of Energy op cit note 204 at 5.

⁴⁶⁶ Eskom op cit note 412 at 29.

⁴⁶⁷ Southern African Power Pool op cit note 38 at 15.

⁴⁶⁸ Jose Angelo Estrella Faria op cit note 69 at 13.

⁴⁶⁹ Jose Angelo Estrella Faria op cite note 69 at 3.

⁴⁷⁰ Gaylor Montmasson-Clair & Bhavna Deonarain op cit note 5 at 41.

participation of IPPs in the energy sector. However, National Regulatory Authorities have discretion regarding the manner in which to implement the standards and guidelines set for creating a conducive environment for IPP participation. In respect of renewable energy IPPs, it is also at the choice of national governments as to the kinds of renewable energies which are suitable for the country. For example, in the DRC it may be conducive to promote more hydro energy IPPs given the country's substantial water resources.⁴⁷¹ The promotion of hydro energy IPPs will not however be appropriate for South Africa where certain parts of the country are experiencing water shortages.⁴⁷² Policy harmonisation, regional integration and energy security can be achieved, without compromising the sovereignty of member states.

⁴⁷¹ Vika di Panzu 'Energy Sector Reform in the Democratic Republic of Congo (DRC). Inga III and Grand Inga Hydro Projects Development' (2011) Power Indaba Summit 4.

⁴⁷² Zachary Donnenfeld, Courtney Crookes and Steve Hedden 'A Delicate Balance: Water Scarcity in South Africa' (2018) 12 *Southern African Report* 2.

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