The role of tax incentives in addressing the energy crisis in South Africa

by

Nandipha Mzizi

Student number: U22937022

Submitted in partial fulfilment of the requirements for the degree

Master of Laws: Tax Law

In the

FACULTY OF LAW

At the

UNIVERSITY OF PRETORIA

Supervisor: Professor SP Van Zyl

Date of submission: 31 October 2024

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Law

Declaration of originality[1] for a research output[2]

Biographical information of student	
Student #	U22937022
Title	Ms
Surname	Mzizi
Initial(s)	N
Registered for the: LLM / MPhil (coursework) ◯ : or LLM / MPhil ◉ : or LLD / PhD ◯	
Email	u22937022@tuks.co.za
Mobile phone #	0823048235

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this research output is my own original work. Where other people's work has been used (either from a printed source, internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.
3. I have not used work previously produced by another student or any other person to hand in as my own.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Signatures

Student	*Supervisor*
Co-supervisor	*Head of Department*

[1] Annexure G to Postgraduate Administrative Processes for Registered Students – S1834/13 (amended).
[2] Research output, in this context, is defined as a mini-dissertation, dissertation or thesis.

DECLARATION OF ORIGINALITY

UNVERSITY OF PRETORIA

The Department of …**Mercantile Law**…. places great emphasis upon integrity and ethical conduct in the preparation of all written work submitted for academic evaluation.

Academics teach you about referencing techniques and how to avoid plagiarism; it is your responsibility to act on this knowledge. If you are at any stage uncertain as to what is required, you should speak to your lecturer before any written work is submitted.

You are guilty of plagiarism if you copy something from another author's work (e.g. a book, an article or a website) without acknowledging the source and pass it off as your own. In effect you are stealing something that belongs to someone else. This is not only the case when you copy work word-for-word (verbatim) but also when you submit someone else's work in a slightly altered form (paraphrase) or use a line of argument without acknowledging it.

Students who commit plagiarism will not be given any credit for plagiarised work. The matter may also be referred to the Disciplinary Committee (Students) for a ruling. Plagiarism is regarded as a serious contravention of the University's rules and can lead to expulsion from the University.

The declaration which follows must accompany all written work submitted while you are a student of the Department of **Mercantile Law**… No written work will be accepted unless the declaration has been completed and submitted.

Full names and surname of student: **N a n d i p h a M z i z i** …

Student number: **U22937022**…..

Topic of work: **The role of tax incentives in addressing the energy crisis in South Africa**

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.

2. I declare that this …Dissertation…… (e.g. essay, report, project, assignment, dissertation, thesis, etc) is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.

SIGNAT

31 October 2024

DATE

Table of Contents

ACKNOWLEDGEMENTS

This dissertation is dedicated to my dearly departed parents. May their souls continue to rest in peace. Ndiyabonga Jama Sjadu.

I would like to thank my siblings for their unwavering support throughout the years and for always believing in me.

I would further like to express my great appreciation to my supervisor, Professor Stephanus Phillipus van Zyl for guiding me through this learning process. Most importantly, thank you for your patience and your generosity with knowledge. I am honoured to have been your student.

I would also like to thank my mentor, Jacqui Kilani for always putting things into perspective and reminding me to keep it simple. Most importantly, I appreciate the support you provide, the learning environment and space for growth you create.

ABSTRACT

The electricity generation industry is one of the most important industries, often referred to as the engine of the economy. However, in recent times South Africa has faced challenges of electricity supply being unable to meet growing demand, leading to load shedding. The electricity industry is also one of the biggest contributors to greenhouse gas emissions therefore must be at the forefront to address climate change.

Various instruments are available to address these challenges. This dissertation explores the role of tax incentives in addressing the energy crisis in South Africa. Tax incentives have the potential of correcting market failures by promoting investments in the electricity sector. Incentives that are well designed and easy to administer can be effective in addressing the energy crisis. As tax incentives are a cost to the *fiscus*, their costs, including administration costs, must be weighed against their benefits, which includes social benefits. South Africa has an array of tax incentives that are applicable generally and specifically to the electricity industry, including those that promote investment in renewable energy to address the environmental externalities.

The study finds that renewable energy incentives, with special focus on temporary rooftop solar incentives, are well-designed and administratively efficient with sunset clauses to address short-term challenges. The importance of base load electricity generation is highlighted and there is a potential to enhance incentives for such technologies. The Research and Development incentives are in line with international practice with room for improvement, particularly on the certainty principle as it pertains to the sunset clauses that are often amended. The energy efficiency incentive is found to lack simplicity and that could be a deterrent leading to it being ineffective. The importance of sunset clauses is highlighted to ensure that incentives are phased out without difficulty when their objective is achieved. The South African tax system is found to be one of the best in the world in terms of both systems and transparency, therefore, incentives are administered with ease.

Lessons learnt from other comparative jurisdictions show that a combination of tax and non-tax incentives has assisted in accelerating investment in electricity generation. In particular, opening the industry to private electricity generators and providing incentives has led to greater investment in renewable energy and ensured

that supply is able to meet growing demand while on course to meet climate change targets.

ABBREVIATIONS AND ACRONYMS

ASEAN	Association for Southeast Asian Nations
BESS	Battery Energy Storage System
BRICS	Brazil, Russia, India, China and South Africa
CIT	Corporate Income Tax
CSIR	Council for Scientific and Industrial Research
CO_2	Carbon dioxide
DMRE	Department of Minerals, Resources and Energy
DPE	Department of Public Enterprises
DSI	Department of Science and Innovation
DTC	Davis Tax Committee
Eskom	Eskom Holdings SOC Ltd
EU	European Union
EVN	Vietnam Electricity Power Group
FIT	Feed-in-Tariffs
FTE	Fiscal Transparency Evaluation
G20	The Group of twenty - premier forum for international economic cooperation
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GW	Gigawatts
GWh	Gigawatt Hour
IEA	International Energy Agency
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund

IPP	Independent Power Producer
IRP	Integrated Resource Plan
ITA	Income Tax Act
ITID	Investment Tax Incentives Database
JETIP	Just Energy Transition Investment Plan
JSE	Johannesburg Stock Exchange
KWh	Kilowatt Hour
METR	Marginal Effective Tax Rate
MVA	Megavolt Amperes
MW	Megawatt(s)
NDP	National Development Plan
NERSA	National Energy Regulator of South Africa
NTCSA	National Transmission Company South Africa
OECD	Organisation for Economic Cooperation and Development
PIT	Personal Income Tax
PPA	Power Purchase Agreement
PPP	Public Private Partnerships
REIPPP	Renewable Energy Independent Power Producer Procurement Programme
REP	Renewable Energy Premium
RFP	Request for Proposal
R&D	Research and Development
SANEDI	South African National Energy Development Institute
SAREM	South Africa Renewable Energy Masterplan
SARS	South African Revenue Service
SDGs	Sustainable Development Goals

Solar PV	Photovoltaic solar
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USA / US	United States of America
VAT	Value-Added Tax

CHAPTER 1 – INTRODUCTION

1.1 Introduction

The planet is facing an energy crisis owing to an escalation in global energy demand, dependence on fossil-based fuels for energy generation and transportation, and an increase in world population. Excessive burning of fossil fuels is not only depleting natural resources but also results in an increase of carbon dioxide emissions, which is believed to be responsible for increasing average global temperatures.[1]

According to the statistics published by the Council for Scientific and Industrial Research (CSIR) on power generation in South Africa, the actual nominal installed capacity at 31 December 2022 (excluding embedded generation capacity and private capacity) was 54 669 Megawatts (MW).[2] Eskom Holdings SOC Ltd (Eskom) is the primary energy producer. During April 2023, Eskom generated 15 443 Gigawatt Hours (GWH) (87.4 per cent) out of 17 671 GWH produced in South Africa.[3]

South Africa has been marred by power outages since 2008 as Eskom has been unable to meet demand from its old and poorly maintained plants.[4] Load shedding has been part of South Africa since 2007.[5] Load shedding is a controlled process that responds to unplanned events in order to protect the electricity power system from a total blackout.[6]

---

[1] ED Coyle & RA Simmonds (Eds) *Understanding the Global Energy Crisis (*2014) 1 Purdue University Press: West Lafayette. Available from http://www.jstor.org/stable/j.ctt6wq56p.5 (Accessed: 30 June 2023).

[2] CSIR 'Statistics of utility-scale power generation in South Africa 2022 (1 Jan 2022 – 31 Dec 2022)' (2023) 9. Available from https://www.csir.co.za/csir-statistics-on-power-generation-south-africa-2022 (Accessed: 07 May 2023).

[3] Statistics South Africa 'Electricity generated and available for distribution (Preliminary) April 2023. Statistical Release P4141' *(2023)* 6. Available from https://www.statssa.gov.za/publications/P4141/P4141April2023.pdf (Accessed: 29/06/2023).

[4] P Burkhardt & S Cele 'South African Presidency Maps Out Vision to End Loadshedding' *Bloomberg (Africa Edition) 8 June 2023*. Available from https://www.bloomberg.com/news/articles/2023-06-08/south-african-presidency-maps-out-vision-to-end-loadshedding (Accessed: 02 July 2023).

[5] D Proctor 'South Africa Energy Crisis at Critical Stage as Load-Shedding Continues' Power Magazine 1 March 2023. Available from https://www.powermag.com/south-africa-energy-crisis-at-critical-stage-as-load-shedding-continues/ (Accessed: 30 June 2023).

[6] https://loadshedding.eskom.co.za/LoadShedding/Description. (Accessed: 29 June 2023).

Load shedding hit the country for the first time in November 2007, disrupted businesses, closed mining operations and affected households.[7] An extract from the article of the Mail and Guardian from January 2008 read; "South Africans can expect current loadshedding by Eskom to continue, if not worsen, for at least the next four weeks".[8] Another article from Power Magazine in 2008 read; "Analysts agree that securing funding will remain one of the most important challenges that Eskom faces as it continues to grapple with the crisis. Until it has access to capital, it may just be that, for all its plans the utility is whistling in the dark."[9] Sixteen years later, South Africa still experiences load shedding.

The build up to the crisis dates back to the mid-90s. In analysing the crisis, TechCentral reported that, in 1996, Eskom warned the South African government that the country was running out of electricity. Eskom provided predictions for future energy demand and submitted that new power stations were needed. It further asked for approval for a new build programme. In 1998, the government was warned again that South Africa was running out of electricity. This warning, too, did not lead to any action and as predicted, in November 2007, South Africa ran out of electricity and load shedding struck for the first time.[10]

In 2007, Eskom warned that, over the next five or six years, the system would be constrained and called for collaboration from all stakeholders to minimise the likelihood of power interruptions. Former President Mbeki helped shift the blame off Eskom by acknowledging the oversight in planning by the government. On 12 December 2007, he made a public apology, stating "Eskom was right, government was wrong".[11]

---

[7] T Niselow 'Sunday Read: Load shedding through the years and how Eskom has struggled to keep the lights on' News24 24 March 2019. Available from https://www.news24.com/fin24/economy/sunday-read-load-shedding-through-the-years-and-how-eskom-has-struggled-to-keep-the-lights-on-20190324 (Accessed: 02 July 2023).

[8] Mail & Guardian staff reporter 'Prepare for a month of load shedding' Mail & Guadian 29 January 2008. Available from https://mg.co.za/article/2008-01-29-prepare-for-a-month-of-loadshedding/ (Accessed: 06 May 2023).

[9] Power Magazine 'Whistling in the dark inside South Africa's power crisis' Power Magazine 1 November 2008. Available from https://www.powermag.com/whistling-in-the-dark-inside-south-africas-power-crisis/ (Accessed: 07 May 2023).

[10] JB Styan 'Inside the Eskom crisis – a critical analysis' TechCentral 6 December 2018. Available from https://techcentral.co.za/inside-the-eskom-crisis-a-critical-analysis/201543/ (Accessed: 30 July 2023).

[11] Former President Thabo Mbeki was the President of the Republic of South Africa form 14 June 1999 to 24 September 2008). Available from https://www.eskom.co.za/heritage/history-in-decades/eskom-2003-2012/ Accessed: 08 May 2023).

The biggest casualty has been the economy of South Africa. In its March 2023 quarterly bulletin, the South African Reserve Bank stated that the economic activity in South Africa in the fourth quarter of 2022 decreased. The increased intensity of loadshedding was cited as one of the contributing factors to the increased economic activity.[12] In March 2023, Businesstech reported that South Africa's biggest retailer Shoprite had spent R560 million over a period of 26 weeks to keep load shedding at bay, which works out to over R3 million a day. This was an increase of R465 million when compared to the comparative period (up 490 per cent).[13] Al Jazeera interviewed small business owners in Cape Town. They said that scheduled power cuts are hurting their daily operations. Some warned that there will be job losses, and they were close to closing their businesses.[14]

In 2022, The Presidency issued the action plan to address load shedding. The focus objectives were to improve the performance of Eskom's existing power stations and to add new generation capacity as quickly as possible.[15] The action plan also included the enablement and acceleration of private investment in generation capacity by removing licencing thresholds as well expanding tax incentives for households to invest in rooftop solar. The acceleration of private investment is in line with the National Development Plan (NDP) 2030 which states that new build opportunities must be divided between Eskom and the Independent Power Producers (IPPs).[16]

In South African tax law, there are several incentives available to businesses broadly and to electricity generation specifically. Efficient use of incentives and allowances and

---

[12] https://www.resbank.co.za/en/home/publications/publication-detail-pages/quarterly-bulletins/quarterly-bulletin-publications/2023/FullQuarterlyBulletinNo307March2023 (Accessed: 05/07/2023).

[13] L Fraser 'South Africa's biggest retailer is spending over R3 million a day to beat load shedding. Business' Tech7 March 2023. Available from https://businesstech.co.za/news/business/670803/south-africas-biggest-retailer-is-spending-over-r3-million-a-day-to-beat-load shedding/#:~:text=The%20group's%20electricity%20and%20water,stores%20due%20to%20load%20shedding (Accessed: 09/05/2023).

[14] C Orderson 'In South Africa, 'load shedding' takes a toll on small businesses' Aljazeera *9 February 2023*. Available from https://www.aljazeera.com/features/2023/2/9/in-south-africa-load-shedding-takes-a-toll-on-small-businesses (Accessed: 30/07/2023).

[15] The Presidency 'Confronting the energy crisis: an action plan to end load shedding' (2022) 2. Available from https://www.gov.za/sites/default/files/gcis_document/202207/confronting-energy-crisisan-action-plan-end-load-shedding.pdf [Accessed: 02/04/2023).

[16] The Presidency: National Planning Commission 'National Development Plan 2030' 169. Available from https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf (Accessed: 10/05/2023).

appropriate tax planning can yield positive results for business and ultimately contribute to address the energy crisis as more IPPs enter the electricity generation sector.

Arguments can be made for and against incentives. If carefully designed, incentives are easy to administer and can be utilised optimally by those they are intended for. Therefore, incentives could prove to be a positive spinoff in addressing the energy crisis.

1.2 Problem statement and importance of the research

For the past fifteen years, South Africa has endured unstable energy supply which has had a negative impact on the economy. Eskom alone cannot afford to build new infrastructure within the timeframe it is needed. The need for additional capacity has never been greater. Included in the government's plans is acceleration of investment in electricity generation by the private sector.

The research of this nature is important because currently, the energy crisis is arguably the biggest threat to the South African economy. Small businesses are having to close, jobs are lost, big manufacturing multinationals are considering moving businesses to other countries with stable electricity supply. It is extremely urgent that South Africa solves this problem.

Many articles and reports have been written about how to solve the energy crisis, including investment, political and technical solutions. Utilising tax policy, specifically tax incentives to assist in addressing the crisis does not seem to be adequately considered.

Currently, there are several broad tax incentives available to businesses and specific ones to renewable electricity generation and consumption. Other than the solar energy tax credit available to individuals and some enhancements to the allowances in respect of renewable energy assets, there are no other incentives that are targeted to address the energy crisis.

Government recognises value in using tax incentives to assist in its energy policy objectives, this is evidenced by the incentives that are available to encourage

production of energy using renewable energy as well as demand side incentives that are used as a tool to reduce C02 emissions. Therefore, an argument can be made that tax incentives can play a role in addressing the energy crisis.

Incentivising the production and consumption using renewable energy is commendable especially because South Africa gets to meet the Paris Agreement commitments. It is also important to recognise that investment in base load electricity is still required to meet the growing demand. Electricity generation, at a large scale is capital-intensive and effective tax incentives play an important role in sustainability of such businesses.

1.3 Research objective

The major objective of the research is to demonstrate how tax policy can effectively complement the energy policy to ultimately achieve stable energy supply. The study determines how tax incentives can be effectively used in addressing the energy crisis.

The research will be guided by the following specific objectives:

1.1 Analyse tax incentives in general including benefits, drawbacks and administrative considerations.

1.2 Analyse the effectiveness of currently available tax incentives in South Africa and how they can be used to attract investment in the electricity generation sector to address the energy crisis. In determining the effectiveness of incentives, consider factors such as whether they are in line with government energy policies and whether they can be administered with ease.

1.3 Analyse how punitive taxes such as carbon tax may have built-in incentives in the form of grandfather clauses that act as a cushion from carbon tax.

1.4 Determine the tax planning mechanisms that can be utilised to enhance tax incentives and encourage investment in electricity generation infrastructure.

1.5 Compare and measure tax incentives to those of India and Vietnam and analyse how tax incentives contributed to address their energy crises.

1.4 Limitations

This study will not discuss the role of corruption in the energy crisis. The political debate will also not be discussed as well as the environmental impact of fossil fuel electricity generation.

The study will focus on the energy crisis and tax incentives in South Africa. However, the study will also refer and compare South Africa with India and Vietnam. The reason for choosing these countries is because they have experienced and overcame electricity supply challenges. The comparative review is necessary to learn how these jurisdictions have developed tax strategies and policies in response to the energy crisis.

Alongside South Africa, India is a member of BRICS. "BRICS" is an acronym for the powerful grouping of the world's leading emerging market economies, namely Brazil, Russia, India, China and South Africa with the aim of promoting peace, security, development and cooperation.[17]

India is one of South Africa's main trading partners having been in the top 5 countries South Africa imported from in May 2023.[18] In 2009, India was riddled with electricity and peak power shortages. These were driven by lack of capacity addition and growing demand.[19] India's electricity security has improved significantly through the creation of a single national power system and increased investments in thermal and renewable capacity.[20]

Vietnam is a developing country with the energy sector that is dominated by state-owned companies. The Vietnam Electricity Power Group (EVN) is the main supplier of electricity, supplying two-thirds of total electricity production.[21] Vietnam has managed to avoid major, ongoing power supply challenges faced by other developing countries

[17] https://www.gov.za/events/fifth-brics-summit-general-background (Accessed: 02 July 2023)
[18] https://www.sars.gov.za/customs-and-excise/trade-statistics/ (Accessed: 05 July 2023)
[19] AP Gupta & J Sathaye 'Electrifying India' IEEE Power & energy magazine September /October 2009 53. Available from IEEE Xplore (Accessed:11 May 2023).
[20] International Energy Agency (IEA) 'India 2020 Energy Policy Review' *(2020) 14.* Available from www.iea.org/india-2020 (Accessed: 14 May 2023)
[21] G Morelli 'Energy consumption, CO2 and economic growth nexus in Vietnam' (2020) 443 *International Journal of Energy Economics and Policy.* Available from https://www.econjournals.com/index.php/ijeep/article/download/8248/4917 (Accessed: 02 July 2023).

mainly due to good power system planning and government commitment.[22] Further, similar to the current structure and plans in South Africa, Vietnam underwent power sector reform from state owned monopoly to private sector participation. In the document issued by the Department of Public Enterprises (DPE) titled "Roadmap for Eskom in a reformed electricity supply industry 2019"[23] it included lessons from Vietnamese electricity reform.

1.5 Research methodology

The research methodology to be used is the qualitative research method. The research analyses tax incentives as an effective tool to attract and retain investment in electricity generation in South Africa. It further analyses tax incentives that are currently available to electricity generation, and how such allowances and incentives can be used optimally. Further, a comparative review is performed on how tax incentives and structures have been utilised in India and Vietnam.

The research analysis will make use of existing literature which consists of newspaper and magazine articles, journals articles, books, reports which include, energy, investments, economic, government, sector and tax reports. Tax and other relevant legislation will be analysed, including electricity regulations, case law where applicable, policy discussion papers and statistics reports.

1.6 Chapter outline

Chapter one: Introduction

This chapter introduces the current energy crisis in South Africa which has led to load shedding and sets the research objective. The chapter also introduces tax incentives and the role they can play in addressing the energy crisis.

[22] AD Lee & F Gerner 'Learning from Power Sector Reform Experiences: The Case of Vietnam' World Bank Policy Research Paper No. 9169. (2020) 5. Available from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3547924 (Accessed: 02 July 2023).

[23] Department of Public Enterprises (DPE) 'Roadmap for Eskom in a reformed electricity supply industry' (2019) 61. Available from https://www.gov.za/sites/default/files/gcis_document/201910/roadmap-eskom.pdf (Accessed: 02 April 2023).

Chapter two: The concept of Tax incentives

This is a broad chapter that introduces tax incentives in general. The chapter uses existing literature to analyse incentives with the focus being on:

i. The definition of tax incentives and their rationale.

ii. Benefits of tax incentives

iii. Drawbacks of tax incentives

iv. General recommendations / factors when developing tax policy, including whether sunset clauses are realistic.

v. Administration considerations, specifically a burden on the taxpayers and SARS when applying incentives and whether they are worth the effort.

Chapter three: Tax incentives regime in South Africa

This chapter is a narrow application which looks at how tax incentives can work in the energy crisis in South Africa. It provides a detailed analysis of currently available incentives in South Africa that are relevant to the electricity generation sector, including accelerated capital allowances, energy efficiency and research and development incentives. Further, it analyses whether minimising carbon tax though tax credits could be considered as a tax incentive as it provides producers with a cushion from carbon tax for some time.

Chapter four: Tax incentives available in India and Vietnam.

This chapter discussed tax incentives that are available to the three countries and provides a comparative analysis with South Africa. The analysis compares how tax incentives have played a role as one of the solutions to address energy crises in each of these jurisdictions, including lessons South Africa can learn.

Chapter five: Conclusion

This chapter offers recommendations and conclusions including opening the industry for large companies to generate electricity at large scale and relaxation of regulations.

Make recommendations including whether more, electricity-focused incentives must be introduced and how the current incentives can be improved.

CHAPTER 2 - THE CONCEPT OF TAX INCENTIVES

2.1. Introduction

The objective of this chapter is to introduce the concept of tax incentives. The discussion commences by defining tax incentives and their rationale. Considering that there is much discussion around their justification and effectiveness, the chapter further discusses benefits and drawbacks of tax incentives.

Section 2.6 examines the main policy considerations when introducing tax incentives as an instrument to address specific issues. The purpose of this section is to discuss considerations including costs, administration, monitoring and corruption.

The chapter concludes by providing a summary and general recommendations from the preceding discussion and addresses the question of effectiveness.

2.2. The meaning of incentives

Tax incentives can be defined simply as measures that provide for favourable tax treatments to certain activities or sectors compared to what is generally granted.[24] Tax incentives can also be defined in terms of their rationale; the Davis Tax Committee (DTC) Macro Analysis Final Report, defines tax incentives as deliberate departures from tax neutrality with the aim of changing taxpayers' behaviour in order to promote growth, employment or other policy objectives.[25] Tax incentives can also be defined in terms of their effect, which is to reduce the effective tax burden for certain projects.[26] Accordingly, it is said that certain well-designed tax incentives will likely increase

[24] A Klemm *Causes, Benefits, and Risks of Business Tax Incentives* (2009) 3 International Monetary Fund *ProQuest Ebook Central. Available from* https://ebookcentral-proquest-com.uplib.idm.oclc.org/lib/pretoria-ebooks/detail.action?docID=1608158. (Accessed: 01 August 2023).

[25] Davis Tax Committee (DTC) *Final Report on Macro analysis of the tax system and inclusive growth in South Africa* (2016) 36. Available from https://www.taxcom.org.za (Accessed 12 August 2023).

[26] EM Zolt 'Tax Incentives: Protecting the tax base' Paper for Workshop on Tax Incentives and Base Protection New York, 23-24 April 2015. (2015) 6. Available from https://static.un.org/esa/ffd/wp content/uploads/2015/04/2015TIBP_PaperZolt.pdf (Accessed: 10 July 2023).

investment. Increased investment has positive effects on output and productivity and can realise objectives related to the Sustainable Development Goals (SDGs).[27]

Tax incentives take many forms such as tax holidays, special zones, investment tax credits, investment allowances, accelerated depreciation, reduced tax rates, exemptions, and financial incentives.[28] According to the OECD Investment Tax Incentives Database (ITID) 2022 update, the widely used tax incentive instruments were tax exemptions, reduced rates, tax allowances and tax credits.[29]

Tax incentives may be targeted, for example broadly to all new investments or narrowly to one particular investment.[30] An example of narrow targeting are renewable energy tax incentives.[31] Another form of providing incentives is what is called "grandfathering". A grandfather clause can be briefly defined as "a provision in a law or regulation which creates an exemption from its requirements for a particular class of people or things based on circumstances existing prior to its enactment".[32] In recent times, the concept of grandfathering has been subject to climate change negotiations particularly on the issue of emissions reductions.[33] Hence, one of the options for initial enactment of a carbon tax includes grandfathering existing emissions.[34] Accordingly, the Carbon Tax Act[35] provides a number of emissions allowances to taxpayers. These allowances were provided pursuant to the phased-in approach to ensure that South Africa's competitiveness is not compromised and to provide a smooth transition to a low carbon economy.[36]

---

[27] OECD 'Investment Tax Incentives Database 2022 update: Tax incentives for sustainable development' (2022) 4. Available from https://www.oecd.org/investment/investment-policy/oecd-investment-tax-incentives-database-2022-update-brochure.pdf (Accessed: 16 July 2023).
[28] Klemm (n 24) 4.
[29] OECD (n 27) 7.
[30] Zolt (n 26) 18.
[31] Sections 12B and 12BA of the Income Tax Act 58 of 1962.
[32] https://www.oed.com/dictionary/grandfather-clause_n?tab=meaning_and_use#2671119 (Accessed: 24 April 2024).
[33] M Damon and others 'Grandfathering: environmental uses and impacts' (2020) 33 Review of Environmental Economics and Policy. Available from https://www.journals.uchicago.edu/doi/full/10.1093/reep/rey017 (Accessed:13 April 2024).
[34] GE Metcalf & D Weisbach 'The design of carbon tax' (2009) *516 Harvard Environmental Law Review* 33. Available from HeinOnline (Accessed: 31 July 2022).
[35] Act 15 of 2019.
[36] National Treasury 'Explanatory memorandum on the Carbon Tax Bill 2018' par 3.

2.3. Rationale for tax incentives

Tax incentives are widely used by governments worldwide to attract investors, promote investments in specific sectors and locations, and to encourage certain investor behaviour.[37] In developing countries, a conceptually legitimate purpose for granting tax incentives is to rectify market failures, most notably those involving externalities.[38] Governments ought to support and encourage economic activities that lead to positive externalities, perhaps through the use of incentives.[39]

According to the OECD ITID, many economies utilise investment tax incentives to attract investments that contribute to sustainable development with about 34 per cent of tax incentive schemes included in the database targeting at least one of six sustainable development areas.[40] The sustainable development areas covered by the ITID include environmental impact, with tax incentives that promote renewable energy and energy efficiency.[41]

With regards to environmental policies, the tax system can be used to address the environmental externality, namely the contribution of greenhouse gas emissions to climate change.[42] Theoretically, the principle of tax incentives in the context of energy-efficiency policy is justified by the existence of various externalities and market failures.[43] Goods or actions that are beneficial for the environment can be subsidised by, for example, VAT exemptions for energy-efficient appliances or favourable depreciation rates for capital investments in renewable energy or pollution reduction.[44] In as much as environmental taxes address market failures that cause markets to

[37] OECD (n 27) 4.
[38] V Tanzi & HZ Howell 'Tax Policy for Emerging Markets' Developing Countries' IMF Working Paper. (2020) 25. Available from https://www.imf.org/external/pubs/ft/wp/2000/wp0035.pdf (Accessed: 23 July 2023).
[39] S James '*Tax and Non-tax incentives and investments: evidence and policy implications*' World Bank (2020) 33. Available from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2401905 (Accessed: 10 July 2023).
[40] OECD (n 27) 15.
[41] OECD (n 27) 15.
[42] J Baveye & C Valenduc 'Are "environmental" tax incentives efficient?' (2011) 144 *Bulletin de Documentation 71*. Available from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=are+environmental+tax+incentives+efficient%3F&btnG= (Accessed: 04 March 2024).
[43] Baveye & Valenduc (n 42) 149.
[44] OECD *Environmental Taxation A guide for policy makers.* (2011) 3. Available from https://www.oecd.org/investment/investment-policy/oecd-investment-tax-incentives-database-2022-update-brochure.pdf (Accessed: 16 July 2023).

ignore environmental impacts, it is important to distinguish them to tax incentives aimed at achieving similar goals. [45] While environmental taxes make environmentally harmful behaviour more costly, tax incentives entail foregoing public revenues to favour less polluting consumption and investment activities to achieve environmental policy goals.[46]

In the South African context, the externalities of inadequate electricity supply can be linked to the effect it has on the economy. According to the 2023 budget review, in respect of the South African economic outlook; inadequate electricity supply remained the most immediate and significant constraint to production, investment and employment.[47] National Treasury noted that there is evidence that downward revisions to GDP growth are related to, *inter alia*, poor electricity supply that restrains investment and job creation.[48] The economic impact of load shedding was also addressed in an Engineering News article which established that the impact of load shedding extends to the broader economy. It noted that manufacturing contributes significantly to employment and economic growth. It therefore concluded that, when manufacturers face challenges due to load shedding, it leads to job losses, reduces economic output, and deters overall development.[49] Perhaps one of the most direct correlations is the effect of load shedding on revenue collection by the South African Revenue Service (SARS). It is submitted that in the mining industry revenue losses impacts government's ability to earn revenue from taxes and royalties.[50]

It is at the back of this negative externality that in 2023, government introduced a new tax incentive in respect of rooftop solar panels to ease pressure on the grid and help

[45] OECD (n 44) 2.
[46] A Köppl & M Schratzenstaller 'Aspects of environmentally beneficial tax incentives' (2021) 2 *a literature review*. Available from http://hdl.handle.net/10419/231461 (Accessed: 16 March 2024).
[47] National Treasury '2023 Budget Review' (2023) 13. Available from https://www.treasury.gov.za (Accessed: 21 April 2024).
[48] National Treasury '2024 Budget Review' (2024) 103. Available from https://www.treasury.gov.za (Accessed: 2 March 2024).
[49] Creamer media reporter 'the impact of load shedding on manufacturers' Engineering News 17 August 2023. Available from https://www.engineeringnews.co.za/article/the-impact-of-load-shedding-on-manufacturers-2023-0817#:~:text=Production%20Disruption%3A%20Load%20shedding%20disrupts,challenges%20in%20maintaining%20production%20schedules. Accessed: 17 March 2024).
[50] JL Erero 'Impact of loadshedding in South Africa*: A CGE analysis'* (2023) 91 *Journal of Energy and Power Engineering* 10. Available from https://dx.doi.org/10.1453/jepe.v10i2.2443 (Accessed: 17 March 2024).

reduce load shedding.[51] It can be concluded that this favourable tax treatment was meant to encourage certain behaviour that is expected to produce the public benefit that is greater than the cost of providing the incentive.[52] The rooftop solar incentive for individuals resulted in R4 billion in forgone tax revenue;[53] however, this must be contrasted with 5 200 MW of electricity generated for households and businesses through the promoted installation of solar panels.[54]

Tax incentives have also been used to encourage Research & Development (R&D).[55] Research presents externalities through the pursuit of the accumulation and advancement of general knowledge.[56] R&D incentives are generally provided to address market failures, such as under-investment in R&D compared to a socially optimum level.[57] There is also evidence that developed countries generally have higher investment in R&D.[58]

2.4. Benefits of tax incentives

Arguments in favour of tax incentives include their justification if they correct market inefficiencies or generate positive externalities.[59] Tax incentives can be a useful tool in attracting investments that would not have been made without the provision of the incentive.[60] Such investments lead to economic activity which leads to positive externalities including creation of jobs and developing environmentally friendly technology.[61] Economic growth increases people's spending power that, in turn,

[51] National Treasury '2024 Budget Speech' (2024) 10. Available from https://www.treasury.gov.za (Accessed: 12 August 2023).
[52] United Nations (UN) 'Design and Assessment of Tax incentives in developing countries' (2018) 42. Available from https://www.un.org/esa/ffd/wp-content/uploads/2018/02/tax-incentives_eng.pdf (Accessed: 10 May 2023).
[53] National Treasury (n 25 Above) 46.
[54] National Treasury (n 25 Above) 3.
[55] R Hamilton 'Tax Incentives and Innovation: The Canadian Treatment of R&D' (1993) 233 *Canada-United States Law Journal* 19 233-258. Available from HeinOnline (Accessed: 9 July 2023).
[56] FJ Sanchez-Ugarte *10 Rationality of Income Tax Incentives in Developing Countries: A Supply-Side Look* (1987) 254 Supply-Side Tax Policy USA International Monetary Fund. Available from https://doi.org/10.5089/9780939934911.071.ch010 (Accessed: 20 March 2024).
[57] National Treasury 'Discussion Document: Reviewing the design, implementation and impact of South Africa's Research and Development tax incentive' (2022) 6. Available from https://www.treasury.gov.za (Accessed: 8 August 2024).
[58] National Treasury (n 34 Above) 6.
[59] Zolt (n 26) 12.
[60] Zolt (n 26) 12.
[61] James (n 39) 33.

increases demand for new goods and services. Increased investment also increases government tax revenue.[62]

As mentioned in 2.3 above, tax incentives encourage R&D and energy efficiency. It is widely accepted that innovation is an important factor in an economy's ability to grow and prosper.[63] With respect to the environment, the most obvious application of energy efficiency incentives concerns the environmental externality, to address pollution.[64]

As compared to other instruments, tax incentives are easier to provide than to correct deficiencies in the legal system or to dramatically improve the communication system in a country.[65] This is especially the case in South Africa where incentives can be incorporated into the existing tax acts such as the Income Tax Act, 58 of 1962 (ITA).[66]

Tax incentives are comparable to direct expenditures in that they are also costly for example, through tax refunds as a result of tax credits, reduced taxes as a result of preferential rates and delayed recognition of income as a result of tax deferrals.[67] Although costly, when compared to direct expenditures, tax incentives may be preferrable in instances where eligibility conditions are linked directly to tax return data, or where maximising the number of beneficiaries is more important than to minimise claims or where the policy objective is to incentivise a clear and broadly defined activity by reducing its net price.[68] Furthermore, tax incentives do not receive the same level of scrutiny as direct expenditures.[69] It is also important to point out that the scrutiny level comparison does not imply that tax incentives are a more useful approach as direct expenditures can also involve loose or tight supervision. The matter

[62] Zolt (n 26) 13.
[63] Hamilton (n 55) 233.
[64] Baveye & Valenduc (n 42) 3.
[65] Zolt (n 26) 12.
[66] Act 58 of 1962.
[67] D Marples 'Tax expenditures: overview and analysis' Congressional Research Service. (2015) 2. Available from https://sgp.fas.org/crs/misc/R44012.pdf (Accessed: 04 July 2024).
[68] A Redonda and others 'Tax expenditure and the treatment of tax incentives for investment' Economics, *13*(1), 20190012. (2019) 2. Available from https://doi.org/10.5018/economics-ejournal.ja.2019-12 (Accessed: 05 July 2024).
[69] Marples (n 67) summary.

of what type of program is best to achieve the desired result lies in cost-benefit and cost-effectiveness analyses.[70]

2.5. Disadvantages of tax incentives

One of the prevailing arguments against incentives is that of costs, they are often criticised on the grounds that they erode the tax base without substantial effects on the level of investment.[71] This is specifically true in respect of forgone revenue from projects that would have been undertaken even if there were no tax incentives[72] thus giving rise to windfall gains.[73] Furthermore, when tax incentives are offered more broadly and without specific focus on activities with social benefits, it is unlikely that the investments will encourage socially beneficial activities for which businesses create spillovers to the society at large.[74] To mitigate against this, incentives must be targeted to specific projects.[75]

Another drawback is that the administrative cost of tax incentives can be significant, especially if incentives are widespread and complex in structure.[76] Effort should be made to ensure that incentive administration permits easy accessibility and automatic availability based on transparent criteria without any discretion.[77]

In respect of environmental tax incentives, some of the limitations include "picking winners" by not considering alternatives for example, providing subsidies on low-emission vehicles and not considering public transit and cycling.[78] They may also indirectly lead to increased pollution, as subsidies for hybrid vehicles may encourage people to drive more.[79]

---

[70] SS Surrey 'Tax Incentives as a Device for Implementing Government Policy: A Comparison with Direct Government Expenditures' (1970) 714 Harvard Law Review 83(4) 705. Available from HeinOnline (Accessed: 05 August 2023).
[71] Zolt (n 26) 12
[72] Zolt (n 26) 14
[73] Baveye & Valenduc (n 42) 145
[74] J Stotsky 'Tax Investments and Investment' (2024) 10. Available from Governance Briefs | Asian Development Bank (adb.org) (Accessed: 23 March 2024).
[75] International Monetary Fund (IMF), OECD, UN, & World Bank 'Options for Low Income Countries Effective and Efficient Use of Tax Incentives for Investment' (2015)10. Available from https://elibrary.worldbank.org/doi/abs/10.1596/22923 (Accessed: 23 July 2023).
[76] Stotsky (n 74) 5.
[77] James (n 39) 62.
[78] OECD (n 44) 3.
[79] OECD (n 44) 3.

Another challenge to tax incentives is the opportunity for corruption especially in regimes where officials exercise discretion.[80] Excessive use of tax incentives is also cautioned as it complicates administration, facilitates evasion and encourages corruption.[81]

Although easier to provide, there is caution that the benefit of tax incentives is harder to assess as they are often used to achieve medium-term development objectives, which may be affected by many factors other than incentives.[82] Generally there is inadequate cost-benefit analysis in a national context to support government decision-making.[83]

Further, once created, tax incentives can prove hard to remove and tend to be enlarged by taxpayer initiatives which include lobbying for more concessions.[84] When arguing for modernising EU-VAT through uniform VAT rates, Cnossen also confirmed that uniform rates are less sensitive to lobbying activities.[85] In the analysis of VAT exemptions, Cnossen argues that they must be reconsidered because of the distortions and complications they cause but he is also cognisant of the difficulty of bringing reforms for example, a method tested in some EU member states to fully tax consumer use of financial services, which were exempt from VAT, was not implemented because of fear of the unknown and objections citing complexity and compliance costs.[86] In considering the rationale of the EU-VAT, it is clear that the inherent distortions and complexities of the exemptions were institutionalised, notably in the common VAT directive and, accepting this directive became a *conditio sine qua non* for joining the EU. Thus, the difficulty with making changes is that it requires unanimous consent of all Member States in case of the European Union.[87]

---

[80] Zolt (n 26) 26.
[81] RM Bird 'Tax Challenges Facing Developing Countries' Institute for International Business Working Paper, (9). Inaugural Lecture of the Annual Public Lecture Series of the National Institute of Public Finance and Policy, New Delhi, India, March 12, 2008. (2008) 10. Available from https://scholar.googleusercontent.com/scholar?q=cache:tLyu16WrBQJ:scholar.google.com/+Tax+Challenges+Facing+Developing+Countries&hl=en&as_sdt=0,5 (Accessed: 23 July 2023).
[82] Klemm (n 24) 10.
[83] DTC *The review of the efficiency of South Africa's Corporate Income Tax System* (2018) 50. Available from https://www.taxcom.org.za (date of use: 12 August 2023).
[84] Bird (n 81) 10.
[85] S Cnossen 'The C-inefficiency of the EU-VAT and what can be done about it' (2022) 224 *Int Tax Public Finance* 29. Available from https://doi.org/10.1007/s10797-021-09683-0 (Accessed: 28 May 2024).
[86] Cnossen (n 85) 224.
[87] Cnossen (n 85) 228.

2.6. Policy considerations for tax incentives

2.6.1. Introduction

The question to be considered by any government is; what policy decision is likely to generate the most long-term economic activity or growth.[88] Legislators have many tools to encourage or discourage conduct, one available tool being tax policy.[89] The study of tax policy is the designing a tax system that is capable of financing the necessary level of public spending in the most efficient and equitable manner.[90] As discussed above, tax has been used as an instrument to address externalities and in respect of energy incentives, the government's decisions about when to offer energy tax incentives are driven by other policy determinations to achieve certain governmental goals, whether the goal is to reduce greenhouse gas emissions, to strengthen the economy, or to improve energy security.[91]

2.6.2. The cost on the *fiscus*

The implementation of a policy suggests that a price has to be paid and the question that the government must consider is whether that price is acceptable in relation to the benefits to be gained.[92] Such price often referred to as 'tax expenditures' is defined as revenue losses that arise due to concessions that fall outside the regular tax system.[93] These losses can also be defined as revenue forgone from projects that would have been undertaken even if there was no tax incentive.[94] At one extreme, if incentives apply only to investments that would not have taken place, the cost of direct revenue forgone is nil.[95] Practically, the true amount of direct revenue losses is likely to be between these two extremes.[96] In most cases, tax expenditures are only estimated and reported based on the revenue forgone approach. This approach assumes

[88] James (n 39) 32.
[89] CD Patterson III 'Environmental taxes and subsidies: what is the appropriate fiscal policy for dealing with modern environmental problems' (2000) 121 *William and Mary Environmental Law and Policy Review* 24. Available from HeinOnline (Accessed: 16 March 2024).
[90] Tanzi & Howell (n38) 3.
[91] JE Milne 'Energy tax incentives in the United States: comparative perspective on state aid' (2017) 34 *European State Aid Law Quarterly* 16. Available from HeinOnline (Accessed: 24 March 2023).
[92] Baveye & Valenduc (n 42) 155.
[93] James (n 39) 28.
[94] Zolt (n 26) 14.
[95] Klemm (n 24) 11.
[96] Klemm (n 24) 11.

unchanged taxpayers' behaviour and unchanged revenues from other taxes.[97] Governments should perform comprehensive evaluations of tax expenditures including cost-benefit analyses, to distinguish those provisions that need to be reformed or simply eliminated from those that are worth supporting or should be expanded.[98] Furthermore, as mentioned above, tax incentives are used to trigger positive externalities for example, one of the most commonly used indicators as the measure of effectiveness of incentives is the cost of jobs created by the tax expenditure.[99]

There is also an issue of administration costs. The issue being that compliance costs add to the tax burden as a result of tax incentives being excessively complex, non-transparent and unpredictable.[100] In respect of environmental taxes, one of the challenges is that the cost of monitoring and enforcing regulation for millions of pollution sources could far exceed the benefits from some downstream regulations.[101] It is for this reason that Metcalf and Weisbach argue for the carbon tax to be imposed upstream on the basis that imposing tax on the emitting entity allows the collection and enforcement costs to be relatively low while ensuring maximum coverage.[102] Generally, imposing the tax upstream will achieve these goals because there are fewer upstream producers as compared to downstream consumers, and due to economies of scale in tax administration the cost per unit of tax is lower.[103] It has been demonstrated that collecting the carbon tax upstream would make it possible to accurately and cheaply cover 80 per cent of U.S. emissions by collecting the tax at fewer than 3000 points, and that it would be possible to cover close to 90 per cent of

[97] A Redonda & T Neubig 'Assessing Tax Expenditure Reporting in G20 and OECD *Economies*' (2018) 7. Available from https://www.cepweb.org/wp-content/uploads/2018/11/Redonda-and-Neubig-2018.-Assessing-Tax-Expenditure-Reporting.pdf (Accessed: 23 March 2024).

[98] Redonda & Neubig (n 97) 3.

[99] O Perera *'Rethinking Investment Incentives'* The International Institute for Sustainable Development Commentary (2012) 4. Available from https://www.iisd.org/system/files/publications/rethinking_investment_incentives.pdf (Accessed: 23 March 2023).

[100] WS Clark 'Tax Policy for Investment' (2007) 252 *eJournal of Tax Research* 5. Available from HeinOnline (Accessed: 18 July 2023).

[101] ET Mansur 'Upstream versus downstream implementation of climate policy' (2011) 184 In The design and implementation of US climate policy (pp. 179-193). *University of Chicago Press*. Available from https://www.nber.org/system/files/chapters/c12146/c12146.pdf (Accessed: 10 June 2024).

[102] Metcalf & Weisbach (n 34) 523.

[103] Metcalf & Weisbach (n 34) 523.

U.S. emissions at a modest additional cost.[104] Further, some research indicates that consumers prefer upstream carbon offsets to downstream carbon offsets. In addition to tax aversion, the upstream offset was perceived to help the environment and to hold accountable those responsible for the emissions.[105]

Unintended tax planning opportunities and distortions must also be considered. Policy makers must consult widely to sharpen estimates of the revenue losses from incentives.[106] Where a tax incentive results in unforeseen tax planning opportunities, withdrawal of such incentives to protect the tax base from further erosion can be costly. In particular, policy credibility can be undermined, weakening government's ability to influence investment behaviour in the future through policy adjustment.[107]

Having regard to these costs, as a recommendation, it is important to visit Patterson's assertion on the environmental taxes forcing externalities to be internalised. This is when a tax on emissions is equal to the value marginal social damage caused by those emissions.[108] Similarly, in respect of tax incentives, cost-benefit analysis can assist policy makers demonstrate the direct cost (tax revenue foregone) against the economic benefits being pursued.[109]

2.6.3. Administration

Bird said, "policy change without administrative change is nothing,".[110] Tax policy, no matter how well designed, cannot be effective without a modern and efficient tax administration to implement it.[111] Principles of a good tax system include administrative efficiency and simplicity. According to these principles, the tax system

[104] Metcalf & Weisbach (n 34) 501.
[105] DJ Hardisty and others 'A carbon price by another name may seem sweeter: Consumers prefer upstream offsets to downstream taxes' (2019) 7 *Journal of Environmental Psychology* 66. Available from https://doi.org/10.1016/j.jenvp.2019.101342 (Accessed: 01 July 2024).
[106] Clark (n 100) 257.
[107] Clark (n 100) 258.
[108] K Kosonen & G Nicodème 'The role of fiscal instruments in environmental policy' CESifo Working Paper Series No. 2719 (2009) 7. Available from http://dx.doi.org/10.2139/ssrn.1437501 (Accessed: 16 March 2024).
[109] H Kronfol & V Steenbergen 'Evaluating the Costs and Benefits of Corporate Tax Incentives: Methodological Approaches and Policy Considerations' Finance, Competitiveness and Innovation in Focus World Bank, Washington, DC. (2020) 1. Available from http://hdl.handle.net/10986/33433 License: CC BY 3.0 IGO." (Accessed: 23 March 2024).
[110] RF Junquera-Varela & CÓ Lucas-Mas *Revenue Administration Handbook*. (2024) 1 Washington DC World Bank. Available from http://hdl.handle.net/10986/41090" (Accessed: 8 April 2024).
[111] Junquera-Varela & Lucas-Mas (n 110) 1.

should be designed as to not impose an unreasonable administrative burden on taxpayers and the revenue authorities, and must be easy to understand.[112] Verification and auditing of complex calculations provides an extra challenge to the tax administrators.[113] This extra challenge is costly in terms of expenses and labour costs and considering the revenue already forgone, may make the tax incentives unstrategic.[114]

In an instance where incentives are poorly-designed and implemented, Bird suggests three rules to reduce the damage, that is; keep them simple, keep records, and evaluate the results.[115] The administration must be through tax code and the awarding of incentives must be through such code and regulations.[116] The G20 working Group recommends that, for transparency, tax incentives must be consolidated under the authority of one government body, ideally the Ministry of Finance, to ensure transparency and avoid unintended overlap and inconsistencies.[117] Another reason for administration by tax authorities instead of sector ministries is that, incentives are foregone revenues that need to be accounted for in budgeting processes. This generates information for the wider debate on the costs and benefits of investment policies.[118]

The ease of obtaining the benefit of tax incentives is also an important consideration. Taxation should be imposed in a manner or a time that is convenient for taxpayers to make it easy for taxpayers to comply.[119] Furthermore, a tax should be designed in a manner that is easy to understand and apply.[120] Incentive administration should permit easy accessibility and automatic availability based on transparent criteria without any discretion.[121] Transparency in this context means consolidating and publicising

---

[112] M Stiglingh and others *SILKE: South African Income Tax (2022) 8* LexisNexis.
[113] D Holland & RJ Vann *23 Income Tax Incentives for Investment* (1998) 12 Tax Law Design and Drafting, Volume 2. International Monetary Fund. Available from https://www.elibrary.imf.org/display/book/9781557756336/C23.xml (Accessed: 12 July 2023).
[114] AW Oguttu '*International tax competition, harmful tax practices and the 'race to the bottom: special focus on unstrategic tax incentives in Africa*' (2018) 307 *Comparative and International Law Journal of Southern Africa* 51. Available from HeinOnline (Accessed: 5 August 2023).
[115] Bird (n 81) 10.
[116] Perera (n 99) 3.
[117] IMF, OECD, UN & World Bank (n 75) 32.
[118] Perera (n 99) 3.
[119] M Stiglingh and others (n 112) 7.
[120] M Stiglingh and others (n 112) 8.
[121] James (n 39) 62.

incentives, along with their eligibility criteria in the main body of law.[122] One of the reasons it is easy to apply the carbon tax upstream is that the regulators allow the utilities to pass through the fossil fuel cost to consumers by embedding it in the price and naturally flow into electricity rates.[123] In terms of transparency, the South African carbon tax and environmental levies that are applied upstream are gazetted in government notices and principal acts[124] and in addition, The National Energy Regulator of South Africa (NERSA) publishes the electricity tariff determinations, which currently include the environmental levy component recovered by licensees.[125]

2.6.4. Importance of monitoring

Monitoring and evaluation systems must be implemented to track progress against the intended results.[126] Although such systems impose additional administrative burdens on authorities, they also provide reasonably accurate ideas of how an investment is performing.[127] It is necessary that investments are monitored on an on-going basis to ensure continuing compliance with qualifying conditions and to detect tax avoidance or evasion.[128] To ensure that tax incentives recipients satisfy the requirements, there must be compulsory tax returns, declarations, and relevant forms to be filed regularly as a precondition for tax benefits.[129] Periodical measurements of the costs and benefits of the tax incentives must inform policy making whether to continue, eliminate or modify them.[130]

The VAT system applies a trade-off between economic efficiency and administrative burden in that small traders are excluded from the VAT system in order to reduce the

[122] IMF, OECD, UN & World Bank (n 75) 32.
[123] Metcalf & Weisbach (n 34) 528
[124] The Carbon Tax Act, 2019 and The Customs and Excise Act, 1964
[125] National Energy Regulator of South Africa (NERSA) 'Eskom Holdings SOC Limited's MYPD5 Revenue application for the 2023/24 and 2024/25 Financial years. Paragraph 8.13'. Available from https://www.nersa.org.za (Accessed: 11 June 2024).
[126] World Bank '2017/2018 Global Investment Competitiveness Report: Report Investor Perspectives and Policy Implications' (2018) 88. Available from https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1175-3 (Accessed: 11 July 2023).
[127] A Easson & EM Zolt *Tax incentives* (2002) 31 pp. 1-35 World Bank Institute. Available from https://scholar.googleusercontent.com/scholar?q=cache:DwvodnIlkrcJ:scholar.google.com/+easson+and+zolt&hl=en&as_sdt=0,5 (Accessed: 23 July 2023).
[128] Zolt (n 26) 27.
[129] James (n 39) 50.
[130] James (n 39) 50.

burden for both the small traders and the revenue authorities.[131] The current solar panel incentive mentioned in paragraph 2.3 above is applied downstream in that it can only be claimed by final users, both businesses (allowance) and individuals (rebate).[132] However, it is important to note that the process of claiming the incentive for individuals is automated and linked to the taxpayer's efiling profile for users that are registered on efiling with few and easy to understand questions such as, a number of solar panels installed, costs, generation capacity as well as confirmation of receipt or certificate of compliance.[133]

2.6.5. The likelihood of achieving results

As discussed above, the purpose of tax incentives is to address externalities, and policy decisions are made based on their likelihood to generate growth. Tax incentives that result in investments with positive, long-term spillover effects on the economy or environmental protection make it easier to justify.[134] The extent of their usefulness, depends upon how well the tax incentive programmes are designed, implemented and monitored.[135]

In terms of the World Bank Report as referred to by the DTC, it was concluded that tax incentives may not be effective in all sectors. However, it is also said that properly targeted incentives have positive impact on investment as they lower the cost of investment and encourage investment in sectors that are primed for growth when fundamental economic factors are conducive.[136]

Another aspect to consider in order to achieve results is a combination of different instruments. A combination of taxes and other policy instruments may also be more effective than using taxes alone.[137] In respect of environmental policy, in the presence of certain market imperfections, a single tax instrument might be inefficient, or its use may involve much higher costs than the combination of two or more instruments.[138]

---

[131] DTC (n 25) 89.
[132] Sections 6C and 12BA of the Income Tax Act, 1962.
[133] https://secure.sarsefiling.co.za (Accessed: 01 July 2024).
[134] James (n 39) 33.
[135] Easson & Zolt (n 127) 34.
[136] DTC (n 83) 51.
[137] Kosonen & Nicodème (n 108) 6.
[138] Kosonen & Nicodème (n 108) 10.

Complementary instruments can be diverse in nature, ranging from information campaigns, labelling and direct subsidies to differentiated indirect tax rates in favour of clean products.[139]

2.6.6. Risk of corruption and fraudulent activities

One of the disadvantages of tax incentives is that that they may induce corruption and rent-seeking behaviour, especially if the process of awarding them is not built into the tax law and has a large discretionary element.[140] Tax incentives are also prone to corruption risks because of their inherent invisible nature as compared to direct public expenditures which means that they do not get much scrutiny, making them prone to lobbying and pressures from special interest groups.[141]

Tax incentives must be designed to be as automatic as possible, to avoid the involvement of tax officials in the determination of their application.[142] Discretionary incentives must be avoided as they are prone to abuse and may lack the necessary checks and balances to maintain a predictable investment climate.[143] In as much as discretionary incentives are avoided, of much consideration is the advantage of having a process of vetting and approving investments that do meet the criteria before the investor proceeds. It also allows the government to keep track of the extent to which the incentive is being used.[144] Any necessary interventionist component of tax policy should be as general in nature as possible and should not depend on the discretionary decisions of officials.[145] In instances where discretion cannot be avoided, it should be heavily circumscribed.[146]

One of the principles outlined by the OECD's Task Force on Tax and Development is that of consolidating tax incentives under a single body to increase transparency. It helps to avoid unintended overlap and inconsistencies in incentive policies. It also

[139] Kosonen & Nicodème (n 108) 10.
[140] Stotsky (n 74) 10.
[141] IMF, OECD, UN & World Bank (n 75) 10.
[142] Clark (n 100) 259.
[143] Perera (n 99) 3.
[144] Holland & Vann (n 113) 9.
[145] RM Bird 'The role of the tax system in the developing countries' (1990) 407 *Australian Tax Forum* 7. Available from HeinOnline (Accessed: 23 July 2023**).**
[146] UN (n 52) 50.

limits discretionary power and enables policy makers to address issues that may arise with the governance of tax incentives.[147]

In the light of potentially fraudulent activities discussed above, it is important to consider deterrents available to the revenue authorities. It is said that there are two ways of achieving improvements in tax compliance: either through stricter enforcement and the fear of penalties for non-compliance, or through improved tax morale.[148] Audits are a vital tool used by tax administrations to increase compliance.[149] It is necessary to enforce the appropriate sanctions when taxpayers do not fulfil their tax obligations.[150] It is suggested that if tax incentives are subsequently found to have been improperly obtained, in addition to legal sanctions, the rights to incentives must be withdrawn and any tax that has been avoided must be repaid.[151]

The purposes of tax penalties should be the punitive and deterring functions.[152] For simplicity purposes and for greater clarity and certainty, all tax sanctions applicable to all taxes must be compiled and consolidated into one single legal body, in the form of a general tax sanctions code.[153] Upstream tax incentives can achieve simplicity in respect of audit and assessment for example, operators already pay taxes, which means that they have the administrative capacity to pay the (carbon) tax and that necessary data is already being collected.[154] In south Africa, the general tax sanctions are codified under the Tax Administration Act[155] read with relevant tax acts. Moreover, there must be clear categorisation of penalties which are based on taxpayer's duties and offenses.[156] There must be proportionality to the severity of each type of tax penalty and the level of difficulty in accurately assessing the tax due arising from the breach of the specific duty.[157]

[147] IMF, OECD, UN & World Bank (n 75) 32.
[148] DTC (n 25) 55.
[149] Junquera-Varela & Lucas-Mas (n 110) 92.
[150] Junquera-Varela & Lucas-Mas (n 110) 107.
[151] Easson & Zolt (n 127) 10.
[152] Junquera-Varela & Lucas-Mas (n 110) 113.
[153] Junquera-Varela & Lucas-Mas (n 110) 108.
[154] Metcalf & Weisbach (n 34) 525.
[155] Act 28 of 2011.
[156] Junquera-Varela & Lucas-Mas (n 110) 112.
[157] Junquera-Varela & Lucas-Mas (n 110) 113.

2.6.7. Sunset clauses and gradual phase-out

Tax incentives must not be considered permanent as they are special treatments which are justified by reference to a particular outcome.[158] It is for this reason that sunset provisions must be considered. Sunset clauses are provisions that determine the termination of specific provisions at a specific time.[159] Making tax incentives temporary provides for a natural point of evaluation and ensures an opportunity to reconsider whether the incentive should be continued, reformed, or repealed.[160] For example, in respect of the R&D incentive, following the review and consultation, the sunset date for the incentive was extended from 1 October 2022 to 31 December 2032. The extension was meant to provide taxpayers with continuity and certainty.[161]

Some criticism of sunset clauses is that they create uncertainty. One of the arguments is that sunset provisions lead to inefficiency as taxpayers are unable to plan their affairs around the existence (or nonexistence) of tax laws, thus creating uncertainty.[162] An example of this uncertainty is the solar incentive for individuals which was announced in the 2023 budget review on 22 February 2023 with an effective date of 1 March 2023 and available for one year.[163] In the same breath, the renewable energy tax incentive for businesses was also expanded with a slightly generous two-year availability.[164] The problem is that the sections of the Act regulating these incentives were only promulgated on 22 December 2023 with retrospective application and only two months before the sunset date for individuals.[165] This means that there was a period of about ten months of uncertainty, where taxpayers could not rely on law to make use of the incentive. While it is acknowledged that a tax incentive should only exist if it meets its intended objectives, the point is that business cannot meet its obligations if it is not given ample notice of contemplated changes.[166]

---

[158] UN (n 52) 43.
[159] S Ranchordas *'Sunset Clauses and Experimental Regulations: Blessing or Curse for Legal Certainty'* (2015) 30 *Statute Law Review* 36. Available from HeinOnline (Accessed: 25 July 2023).
[160] Oguttu (n 114) 312.
[161] National Treasury 'Explanatory Memorandum on the Taxations Laws Amendment Bill, 2022' Par 4.4.
[162] N Viswanathan '*Sunset Provisions in the Tax Code: A Critical Evaluation and Prescriptions for the Future*' (2007) 681 *New York University Law Review* 82. Available from HeinOnline (Accessed: 24 July 2023).
[163] National Treasury (n 28 Above) 10.
[164] National Treasury (n 24 Above) 47.
[165] Sections 2(1) and 16(1) of the Taxation Laws Amendment Act, 17 of 2023).
[166] E Lombard 'Uncertain future for tax incentives' Tax Breaks March 2022 8. Available from Sabinet (Accessed: 27 July 2023).

It has however been argued that uncertainty does not result from sunset clauses as such, but from other factors, such as the pressure exercised by lobbyists and special interest groups.[167] In fact, it is argued that sunset clauses provide 'greater certainty' than permanent law because of the diminished effectiveness as time goes by. This diminished effectiveness may constitute grounds for justifying the need for legal change.[168] Proponents of sunset clauses also warn against their extensions or repeals before sunset dates, on the basis that such extensions and repeals may create uncertainty.[169] Viswanathan provides an example of how the uncertainty of repealed sunset provisions have the consequence of creating inefficient outcomes as taxpayers make decisions based on the assumption that provisions will indeed sunset. The inefficiency is not created by the law itself, but the uncertainty in the future existence of the law.[170]

In addition, Sunset clauses, if correctly designed and implemented, may stimulate long-term investment for example, a sunset may still accelerate investment because taxpayers may fear losing tax benefits.[171] When government introduced section 12BA of the ITA to enhance the renewable tax incentive for businesses, it was explicitly mentioned that the enhancement was temporary.[172] National Treasury further issued a note setting out basic features and requirements for the temporarily enhancement and clarifying that the note was meant to enhance certainty for taxpayers.[173]

A central virtue of sunset clauses is that, where there are political disagreements, they may facilitate compromise, increasing the chances of provisions being passed. Individuals who are against a legislative change are assured of another opportunity to contest it, especially if the law proves to be ineffective or counterproductive.[174]

Section 2.2 above discussed grandfathering in the form of emissions allowances as a phase-in approach. Similar arguments can be advanced to phasing out allowances.

---

[167] Ranchordas (n 159) 43.
[168] Ranchordas (n 159) 39.
[169] Ranchordas (n 159) 43.
[170] Viswanathan (n 162) 671.
[171] Ranchordas (n 195) 40.
[172] National Treasury 'Explanatory memorandum on the Taxation Laws Amendment Bill 2023' Par 4.4.
[173] National Treasury 'Frequently Asked questions: Enhanced renewable energy incentive for business' (2013) 1. Available from https://www.treasury.gov.za (Accessed: 16 April 2024).
[174] K Underhill & I Ayres 'Sunsets are for suckers: an experimental test of sunset clauses' (2002) 105. *Harvard Journal on Legislation* 59. Available from HeinOnline (Accessed: 24 July 2023).

When considering the importance of sunset provisions, a case must be made for the complementary process of gradually phasing out the incentives. “Gradualism” is the principle that, policy changes must be implemented without creating dramatic shifts in cost and benefits to individuals or groups.[175] Accordingly, well-designed incentives require the predictability that comes from gradual changes to the benefits they provide.[176] The principle of gradualism also takes into account whole industries, such as solar providers, that should be provided ample time to adapt and plan for new forms of opportunity.[177]

2.6.8. Importance of adjacent legislation

Tax policy decisions are not made in isolation but are outcomes of complex social and political interactions between different groups in society.[178] Ministries and agencies involved in the granting of tax incentives must coordinate their activities and bring specific expertise, which can be useful in the design of tax incentives.[179] For example, although the incentive is provided through the tax law, the evaluation of R&D incentive application is done by experts from the Department of Higher Education, Science and Innovation, National Treasury, and SARS.[180] The Regulations in terms of the energy efficiency savings incentive are issued by the Minister of Finance in consultation with the Minister of Energy and Minister of Trade and Industry.[181]

2.6.9. Importance of concomitant penalties

There are government disincentives or penalties in the form of taxes, levies or otherwise that are meant to discourage businesses from being energy inefficient or relying on non-renewable sources. Of note is the environmental levy which is a levy payable for electricity generation using fossil fuels and nuclear sources at 3.5 cents per kWh.[182] This levy is payable upstream by producers and recovered from

[175] C Moran & C Ball ‘Structuring better caps for sustainability incentive programs’ (2018) 182 *Idaho Law Review*, 54. Available from HeinOnline (Accessed: 16 April 2024).
[176] Moran & Ball (n 175) 182.
[177] Moran & Ball (n 175) 186.
[178] Bird (n 81) 16.
[179] Oguttu (n 114) 313.
[180] Section 11D of the Income Tax Act, 58 of 1962.
[181] Section 12L of the Income Tax Act, 58 of 1962.
[182] Schedule 1, Part 3B of Customs & Excise Tariff.

consumers through tariffs.[183] In Eskom's Multi Year Price Determination 5 Revenue application, Eskom applied for the total cost of R6 895m and R6 500m to be recovered as environmental levy for the 2023/24 and 2024/25 financial years, respectively.[184] This levy is not applicable to consumers who produce their own electricity using solar panels or renewable energy producers (Customs and Excise Tariff, Schedule 1, Part 3B) and hence it could be considered a concomitant penalty for using fossil fuels. The other way where customers pay more for grid electricity is through incline block tariffs where the first block of electricity is at the lowest price. As the customer purchases more electricity during the month, the electricity bought will eventually fall in block two which is a bit more expensive. For example, during the 2024/25 financial year, homeowners on Homelight 60A can expect to pay 232.31 c/kWh for block one (>0 to 600kWh) and 394.86 c/kWh for block two (>600kWh).[185] This could serve as an incentive to homeowners to invest in rooftop solar energy, even if it is to complement grid electricity and ensure that they only consume electricity in block one.

The useful life of solar PV panels can range from twenty-five to thirty years. The question is what happens to the panels after their operational life has been exhausted. The hazardous components present in the panels means that they cannot be dumped to the landfill and recycling could result in financial opportunities.[186] In South Africa, the National Environmental Management Waste Act[187] provides for, *inter alia,* disposal, reduction, re-use, recycling and recovery of waste (Part 3). The Act also provides punitive provisions for non-compliance and offences which include fines and imprisonment (section 68). The CSIR Waste Research Development and Innovation Roadmap Research Report considers economic instruments for reducing volumes of waste going to the landfills. To discourage waste, instruments such as disposal tax and gate fees are considered and to encourage alternative measures such as recycling, instruments such as subsidies, tax rebates and grants must be

[183] https://www.sars.gov.za/customs-and-excise/excise/environmental-levy-products/electricity-generation/ (Accessed 30 June 2024).
[184] NERSA (n 125).
[185] Eskom 'Tariffs & Charges booklet 2024/25 (2024) 30 Available from https://www.eskom.co.za/distribution/wp-content/uploads/2024/05/ESK114-Eskom-Digital-Tariff-Booklet-2024_Final.pdf (Accessed: 30 June 2024).
[186] C Vargas & M Chesney 'End of life decommissioning and recycling of solar panels in the United States. A real options analysis' (2021) 83 *Journal of Sustainable Finance & Investment* 11. Available from https://doi.org/10.1080/20430795.2019.1700723 (Accessed: 03 July 2024).
[187] Act 59 of 2008.

considered.[188] One of the lessons is that deposit-refund systems have proven to stimulate recycling (or at least safe disposal) by providing a tangible financial reward for the return of recyclable products.[189]

2.7. Conclusion

The objective of this chapter is to broadly discuss the concept of incentives. There is no doubt that tax incentives are one of the commonly used instruments the world over. The chapter considers the rationale for providing tax incentives being to address market failures such as inadequate electricity supply and environmental issues and if they generate positive externalities in the form of R&D. The prevailing argument for tax incentives includes their ability to address externalities which translates into stimulating economic growth, cleaner environment and increased innovation. The main drawback is the cost to the fiscus which is often countered by cost-benefit analysis which includes social benefits.

Section 2.6 proceeds to discuss tax policy considerations for tax incentives and the findings were that incentives are a cost to the fiscus and therefore it is recommended that, when introducing a new incentive, rigorous cost-benefit analyses be performed. In order to minimise administration costs, upstream tax incentives should be considered. Administration is a critical consideration when designing tax policy with the principles of administrative efficiency and simplicity at the forefront. Tax incentives must be codified in the tax acts and must be consolidated and administered under the Ministry of Finance. To track performance and effectiveness, they must be accurately monitored. The risk of corruption and fraud must be mitigated through automation and enforcement of concomitant penalties.

Since tax incentives are introduced to achieve a specific objective, once the objective is achieved, it only makes sense that the incentive also comes to an end, hence the consideration of sunset provisions and applying a gradual phase-out approach in line with the certainty principle. In implementing the incentives, it is important to consider the coordination of different ministries and agencies of government to ensure

[188] CSIR 'Incentives for Municipalities to Divert Waste from Landfill in South Africa' Final Report (2021) 23. Available from https://wasteroadmap.co.za/wp-content/uploads/2021/05/20-CSIR-Final_Technical-report.pdf. (Accessed: 03 July 2024).
[189] CSIR (n 184) 44.

effectiveness. Lastly, concomitant penalties are an important factor in disincentivising behaviour that contributes to negative externalities.

In conclusion, the justification and thus effectiveness of tax incentives will mainly depend on how well designed they are, with particular consideration on administration, monitoring and transparency.

Having the understanding of the incentives and the role they can play in addressing the energy crisis, the next chapter focuses on specific tax incentives that are applicable to energy generation and supply in South Africa.

CHAPTER 3: TAX INCENTIVES REGIME IN SOUTH AFRICA

3.1 Introduction

The previous chapter introduces the concept of tax incentives, specifically how they can be used to enhance investment. This chapter provides an analysis of tax incentives available in South Africa that are of relevance to the electricity generation sector, including accelerated depreciation allowances, energy efficiency and research and development incentives. The ITA contains several incentives, and this chapter explores how these incentives can be utilised to alleviate the energy crisis. Further, it analyses whether minimising carbon tax though tax credits could be considered as a tax incentive as it provides producers with a cushion from carbon tax for some time.

3.2 An overview of the South African electricity industry

3.2.1 The Regulatory framework

South Africa's energy landscape is regulated through a series of laws that are inter-linked, and include policy documents and position papers.[190] NERSA is the custodian and enforcer of the regulatory framework including issuance of licences for the generation, transmission and distribution of electricity.[191] To increase the supply of electricity and to promote competition in the electricity generation sector, the Minister of Mineral Resources and Energy, in consultation with NERSA is empowered to establish IPPs.[192] Another important piece of legislation is the National Energy Act, 34 of 2008 (NE Act), which is an enabling legislation that empowers the Minister of Mineral Resources and Energy to ensure the availability of diverse energy resources in sustainable quantities and at affordable prices to support economic growth and poverty alleviation, while also taking into account environmental considerations. The NE Act further provides for energy planning; and for increased generation and consumption of renewable energy.[193]

---

[190] DPE (n 23).
[191] Electricity Regulation Act, 4 of 2006.
[192] DMRE *'Strategic Plan 2020-2025'* 20. Available from https://www.dmre.gov.za/ (Accessed: 04 April 2023).
[193] DMRE (n 192) 20.

3.2.2 Energy supply

The electricity sector is dominated by the vertically integrated state-owned utility, Eskom[194] with nominal with total nominal capacity of 46 788 MW as at 31 March 2023.[195] The total capacity for IPPs at the same period was 7 110 MW (thirteen per cent). During the 2023 financial year, Eskom generated and sent out 185 803 GWh of energy and purchased 17 957GWh (nine per cent) from the IPPs.[196] During the same period, the System Operator estimates that 5.91 per cent of the sales were lost; and demand was not met due to load shedding and load curtailment.[197]

The electricity mix is still dominated by coal-fired power generation which contributed about 80 per cent to system demand in 2022 with renewable energy excluding hydroelectric dams contributing only 7.3 per cent.[198] The use of coal for electricity generation makes South Africa a significant emitter of carbon dioxide, which contributes to climate change.[199] The energy mix consists of coal, nuclear, diesel (Open Cycle Gas Turbines), hydro, wind, photovoltaic solar (solar PV) and Concentrated Solar Power.[200]

3.2.3 Electricity consumption

The South African economy is very energy-intensive, and is dominated by extraction of raw materials and primary processing.[201] Due to this high energy intensity, the energy sector is at the centre of the economy.[202] During the 2023 financial year, Eskom reported that distributors (municipalities), together with the residential (direct Eskom

---

[194] The Presidency: National Planning Commission (n 16) 164. Available from https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf (Accessed: 10 May 2023).
[195] Eskom '2023 Integrated Report' (2023) 9. Available from www.eskom.co.za (Accessed: 16 May 2024).
[196] Eskom (n 195) 13.
[197] Eskom (n 195) 13.
[198] CSIR (n 2).
[199] The Presidency: National Planning Commission (n 16) 164.
[200] JG Wright & JR Calitz 'Statistics of utility-scale power generation in South Africa H1-2021' (2021) 2. Available from https://researchspace.csir.co.za/dspace/handle/10204/13493 (Accessed on 16 July 2024).
[201] JC Nkomo '*Energy and economic development: challenges for South Africa*' (2005) Abstract *Journal of Energy in Southern Africa*, 16. Available from http://www.erc.uct.ac.za/jesa/jesa-contents.htm (Accessed: 11 July 2024).
[202] DMRE 'The South African Energy Sector Report 2021' (2021) 7. Available from https://www.dmre.gov.za/Portals/0/Energy_Website/files/media/explained/2021-South-African-Energy-Sector-Report.pdf (Accessed: 22 March 2023).

customers), industrial and mining sectors accounted for over 85 per cent of sales volumes in terms of Gigawatt Hours (GWh); with industrial and mining sectors accounting for 39 per cent of sales volumes.[203] It is projected that, between 2023 and 2050, peak demand will grow from around 35 000 MW to around 62 000 MW.[204] The country would need an additional 29 000 MW of electricity by 2030. About 10 900 MW of existing capacity will be retired, implying new build of more than 40 000 MW.[205] This is to be done through diversification of power sources and ownership in the electricity sector.

3.2.4 The future

According to the NDP 2030, some of the government's priorities include procuring at least 20 000 MW of renewable electricity by 2030, importing hydro-electricity from the region, decommissioning 11 000 MW of ageing coal-fired power stations and investing in energy-efficiency.[206] Furthermore, the NDP also recognises that the introduction of carbon pricing through carbon tax has internalised the external factors.[207] The Integrated Resource Plan (IRP) 2023 analysed energy pathways aimed at informing policy choices or decisions for a secure and sustainable energy and tested a combination of electricity generation sources such as wind, solar PV, Energy Storage System, gas, nuclear and cleaner coal technologies.[208]

3.3 The South African tax incentive structure

In developed and developing countries, company reforms of the 1960s and 1970s favoured tax incentives to correct market failure and promote investment. There was, however, growing scepticism because of base erosion and rent-seeking behaviour.[209] The Margo Commission also favoured reducing tax incentives to the minimum. The government responded by, *inter alia*, scrapping investment allowances and revising

---

[203] Eskom (n 195) 84.
[204] SANEDI 'Demand projection model in support of IRP update' (2023) 4. Available from https://www.energy.gov.za/IRP/2023/Electricity%20demand%20projection%20model%20ESRG%20SANEDI%20Report%20Rev%201.pdf (Accessed: 16 May 2024).
[205] The Presidency: National Planning Commission (n 16) 168.
[206] The Presidency: National Planning Commission (n 16) 46.
[207] The Presidency: National Planning Commission (n 16) 171.
[208] DMRE 'Integrated Resource Plan 2023' (2023) 24. Available from www.gov.za (Accessed: 20 July 2024).
[209] JT Steenekamp & JA Dockel 'Taxation and tax reform in LDCs: Lessons for South Africa' (1993) 324. *Development Southern Africa* 10. Available from https://doi.org/10.1080/03768359308439697 (Accessed: 11 August 2023).

depreciation allowances from 50/30/20 write-off to a five-year scheme.[210] The 1994 Katz Commission also stated that, "*the range of incentives should be narrowed as far as possible*".[211] In an address by the then Minister of Finance, Mr Trevor Manuel,[212] he confirmed the government's steps to move away from harmful tax practices whereby the country attracts foreign investments through tax holidays and ring-fenced incentives not available to local companies. He said that government had instead adopted incentive structures that were a more effective and internationally acceptable approach to stimulating the economy. These incentives largely involved accelerated depreciation for qualifying manufacturing assets. In anticipation for privatisation, depreciation allowances were also made available for assets such as electricity transmission lines.[213]

South Africa has several incentives that are applicable to manufacturing, tourism, and mining among other industries.[214] Calitz et al analysed tax incentives in South Africa and found that they were aimed at nine general sectors with tax expenditures in 'electricity, gas and water supply' sector being the second lowest and 'manufacturing' sector significantly higher than all sectors combined.[215] The DTC Makro Analysis Final Report, 2016 provides a list of corporate income tax incentives which take the form of deductions, allowance and exemptions. Included in the list is the deduction in respect of Scientific & Technological Research and Development; Renewable energy relief and energy efficiency savings allowance.[216] Having regard to these incentives, the World Bank Report prepared for the DTC found the impact of tax incentives on raising investment in South Africa to be mixed, with no impact on the mining sector and

[210] Steenekamp & Dockel (n 209) 324.
[211] National Treasury '2020 Budget Review' (2020) 39. Available from https://www.treasury.gov.za/documents/national%20budget/default.aspx (Accessed: 10 July 2024)
[212] Mr Trevor Manuel was the Minister of Finance of the Republic of South Africa from 4 April 1996 to 10 May 2009.
[213] Annual Conference of The International Bar Association *The South African Tax Reform Experience Since 1994* (2002) 8. Available from https://www.treasury.gov.za/comm_media/speeches/2002/2002102501.pdf (Accessed: 05 May 2024)
[214] E Calitz, S Wallace & L Burrows 'The impact of tax incentives to stimulate investment in South Africa' Working Papers 19/2013, Stellenbosch University, Department of Economics (2013) 2. Available from https://ideas.repec.org/p/sza/wpaper/wpapers195.html (Accessed: 08 May 2024).
[215] Calitz, Wallace & Burrows (n 214) 15.
[216] DTC (n 25) 115.

positive in five of the nine sectors.[217] Although not effective in all sectors, investment linked incentives (accelerated depreciation) were found to be more effective when compared to tax rate reduction.[218]

To promote transparency and accountability, National Treasury, in the annual budget review, issues a tax expenditure statement. This statement also helps government and the public assess the costs, benefits and overall effectiveness of tax expenditure.[219] In 2021/22, the latest year for which data was available, tax expenditures were estimated at R263 billion or 4.2 per cent of GDP.[220] The estimates show Corporate Income Tax (CIT) to be the lowest tax expenditure at six per cent with Personal Income Tax (PIT) being the highest at 48 per cent and Value-Added Tax (VAT) and Customs and excise at 46 per cent.[221] It is also important to note that these estimates do not include the costs of administering the incentives, they only entail a comparison of actual revenue foregone.[222] In July 2023, the International Monetary Fund (IMF) performed the Fiscal Transparency Evaluation (FTE), which assessed and benchmarked South Africa's fiscal transparency institutions and practices against the IMF's Fiscal Transparency Code.[223] The FTE confirmed that South Africa's Fiscal transparency practices are strongest in fiscal reporting.[224] The coverage of tax expenditures was assessed as "good" because of how the historical and sectoral analysis by type is performed.[225] The IMF also stated that South Africa's strong reputation for budget transparency is well deserved, as the Budget Review and

[217] World Bank 'South Africa: Sector Study of Effective Tax Burden and Effectiveness of Investment Incentives in South Africa – Firm Level Analysis' (2016) 26. Available from https://www.taxcom.org.za/docs (Accessed: 07 April 2023).
[218] World Bank (n 217) 27.
[219] National Treasury (n 48) 119.
[220] National Treasury (n 48) 119.
[221] CIT expenditures include depreciation allowances, research and development incentives and energy-efficiency savings. The biggest expenditure for PIT is retirement fund contribution which is revenue deferred rather than forgone. VAT expenditures include zero-rated supplies and exempt supplies and Customs and Excise include Motor Industry Development Programme.
[222] National Treasury (n 48).
[223] IMF 'High-level summary Technical Assistance Report - South Africa: Fiscal Transparency Evaluation' (2024) 6. Available from https://www.imf.org/en/Publications/technical-assistance-reports/Issues/2024/04/15/South-Africa-Technical-Assistance-Report-Fiscal-Transparency-Evaluation-547665 (Accessed: 25 August 2024).
[224] IMF (n 32 Above).
[225] IMF 'Technical Assistance Report - South Africa: Fiscal Transparency Evaluation' (2024) 31. Available from https://www.imf.org/en/Publications/technical-assistance-reports/Issues/2024/04/15/South-Africa-Technical-Assistance-Report-Fiscal-Transparency-Evaluation-547665 (Accessed: 25 August 2024).

Medium-Term Budget Policy Statement are well explained and rich in detail. Budget documents are readily available, going back 30 years, it confirmed.[226] In addition, South Africa is ranked second out of 120 countries surveyed in the Open Budget Survey, with budget transparency and oversight being areas of strength.[227] The IMF, however, recommended that it is important that the disclosure of tax expenditures be strengthened to facilitate policy discussions given that revenue of almost five per cent of GDP was forgone through tax expenditures in 2020/21.[228] The discussion must include the impact that any tax proposals have on tax expenditures and tax collections.[229]

In as much as there are several tax incentives that apply to different sectors there are also special allowances legislated to serve specific goals or develop particular activities (e.g. urban development) or industry (e.g. the film industry)[230] The energy tax incentives available in South Africa include accelerated depreciation, accelerated deductions, energy efficiency incentives[231] and exemptions.[232] These incentives are administered by SARS through the ITA. The Carbon Tax Act, because of its nature as a disincentive to address environmental externalities, does not provide for tax incentives, however, it does provide for exemptions and rates thresholds which may be considered as incentives.

3.4 Accelerated depreciation allowances.

3.4.1 Introduction

Accelerated depreciation is a tax incentive where companies obtain tax benefits from tax rules that allow full depreciation of assets before their economic lifespans end.[233] Accelerated depreciation allowances have always featured in discussions and policy initiatives to stimulate investment.[234] From an economic point of view, they are

[226] IMF (n33 Above) 32. (Accessed: 08 May 2024).
[227] IMF (n 33 Above) 6.
[228] IMF (n32 Above) 19. The same methodology and comparatives as note 217 above were used.
[229] IMF (n33 Above) 30.
[230] E Calitz and others 'Depreciation allowances in South Africa' WIDER Working Paper 2020/49 Helsinki: UNU-WIDER (2020) 9. Available from https://doi.org/10.35188/UNU-WIDER/2020/806-1 (Accessed: 10 May 2024).
[231] Income Tax Act, 58 of 1962 – Sections 12B, 12L, 11D.
[232] Carbon Tax Act, 15 of 2019.
[233] Calitz and others (n 230) 2.
[234] Calitz and others (n 230) 5.

considered among the more attractive tax incentives. For example, they are less costly in terms of revenue foregone than are tax holidays.[235] The 2015 World Bank Report confirmed that the impact of the accelerated depreciation allowances was that the Marginal Effective Tax Rate (METR) is considerably lower than the statutory CIT.[236]

By definition, activities and sectors that require more capital investment are likely to qualify for tax depreciation allowances[237] with the main beneficiaries being electricity and water, manufacturing, mining, transport, and the finance sector.[238] The main critique of accelerated depreciation in the impact it has on loss-making companies as it may encourage companies to increase capital expenditure at the cost of labour-intensive activities.[239] In 2021, the government restricted assessed losses carried over to 80 per cent of taxable income and some of the reasons were that this achieves symmetry and stabilisation and opens up space for a reduction in CIT rate[240], which was subsequently reduced the following year from 28 per cent to 27 per cent.[241] Calitz further recommends that tax incentive schemes must contain sunset clauses with regular monitoring so that the continuation of tax-driven businesses can be curtailed earlier rather than later.[242]

This section analyses accelerated depreciation allowances that are applicable to electricity generators and transmitters of both renewable and non-renewable electricity.

3.4.2 Generation of electricity using non-renewable energy sources

As mentioned above, government's plans, as stated in the IRP 2023 include investment in gas and base-load technologies such as nuclear and clean coal technologies. Some scientists consider baseload generation as the backbone of the

[235] Calitz and others (n 230) 5.
[236] World Bank 'South Africa: Sector Study of Effective Tax Burden and Effectiveness of Investment Incentives in South Africa – Firm Level Analysis Part I' (2015) 21. Available from https://www.taxcom.org.za/docs (Accessed: 07 April 2023).
[237] Calitz and others (n 230) 9.
[238] Calitz and others (n 230) 13.
[239] Calitz and others (n 230) 16.
[240] National Treasury. Explanatory Memorandum on the Taxation Laws Amendment Bill, 2021. Par 2.2.
[241] National Treasury '2022 *Budget Review*' (2022) 38. Available from https://www.treasury.gov.za/documents/national%20budget/default.aspx (Accessed: 15 July 2024).
[242] Calitz and others (n 230) 16.

electricity grid, as the uninterrupted capacity of baseload electricity helps provide grid stability and reliability in an electricity system.[243]

Unlike the depreciation allowances afforded to generation of electricity using renewable sources as specified in section 12B of the ITA, there is no section in the ITA that specifically provides for depreciation allowances in respect of assets used to generate electricity from non-renewable sources such as coal, gas, nuclear and large-scale hydropower. It is important to mention that some research suggests that, even though South Africa is a water-scarce country, there are multiple locations where hydropower can be generated that include irrigation canals, water distributions systems, wastewater treatment works, transfer schemes, and dams.[244]

Therefore, in respect of the abovementioned technologies, accelerated allowance can be sought for machinery or plant contemplated in section 12C(1)(a) of the ITA which is broad enough to apply to electricity generation as it provides an allowance in respect of machinery or plant brought into use for the purpose of trade and used directly in the process of manufacture.[245]

Section 12C was introduced in 1990 and applies *inter alia* to machinery and plant used directly in a process of manufacture.[246] The section was amended in 2002 to accelerate depreciation to a rate of 40 per cent in the first year and 20 per cent in each of the subsequent years.[247] This amendment gave effect to the budget announcement that proposed the accelerated depreciation to complement the strategic investment programme and other initiatives of the Department of Trade and Industry to encourage manufacturing investment and job creation. It further said that the measures would provide a broad-based stimulus to short-term investment spending and add capacity to improve the longer-term prospects of the economy.[248]

---

[243] M Fasihi & C Breyer 'Baseload electricity and hydrogen supply based on hybrid PV-wind power plants' (2020) 1. *Journal of Cleaner Production* 243. Available from https://doi.org/10.1016/j.jclepro.2019.118466 (Accessed: 18 July 2024).

[244] A Bekker and others 'Framework development for the evaluation of conduit hydropower within water distribution systems: A South African case study' (2021) *Journal of Cleaner Production* 283. Available from https://doi.org/10.1016/j.jclepro.2020.125326 (Accessed: 18 July 2024).

[245] Sections 12C(1)(a) and (b) of the ITA.

[246] National Treasury. Explanatory Memorandum on the Income Tax Bill, 1990, Clauses 13 and 14.

[247] Act 30 of 2002.

[248] National Treasury 'Revenue Trends and Tax proposals' (2002) 84.

The terms “machinery” and “plant” are not defined in the ITA. The Oxford Dictionary of Law defines “machinery and plant” as the machines, parts of machines, and all other apparatus used for carrying on a business but excluding stock in trade.[249] In *Blue Circle Cement*[250], the court turned to the English case (*Yarmouth v France* (1887) 19 QBD 647) for the meaning of the word “plant” where the court said that “plant includes whatever apparatus is used by a businessman for carrying on his business, not his stock-in-trade which he buys or makes for sale; but all goods and chattels, fixed or movable, live or dead, which he keeps for permanent employment in his business”.

In considering whether electricity generation is the process of manufacture, In *SIR v Safranmark*[251], the term ‘process of manufacture’ was summarised as an action or series of actions directed to the production of an object or thing which is essentially different from the materials or components which went into its making. Fossil fuel power plants burn coal to generate electricity. Nuclear power reactors use the heat produced from splitting atoms to generate steam to drive a turbine.[252] On this basis, it can be concluded that generation of electricity is the process of manufacture as contemplated in section 12C of the Act.

In recommending favourable accelerated allowances for electricity generation, it is prudent to make a brief comparison with the mining sector especially because, in addition to the general income tax provisions, the mining sector is also eligible for various deductions, capital and other tax incentives.[253] One of the reasons for these allowances is to cater for the large upfront capital investments made by mines.[254]

When addressing the special tax incentives given to mining companies, the DTC submitted that the life cycle of a mine is shaped by various factors which differentiate it from manufacturing concerns. Generally, mining is a long-term activity that requires significant upfront capital investment and expertise to develop large ore-deposits to

[249] Oxford Dictionary of Law, Fifth Edition, 2001.
[250] 46 SATC 21.
[251] 43 SATC 235.
[252] https://world-nuclear.org/nuclear-essentials/where-does-our-electricity-come-from.aspx (Accessed: 15 August 2023).
[253] DTC *Second and Final Report on Hard Rock Mining*. (2016) 46. Available from https://www.taxcom.org.za/ (Accessed: 15 August 2023).
[254] DTC (n 253) 46.

the mining production stage.[255] Mining projects are on a large-scale and can take ten to fifteen years to launch.[256] In comparison, one of the most recent reactor grid connections, Vogtle 4 in the United States of America started construction in September 2013 and reached commercial operation in April 2023 (just under eleven years).[257] The case study of the four Korean ultra-critical 1000 MW coal-fired power plants found an 85 per cent likelihood of construction duration to be between 64 and 68 months.[258] The construction of Finland's Olkiluoto 3 nuclear reactor started in 2005 and achieved commercial operation in 2023, eighteen years later.[259] Therefore, on the basis of electricity generation process being capital intensive with long payback periods, an argument can be made that it is can be differentiated from the process of manufacture and more generous and special allowances may be afforded. In addition, to reiterate the similarity to the mining sector, fossil and nuclear power plants also consist of environmental assets that require recycling and disposal.[260]

The DTC ultimately recommended that the write off regime for upfront capex be discontinued and replaced with a capex depreciation regime which is equivalent to the write off periods provided for in respect of manufacturing.[261] Another important recommendation was that, assets must be written off from the date on which expenditure is incurred as opposed to when it is brought into use.[262] Section 12C allows for the first deduction when the assets are brought into use. Importantly, the same report recommended that, despite distortions and breaches to tax neutrality, the upfront capex allowances be retained for existing gold mines and the reasons include the positive externalities that the gold mining tax formula bestows such as contribution

[255] DTC (n 253) 46.
[256] https://www.explorelesmines.com/en/mining-industry/mining-cycle.html (Accessed: 15 August 2023).
[257] https://world-nuclear.org/nuclear-reactor-database/details/VOGTLE-4 (Accessed: 28 July 2024).
[258] HC Lee, EB Lee & D Alleman 'Schedule Modeling to Estimate Typical Construction Durations and Areas of Risk for 1000 MW Ultra-Critical Coal-Fired Power Plants' (2018) 12 *Energies* 11. Available from https://doi.org/10.3390/en11102850 (Accessed: 15 August 2023).
[259] E Lehto 'After 18 years, Europe's largest nuclear reactor starts regular output' Reuters 16 April 2023. https://www.reuters.com/world/europe/after-18-years-europes-largest-nuclear-reactor-start-regular-output-sunday-2023-04-15/ (Accessed: 20 August 2023).
[260] Eskom. See par 2.4.2 of the Draft Environmental & Social Impact Assessment report for Komati Power Station shutdown & dismantling which highlights the key environmental legislation in SA and their possible relevance to the Project. https://www.eskom.co.za/wp-content/uploads/2022/08/P177398-Component-A-ESIA-Part-I.pdf (Accessed: 19 July 2024).
[261] DTC (n 253) 68.
[262] DTC (n 253) 69.

to growth and job creation.[263] Therefore, on this basis, it is prudent to consider more favourable allowances or at least allow for write-off when expenditure is incurred.

The discussion of reliable electricity supply is not complete without considering battery storage, especially where the world is moving towards non-dispatchable renewable energy sources. Battery storage is an essential enabler of renewable energy generation;[264]however, there are also environmental concerns, particularly relating to handling and disposal thereof.[265] Therefore, for this reason, any tax incentive available to battery storage cannot be environmental based. As discussed above, section 12C is broad enough to apply to electricity generation using non-renewable energy sources.

One of Eskom's strategic programmes is the Battery Energy Storage System (BESS). BESS are devices that store and discharge electricity as and when required. BESS can be charged by either conventional source of energy i.e. gas or nuclear or renewable sources. According to Eskom, BESS can alleviate load shedding as it discharges energy for a minimum of four hours.[266] The International Institute for Sustainable Development (IISD) also found that grid batteries are an immediate strategic priority with global installed capacity predicted to reach over 270 GW by 2026.[267]

There are environmental concerns linked to the end of life of large-scale batteries, including decommissioning and waste management aspects.[268] Chapter 7 of the National Environmental Management Act[269] enforces the duty of care and remediation of environmental damage and further provides for private prosecutions and criminal proceedings for non-compliance. In addition, to minimise waste, batteries can be

[263] DTC (n 253) 77.
[264] https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/enabling-renewable-energy-with-battery-energy-storage-systems (Accessed: 25 August 2024).
[265] International Institute for Sustainable Development (IISD) 'Watts in Store Part 1: Explainer on how energy storage can help South Africa's energy crisis' (2023) 33. Available from https://www.iisd.org/system/files/2023-07/south-africa-watts-in-store-part-1.pdf (Accessed: 11 July 2024).
[266] https://www.eskom.co.za/distribution/battery-energy-storage-system/ (Accessed: 17 August 2023)
[267] IISD (n 265) 22.
[268] J Mackay and others 'Regulatory assessment of battery energy storage systems in South Africa' (2022) 58. Available from https://res4africa.org/wpcontent/uploads/2023/04/FINALRegulatoryassessmentofBatteryEnergyStorageSystemsinSouthAfrica.pdf (Accessed: 25 August 2024).
[269] Act 107 of 1998.

designed to make recycling easier, but it may increase the cost.[270] Section 37B of the ITA provides for deductions in respect of environmental expenditure in respect of recycling and disposal assets, however, this deduction applies to disposal assets of a permanent nature. It is evident that battery storage will play a significant part in the future energy supply. On 01 August 2023, the DMRE invited and encouraged stakeholders to review and provide comments on the draft South Africa renewable energy masterplan (SAREM) document to ensure that the contribution of the renewable energy and battery storage value chains is maximised in support of South Africa's NDP objectives.[271] In light of this, taxpayers can lobby the government to enhance the section 37B deduction to encourage recycling and environment protection.

3.4.3 Generation of electricity using renewable energy sources

To encourage businesses to replace carbon-intensive equipment with environmentally friendly equipment and as part of environmental-based tax programs aimed to control carbon emissions, accelerated depreciation provisions were proposed in many parts of the world.[272] Accelerated depreciation is a positive incentive for environmental protection that is designed, generally, to impact upon a taxpayer's taxable income.[273] In South Africa, the accelerated depreciation allowance that was previously for investments in bio-diesel and bio-fuels was extended to include other environmentally friendly sources of energy.[274] The energy sources include generation of electricity using wind, solar and hydropower. The write-off is 50 per cent in the first year, 30 per cent in the second year and 20 per cent in the third year. A 100 per cent deduction of the cost is allowed for solar PV that produces one megawatt or less. The 50/30/20

[270] IISD '*Watts in Store Part 2: Creating an enabling environment for the deployment of grid batteries in South Africa'* (2024) 19. Available from https://www.iisd.org/system/files/2024-06/south-africa-watts-in-store-part-2.pdf (Accessed: 25 August 2024).
[271] https://www.dmre.gov.za/news-room/post/2084/media-statement-call-for-comments-on-the-draft-south-africa-renewable-energy-masterplan-sarem (Accessed: 17 August 2023).
[272] N Koowattanatianchai, M Charles & IA Eddie 'Accelerated Depreciation: Establishing a historical and contextual perspective' (2009) 16. Conference paper. Available from https://www.researchgate.net/publication/242601137 (Accessed: 14 August 2023).
[273] PGW Henderson 'Fiscal incentives for environmental protection: the way forward' (1995) 162 *South African Journal of Environmental Law and Policy* 2. Available from https://journals-co-za.uplib.idm.oclc.org/doi/epdf/10.10520/AJA10231765_155 (Accessed: 21 July 2024).
[274] National Treasury 'Explanatory Memorandum on the Revenue Laws Amendment Bill, 2005' Clause 19.

write-off is also extended to improvements to plant and foundation and supporting structures.[275]

According to South Africa's Just Energy Transition Investment Plan (JET IP), South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPP) is considered to be world-class, having procured 6 422 MW of renewable electricity capacity in ten years through four bid windows, with another two bid windows in progress.[276] In conjunction with other policy instruments, literature suggests that tax incentives could effectively address environmental challenges and change consumer behaviour.[277]

To further support renewable projects, section 12U of the ITA allows taxpayers to claim a deduction on amounts incurred on the construction of roads and fences used for the purpose of trade of generating renewable energy from specified sources.[278] The reason for the insertion of this section was to cater for large scale renewable energy projects that were not adequately provided for under the existing accelerated depreciation regime because of the capital intensive nature of supporting infrastructure whose tax treatment would need to be specifically targeted.[279]

3.4.4 Transmission of electricity

There is a boom of investments in long-distance power lines around the world, given that wind and solar facilities are often located far from power consumers.[280] Grids are essential to decarbonise electricity supply and effective integration with renewables.[281] Section 12D of the ITA was inserted in year 2000 and includes lines and cables used

[275] Section 12B of the ITA.
[276] The Presidency 'Just Energy Transition Investment Plan, 2023 – 2027' 31. Available from https://www.stateofthenation.gov.za/assets/downloads/JET%20Implementation%20Plan%202023-2027.pdf (Accessed: 07 March 2023).
[277] M Dippenaar 'The role of tax incentives in encouraging energy efficiency in the largest listed South African businesses' (2018) 6. *South African Journal of Economic and Management Sciences* 21. Available from https://doi.org/10.4102/sajems.v21i1.1723 (Accessed: 06 July 2024).
[278] Section 12U of the ITA.
[279] National treasury 'Explanatory Memorandum' (n 274).
[280] B Payton 'Africa's race for transmission investment' African Business' 24 May 2023. Available from https://african.business/2023/05/energy-resources/africas-race-for-transmission-investment (Accessed: 16 August 2023).
[281] https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions/executive-summary (Accessed: 19 July 2024)

for the transmission of electricity[282] and pipelines for the transportation natural oil as well as transportation of water used by power stations in the process of generating electricity; the latter was inserted in 2008.[283] The insertion in year 2000 coincided with Eskom becoming a taxpayer for the first time and it was submitted that the disallowance of depreciation on transmission lines would have a detrimental effect on the cost of supplying electricity.[284] This socio-economic consideration is also seen as justification for renewable energy premium in carbon tax.

Depreciation was previously not available for these type of assets on the basis that the structures were permanent in nature and not subject to wear and tear.[285] Transmission lines typically have a fifty-year lifespan.[286] The electricity transmission lines and water pipelines, as mentioned above, have a write-off period of 20 years, ten years more than the pipelines used for transporting natural oil.[287]

In order to reach national goals, a total of over 80 million kilometres of grids must be added or refurbished by 2040, that is the equivalent of the entire existing global grid.[288] On 27 July 2023, NERSA approved a twenty-five-year transmission licence for the National Transmission Company South Africa (NTCSA), which has been unbundled from Eskom. The current Transmission Development Plan indicates that South Africa will need more than 14 000 km of new lines by 2032, along with 122 600 MVA-worth of transformation capacity at the current estimated investment value of R210-billion.[289]

In addition, according to the IRP 2019, a decision was made to support the development of gas infrastructure to power capacity.[290] On 12 June 2023, News24 reported that Eskom had put out a request for proposal (RFP) to supply Gourikwa

[282] National Treasury 'Explanatory Memorandum on the Taxation Laws Amendment Bill, 2000' Clause 23.
[283] Inserted by section 12(a) of Act 3 of 2008.
[284] National Treasury 'Explanatory Memorandum' (n 282).
[285] National Treasury 'Explanatory Memorandum' (n 282).
[286] T McLaughlin 'Creaky U.S. power grid threatens progress on renewables, EVs' Reuters 12 May 2022. Available from https://www.reuters.com/investigates/special-report/usa-renewables-electric-grid/ (Accessed: 16 August 2023).
[287] Section 12D(3) of the ITA.
[288] https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions/executive-summary (Accessed: 19 July 2024).
[289] T Creamer 'energy-regulator-approves-25-year-transmission-licence-for-ntc-with-two-more-approvals-to-follow' Engineering News 28 July 2023. Available from https://www.engineeringnews.co.za/article/energy-regulator-approves-25-year-transmission-licence-for-ntc-with-two-more-approvals-to-follow-2023-07-28 (Accessed: 16 August 2023).
[290] DMRE 'Integrated Resource Plan (IRP 2019)' (2019) 47.

power plant in Mosselbay and Ankerlig power station in Atlantis with natural gas. The two power stations currently run on diesel but have a conversion to also use natural gas. Eskom hopes to switch from diesel to gas by December 2027.[291] The gas pipelines would qualify for the deduction as an affected asset as defined in section 12D(1) of the ITA.

Similarly to transmission lines where depreciation was not available on the basis of permanence, roads and fences did not qualify for deductions under the ITA. A recommendation would be to consider a more accelerated allowance for transmission lines that will be integrated to renewable energy sources. This can be further supported by reference to SARS's guidance, where is it stated that feeder lines constitute plant for purposes of sections B and BA allowances.[292] However, it is important that a distinction is made between the said feeder lines and transmission lines contemplated in section 12D as they may technically be different.

3.5 Temporary tax incentives

Chapter two highlights the importance of creating incentives to address a failure and further emphasised the importance of sunset clauses when the incentives have achieved their intended objective. During the 2023 budget speech, the Minister of Finance announced two tax measures to encourage businesses and individuals to invest in renewable energy and increase electricity generation.[293]

3.5.1 Temporary incentive for businesses

Following the budget review, Section BA was inserted to encourage greater private investment in renewable energy.[294] The assets that qualify are those used to generate electricity using wind power, solar PV energy, concentrated solar energy, hydropower and biomass. Similar to section 12B, the incentive also applies to supporting structures. Businesses are able to deduct an upfront deduction of 125 per cent of the

[291] https://www.news24.com/fin24/climate_future/energy/ready-steady-gas-eskom-kicks-off-bid-to-switch-two-plants-from-diesel-to-natural-gas-20230612 (Accessed: 16 August 2023).
[292] SARS 'Draft Guide on the allowances and deductions relating to assets used in the generation of electricity from specified sources of renewable energy' (2024) Par 2.2. Available from www.sars.gov.za (Accessed: 27 August 2024).
[293] Minister Enoch Godongwana is the current minister of Finance. National Treasury *2023 Budget Speech* (2023) 10. Available from https://www.treasury.gov.za (Accessed: 12 August 2023).
[294] Taxation Laws Amendment Bill, 2025.

cost incurred and this incentive is available for two years only, for assets brought to use from 1 March 2023 but before 1 March 2025.

One of the main differences between this incentive and the one for individuals in 3.5.2 below is that the individuals tax credit specifically applies to Solar PV panels. Whereas in this incentive, the word “in” in the phrase “in the generation of electricity” implies that the deduction is not only for assets producing electricity (i.e. Solar PVs) but storage and conversion assets as well.[295] Therefore, to the extent that batteries and inverters are not drawing power from the grid and storing it, they will qualify for the allowance, however, SARS states that the assessment of this criteria will be on a case by case basis.[296] Furthermore, the main reason for allowing batteries and invertors is that it is common for businesses to deduct costs in relation to assets used in the production of income which is in contrast to individuals who use these assets for private purposes.[297] The main challenge for SARS will be to verify if the batteries and invertors do indeed draw energy for the qualifying energy sources and this may prove difficult to administer.

3.5.2 Temporary incentive for individuals

Section 6C was also inserted in response to the severe energy crisis that was experienced by the country, as one of the various policy measures to reduce pressure on the electricity grid and improve the renewable energy mix for energy efficiency. Government implemented a rooftop solar tax incentive for individuals who invest in solar PV panels to encourage households to invest in clean electricity generation capacity and supplement electricity supply.[298] The incentive is in a form of a tax credit and is available for one year only, applicable to solar PVs with a generation capacity

[295] SARS ‘Draft Guide on the allowances and deductions relating to assets used in the generation of electricity from specified sources of renewable energy’ (2024) Par 2.2. Available from www.sars.gov.za (Accessed: 27 August 2024).
[296] SARS (n 295).
[297] National Treasury. 2023. Frequently Asked Questions: Enhanced renewable energy incentive for businesses. 2. Available from https://www.treasury.gov.za/comm_media/press/2023/2023112001%20FAQ%20Enhanced%20renewable%20energy%20incentive%20for%20businesses.pdf (Accessed 26 August 2024).
[298] National Treasury ‘Explanatory Memorandum’ (n 172) Par 1.3.

of not less than 255 Watts.[299] The value of the of the incentive is 25 per cent of the actual cost of the solar PV panel, limited to R15 000.

Other two important requirements are that the solar PVs must be brought into use for the first time on or after 1 March 2023 but before 1 March 2024, and that a certificate of installation must be issued.[300] The ITA does not have a time period by which the certificate must be issued. According to SARS's guidance, the certificate may be issued after 29 February 2024 however, the taxpayer must prove that the solar PV panels were "brought into use" within the one year period prescribed in section 6C(2).[301] SARS further states that, in this regard, each case will be examined on its own merits.[302] This implies that there may be a discretionary element in verifying that the requirements of qualifying for the incentive have in fact been met. Discretion is cautioned against when introducing incentives as it may open opportunities for corruption.

Another area of uncertainty is the absence of the requirement for continuous use in the ITA ,however, SARS states that once-off use is insufficient and takes the purposive approach in interpreting this requirement, that solar PV installations are not installed merely to take advantage of the tax credit and be uninstalled, but to expand electricity generation in the country.[303] SARS may have difficulty enforcing this requirement for reasons that it does not exist in the ITA and that continuous use may be difficult to prove, administratively burdensome and costly to audit. To ensure that the intention of this incentive is achieved, a requirement for continuous use may be added, even if it is for a limited time period.

The other consideration is whether tax credits for individuals influence their decisions to invest in rooftop solar and thus effective as an incentive. Interviews conducted on some residents in California, United States linked distrust of utility companies to their

[299] Section 6C(2)(a).
[300] Sections 6C(2) and 6C(3).
[301] SARS 'Guide on the Solar Energy Tax Credit provided under section 6C' (2024) Par 2.1.2. Available from www.sars.gov.za (Accessed 26 August 2024).
[302] SARS (n 301).
[303] SARS (n 301).

interest in solar along with financial and environmental concerns.[304] Financial benefits include access to self-generated electricity and feed-in tariff revenue, which help to reduce electricity bills.[305]

3.5.3 Temporary incentives and certainty

The criticism of these incentives is the lack of certainty. The incentives were officially announced in the 2023 budget review in February 2023 with an effective date of 1 March 2023. They were officially codified in the ITA through the Taxation Laws Amendment Act, 17 of 2023 which was gazetted on 22 December 2023, two months before the sunset date for the individuals tax credit. It is known that policy uncertainty is a deterrent in securing private-sector investment. Where there is uncertainty, IPPs become pessimist and assume that there are no tax credits renewal, whereas utilities, who are under statutory obligation to secure least-cost power, become optimistic and assume tax credit renewal. This asymmetry of assumptions delays negotiations under uncertain conditions. It follows then that it is particularly important to reduce policy uncertainty for industries in which contract negotiation is common.[306]

3.6 Manufacturing incentive

Although this incentive is not in respect of generation of electricity, it is worth discussing in this context on the basis that one of the qualifications of eligible projects is that utilisation of new technology that results in improved energy efficiency and cleaner production technology.[307] Section 12I was introduced with the aim of supporting the main objectives of the National Industrial Policy Framework to diversify South Africa's industrial output, support a knowledge-based economy and nurture labour-intensive industries.[308] The incentive seeks to promote investment within the domestic manufacturing sector by promoting South African competitiveness. The main

[304] C Horne, EH Kennedy & T Familia 'Rooftop solar in the United States: Exploring trust, utility perceptions, and adoption among California homeowners' (2021) *Energy Research & Social Science* 82. Available from https://doi.org/10.1016/j.erss.2021.102308 (Accessed: 18 July 2024).

[305] R Best and others 'Effects of rooftop solar on housing prices in Australia' (2021) 493. *Aust J Agric Resour Econ*, 65. Available from https://doi.org/10.1111/1467-8489.12431 (Accessed: 18 July 2024).

[306] MJ Barradale 'Impact of public policy uncertainty on renewable energy investment: Wind power and the production tax credit' (2010) *Energy Policy* 38. Available from https://doi.org/10.1016/j.enpol.2010.08.021 (Accessed: 21 July 2024).

[307] Section 12I(8)(a)(ii) of the ITA.

[308] SARS. Interpretation Note 86 (Issue 3), Par 2..

benefit of the incentive is an additional immediate allowance for investment in manufacturing assets associated with industrial policy projects. A secondary benefit is an additional training allowance for associated employees.[309]

The Regulations to section 12I provide for further qualifications as certified by the South African National Energy Development Institute (SANEDI), to determine whether the project will upgrade the industry by utilising new technology that results in improved energy efficiency.[310]

3.7 Energy Efficiency Incentives

3.7.1 Introduction

Excerpts in respect of energy efficiency from the SANEDI website read as follows: "*Energy is essential to life and all living organisms…Energy efficiency means using less energy to provide the same service*."[311] The IRP 2019 defines "Energy efficiency" as the effective use of energy to produce a given output (in a production environment) or service (from a consumer point of view), i.e. a more energy-efficient technology is one that produces the same service or output with less energy input.[312] The implementation of energy efficiency policies is a current practice in most countries.[313] Policies for energy efficiency improvements use a broad range of measures and instruments to encourage companies to reduce greenhouse gas emissions by investing in energy-saving technologies. Economic policies include instruments such as taxes, subsidies and loans, tax credits, and cap and trade schemes.[314] The ITA provides for an energy efficiency tax incentive in the form of section 12L.

3.7.2 Section 12L: Energy efficiency incentive

This incentive was introduced to give taxpayers a tax benefit or notional allowance for energy efficiency savings. This notional allowance seeks to stimulate the investment

[309] National Treasury 'Explanatory Memorandum on the Taxation Laws Amendment Bill, 2012' Par 4.2.
[310] GR R. 639 and GR. R 633.
[311] https://sanedi12ltax.org.za/#!/content/home (Accessed: 17 August 2023).
[312] DMRE 'IRP 2019' (n89 Above) 6.
[313] J García-Quevedo & E Jové-Llopis 'Environmental policies and energy efficiency investments. An industry-level analysis' (2021) 2. *Energy Policy* 156. Available from https://doi.org/10.1016/j.enpol.2021.112461 (Accessed: 19 August 2023).
[314] García-Quevedo & Jové-Llopis (n 313) 2.

in the conversion by taxpayers of old technologies to new ones to address the challenges of climate change and improved energy usage.[315] Section 12L allows a taxpayer to claim a deduction calculated at 95 cents per kilowatt hour or kilowatt hour equivalent of energy efficiency savings. The taxpayer claiming a deduction must obtain a certificate before being able to claim a deduction under section 12L during any year of assessment.[316] The certificate is issued by SANEDI.[317] Regulation No. R. 971 provides for the procedure for claiming an allowance which includes registration with SANEDI and appointing a measurement and verification professional to compile a report for submission to SANEDI.

The incentive excludes any concurrent benefits in respect of energy efficiency savings. The exclusion was introduced to prevent savings that have already been incentivised through other programmes thus preventing the *fiscus* from paying twice for the same energy efficiency savings.[318] South Africa has a number of incentive programmes, although they may serve different purposes, there could be possible overlapping which could lead to concurrency.[319] Hamer et al also concede that measurement and verification is a highly technical field which makes it very important to consider the issue of concurrency.[320] This could be detrimental to taxpayers because the incentive lacks simplicity. A study conducted on some JSE listed companies on effectiveness of tax incentives showed that the majority of respondents did not perceive the current available energy efficiency tax incentives to be effective.[321] The respondents agreed that the government must reduce the burden of complying with the requirements of Section 12L and simplify the process of claiming. It was perceived to be too onerous, complicated and costly. The expected benefit of claiming the tax allowance must exceed expenditure incurred in the measurement and verification process.[322]

---

[315] M Stiglingh and others (n 112) 453.
[316] Section 12L(2) of the ITA.
[317] Government Notice No R 971, GG, 9 December 2013, 37136 (Regulations in terms of section 12L of the Income Tax Act, on the allowance for energy efficiency savings).
[318] W Hamer and others 'Testing concurrent benefits for Section 12L tax incentives in South Africa' (2020) 58 *Journal of Energy in Southern Africa* 31. Available from https://dx.doi.org/10.17159/2413-3051/2020/v31i4a8674 (Accessed: 11 August 2023).
[319] Hamer and others (n 318) 59.
[320] Hamer and others (n 318) 59.
[321] Dippenaar (n 277) 9.
[322] Dippenaar (n 277).

In its website, SANEDI published some case studies of taxpayers that have claimed the deduction, and one notable taxpayer is Woolworths Holdings Limited ("Woolworths"). Since the 2015 financial year (it is not specified until what period), Woolworths saved 20 524 736 kWh, resulting in approximately R35 million saved in electricity cost, and mitigated 19 293 tonnes of CO2.[323]

3.8 Research and Development Incentives

3.8.1 Introduction

Research and Development (R&D) generates positive externalities, therefore it is logical for the government to intervene and encourage private research investment.[324] Energy-based technology development and innovation is imperative to productivity and growth of the country.[325] According to IEA, in 2021 public spending on energy R&D rose to USD 38 billion, nearly 90 per cent of which was allocated to low-carbon energy R&D.[326] Economists estimate that, half of United States' economic productivity after World War Two is attributable to technical progress as a result of science and engineering research.[327] In the South African context, the IRP 2019 provides that R&D must focus on innovative solutions, especially on technologies that have the potential to address electricity challenges for energy consumers in a shortest timeframe.[328]

Governments worldwide adopt various financial instruments to support and promote R&D by businesses and have been increasingly relying on tax incentives to incentivise R&D investment.[329] As of 2022, 33 of the 38 OECD countries, 22 of 27 EU member

[323] https://sanedi12ltax.org.za/document/60c0d25b87e85-1623249499-SANEDI-woolworths-NW22.pdf (Accessed: 19 August 2023).
[324] J Talley 'The research and development tax credit: moderately effective but hampered by politics' (2011) 90. *DePaul Business & Commercial Law Journal* 10. Available from HeinOnline (Accessed: 19 August 2023).
[325] Department of Minerals and Energy 'Energy security masterplan- Electricity 2007-2025' 41. Available from https://www.gov.za/sites/default/files/gcis_document/201409/energysecmasterplan0.pdf (Accessed: 07 May 2023).
[326] IEA 'World Energy Investment 2022' (2022) 172. Available from https://www.iea.org/reports/world-energy-investment-2022 (Accessed: 22 March 2023).
[327] Talley (n 320) 89.
[328] DMRE (n 290) 20.
[329] OECD 'R&D tax incentives database, 2022 edition' (2022) 7. Available from https://one.oecd.org/document/DSTI/STP/NESTI(2023)2/FINAL/en/pdf (Accessed: 19 August 2023).

states and several other major economies offer tax incentives for R&D expenditure at central or subnational government level.[330]

In South Africa, the ITA provides an accelerated deduction in respect of research and development. This incentive is designed to encourage private sector investment in scientific and technological research and development activation in South Africa.[331] It is important to note that a tax incentive is not the instrument that will necessarily drive investment in R&D, it should, however, be seen as a complementary measure to policy certainty and an attractive investment environment.[332]

3.8.2 Section 11D: Scientific or technological research and development

Section 11D of the ITA provides for accelerated deduction in respect of research and development. 'Research and development' is defined to include systematic investigative or systematic experimental activities of which the result is uncertain for the purpose of discovering non-obvious scientific or technological knowledge. The incentive was introduced in 2006 and has undergone various design changes to meet its objectives. The most significant of these changes was the introduction of a pre-approval process in 2012. The R&D tax incentive allows for operating expenses incurred directly and solely for the purpose of conducting R&D to be deductible at 150 per cent.[333]

An accelerated depreciation applies for plant and machinery used for purposes of research and development at a rate of fifty per cent in the first year, thirty per cent in the second year and twenty per cent in the third year. The sunset period for the provision was extended to 31 December 2033 with some transitional rules on expenditure incurred during specific periods.[334]

The administration of the incentive is shared by the Department of Science and Innovation (DSI), SARS and the National Treasury[335] and the approval committee is

[330] OECD (n 329).
[331] KPMG 'A guide to South African Government and Tax Incentives' (2020) 20. Available from https://kpmg.com/za/en/home/services/tax/global-r-and-d-incentives.html (Accessed: 07 April 2024).
[332] National Treasury (n 57) 7.
[333] National Treasury (n 298) Par 4.3.
[334] Act 17 of 2023.
[335] https://www.dst.gov.za/rdtax/index.php/administration-of-the-incentive (Accessed: 20 August 2023)

made up of persons from all these government departments / entities.[336] According to the report by the DSI for the 2018-19 year which was published on 06 June 2023, the Electricity, Gas and Water Supply sector, although it had only 23 adjudicated applications out of 1 349, it had the second highest rate of approval at 78,3 per cent.[337]

With the introduction of the pre-approval process in 2012, one of the criticisms was the backlog of applications in the pre-approval process. This was remedied in 2016 by allowing affected taxpayers to re-open assessments (section 11D(20)).[338] Further, during the parliamentary committee meeting on 07 June 2017, the DSI submitted that of applications from October 2012 to 18 May 2017, only one per cent were in backlog.[339]

Lastly, regarding the effectiveness of the incentive, one of the findings from the impact evaluation revealed that, although based on limited data, there was some evidence that the incentive had increased R&D spending by companies.[340] The internal Synthesis Analysis found that for every one Rand of tax revenue forgone, companies spent an additional R1.84 on R&D.[341]

3.8.3 General recommendations

As mentioned above, the R&D incentive has a sunset date. There is a view that lack of permanence weakens the effect of the incentive as many firms plan their multi-year R&D projects more than a few years in advance.[342] If the incentive is temporary, businesses will likely not account for it in budgeting for projects, and thus defeating the purpose as the incentive will have no influence on decision making. Legislators justify the temporary nature of the credit as a way to review the incentive's performance and effectiveness.[343]

---

[336] Section 11D (11). (The DSI is formerly known as the Department of Science and Technology)
[337] DSI 'Research and Development tax incentive programme report to Parliament 2018-19' 17. Available from https://www.dst.gov.za/rdtax/index.php/annual-reports (Accessed: 20 August 2023) *The reason for referring to this report instead of the latest 2021/22 report is because the 2018/19 report provides cumulative numbers as far back as 2006 and 2012.
[338] National Treasury 'Explanatory Memorandum on the Taxation Laws Amendment Bill 17B of 2016' Par 4.3.
[339] https://pmg.org.za/committee-meeting/24550/ (Accessed: 20 August 2024).
[340] National Treasury (n 124 Above) 17.
[341] National Treasury (n 124 Above) 19.
[342] Talley (n 324) 92.
[343] Talley (n 324) 92.

According to Heath, to determine if an R&D incentive is well-designed, the principles of equity, effectiveness, efficiency and administrative costs should be examined.[344] The goal of the incentive is to encourage R&D spending; therefore, for the incentive to be effective in achieving this goal, Heath submits that a moving tax base is necessary. This is achieved by allowing the credit for R&D spending in excess of previous spending, thus, encouraging more R&D spending.[345] The ease in qualifying for the tax credit is also a factor in determining whether a tax credit is effective or not.[346] In Canada, the revenue authorities assist taxpayers by sending science advisors to talk to the taxpayer about what is required to meet the requirements for the R&D tax incentives.[347] The section 11D regime provides for pre-approval but not whether the taxpayer may seek advice prior to submission the application for pre-approval.

3.9 Carbon tax renewable energy incentive

South Africa has the fourteenth highest carbon emissions in the world and is the worst polluter in Africa.[348] South Africa also contributes 33 per cent to the total air pollution of the African continent, and in 2020 saw a 1,5 per cent rise in carbon emissions.[349] Power generation, which includes electricity and heat contribute 55 per cent of total energy-related CO2 emissions.[350] South Africa is one of more than 190 members of the United Nations Framework Convention on Climate Change (UNFCCC) who are parties to the Paris Agreement in terms of which it committed to reduce greenhouse gas emissions (GHG).[351] As an instrument to be used to achieve the emissions targets, South Africa also passed the Carbon Tax Act, which became effective on 1 June 2019.[352] The carbon tax liability is calculated as the tax base (total quantity of

[344] BL Heath 'The importance of research and development tax incentives in the world market' (2002) 362 *Michigan State University-Detroit College of Law's Journal of International Law* 11. Available from HeinOnline (Accessed: 19 August 2023).
[345] Heath (n 344) 365.
[346] Heath (n 344) 365.
[347] Heath (n 344) 361.
[348] https://www.iea.org/countries/south-africa/emissions (Accessed: 27 August 2024).
[349] https://www.dbsa.org/article/how-can-we-reduce-carbon-footprint-africa (Accessed: 20 August 2023).
[350] https://www.iea.org/countries/south-africa/electricity (Accessed: 27 August 2024).
[351] The Presidency 'Statement: President Ramaphosa assents to climate change Bill' (2024) Available from https://www.thepresidency.gov.za/president-ramaphosa-assents-climate-change-bill (Accessed: 27 August 2024).
[352] M Kalaba 'South Africa's carbon tax: Balancing climate action and economic development' (2020) 3. *South African Institute of International Affairs*. Available from http://www.jstor.org/stable/resrep2953 (Accessed: 27 July 2023).

GHG emissions from combustion, fugitive and industrial processes proportionately reduced by the tax-free allowances) multiplied by the rate of the carbon tax.[353]

In respect of electricity generation activities, the Carbon Tax Act makes provision for taxpayers conducting electricity generation activities to deduct the costs of purchasing additional renewable electricity and environmental levy against their carbon tax liability.[354] It is important that the renewable electricity must be purchased under a Power Purchase Agreement (PPA), which essentially excludes self-produced renewable energy. According to the Explanatory Memorandum to the 2018 Carbon Tax Bill, it was said that the renewable energy premium (REP) credit would reduce the impact of the carbon tax on electricity prices and avoid the so-called "double taxation".[355]

When considering taxpayers that qualify for the incentive, Garciano submits that it is instructive to identify the qualifying taxpayers targeted by the incentives, to get a sense of the overall policy objective of the incentive and the potential scope of its effect.[356] The beneficiaries of the REP are electricity generators including state-owned entities that claim the REP deduction for renewable energy purchased under PPAs concluded as part of the REIPPP programme and with private producers. During the 2022 financial year, Eskom purchased 15 073GWh from renewable IPPs.[357] This cost would have been offset against the carbon tax liability as REP. As mentioned above, Eskom has been unbundled with the Transmission company being a separate entity which purchases electricity from Eskom Generation and the IPPs. NTCSA is licenced to purchase electricity from generators and sell it as regulated tariffs.[358] It was also stated in the Roadmap to electricity report document that Eskom and other generators would all have PPAs with NTCSA.[359] This makes the REP as an incentive obsolete as NTCSA is not a producer of GHG emissions as contemplated in the Carbon Tax Act which means that the original targeted users of the incentive no longer qualify. To circumvent

[353] National Treasury 'Explanatory Memorandum' (n 36) Par 3.3.
[354] Section 6(2) of the Carbon Tax Act read with Regulation 4 of the Offset Regulations. GG 45654.
[355] National Treasury 'Explanatory Memorandum' (n 36) 23.
[356] JL Garciano 'Green energy tax policies: state and federal tax incentives for renewable energy and energy efficiency' *(2011) 13 Natural Resources & Environment* 25. Available from HeinOnline (Accessed: 16 July 2024).
[357] Eskom 'Integrated Report 2022' (2022) 77. Available from www.eskom.co.za (Accessed: 13 July 2024).
[358] https://www.ntcsa.co.za/about-us/#license (Accessed: 28 July 2024).
[359] DPE (n 23) 21.

against this, in the 2024 budget review,[360] government proposed that the Carbon Tax Act be amended to allow electricity generators to continue to claim the REP deduction for PPAs ceded to the National Transmission Company of South Africa. The effective date is proposed to be 1 January 2024 and similarly to the uncertainty created for temporary rooftop incentives, this change is still in a Draft Bill[361] with a proposed retrospective date of operation being 1 January 2024.

One of the key recommendations by IISD that the carbon tax is creating a mechanism to price externalities, but exemptions are weakening the strength of this signal, and that to be in line with Environmental Fiscal Reform, there must be a move to phase out exemptions.[362] Although the intentions of carbon tax cannot be questioned when it comes to addressing climate change, the socio-economic impact it has on poverty through increased prices must also be considered.[363] As mentioned above, REP was meant to reduce the impact of carbon tax on electricity prices until 31 December 2025. This can still be achieved through making the exemption available to GHG producers that also generate electricity using renewable energy, thus also encouraging energy transition and mix.

Section 13 of the Carbon Tax Act provides for offset allowances with the effect of reducing the tax liability.[364] The rationale was to encourage investing in GHG emissions reductions projects.[365] The allowance was limited to small to medium projects that would not normally qualify under other government programmes such as REIPPP.[366] Similarly to the temporary incentive in section 12BA, which is to encourage investment in embedded and utility scale electricity generation, the government has now proposed to increase the threshold of renewable projects that are eligible for the carbon offset allowance from fifteen megawatts to thirty megawatts.[367] It is stated that

[360] National Treasury (n 48) 141. https://www.treasury.gov.za/documents/national%20budget/default.aspx (Accessed: 28 July 2024).
[361] Section 63 of the Taxation Laws Amendment Bill, 2024.
[362] IISD 'South Africa's Energy Fiscal Policies: An inventory of subsidies, taxes, and policies impacting the energy transition' (2022) 36. Available from https://www.iisd.org/system/files/2022-01/south-africa-energy-subsidies.pdf (Accessed: 06 March 2023).
[363] Kalaba (n 352) 12.
[364] Section 13 of the Carbon Tax Act.
[365] National Treasury 'Explanatory Memorandum' (n 36) Par 2.
[366] National Treasury 'Explanatory Note for the Draft Regulations on the carbon offset, 2016. 9.
[367] National Treasury 'Explanatory Memorandum to Regulations on the Carbon Offset Regulations under the Carbon Tax Act, 2024.

this change will contribute towards meeting climate commitments and help contribute towards energy security of supply.[368]

3.10 Conclusion

The objective of this chapter is to discuss energy tax incentives available in South Africa, analyse them and make recommendations on their role in addressing the energy issues. The departure point is the current energy landscape in South Africa, the regulation thereof and most importantly the future of electricity especially in the world or energy transition. It is clear that the South African government has implemented various interventions to address the current energy challenges and sustainable future of energy supply.

The discussion of energy future is not complete without considering base load energy, and thus, what can be used to incentivise it. Parallels are drawn with mining incentives, taking into account long construction times. In respect of renewable energy sources of electricity generation, a number of incentives have been introduced or enhanced over a number of years. As renewable energy forms an integral part of the future energy supply, so are supporting technologies such as battery storage. They however present environmental challenges where a balance must be struck between incentives for sustainable energy supply and disincentives for environmental externalities.

Paragraph 3.7 discusses the energy efficiency incentive where the issue of simplicity is highlighted. The incentive requires technical (and perhaps costly) measuring and verification process which has the potential to keep the taxpayers away.

The R&D incentive is also an important consideration when looking into the future of energy. The current incentive is generally in line with international practice, but the issue of uncertainty created by sunset dates is important to highlight especially because R&D projects can be undertaken over a number of years with significant financial implications. Further, because of the highly technical and scientific nature of research, it is recommended that that support by the government departments involved on the eligibility for deduction be provided early.

[368] National Treasury 'Explanatory Memorandum' (n 367).

Lastly, the introduction of carbon tax is considered an important climate change mitigation action however, with socio-economic issues to be considered, renewable energy exemptions are found to be weakening the intention of the carbon tax to price externalities. Further, should this exemption be extended beyond the sunset period, it will not achieve its purpose in its current form, and it is recommended that it takes into account self-generated renewable energy instead of purchased. On the other hand, increasing the threshold for carbon offset allowance is important towards meeting climate change commitment.

Chapter 4 provides a comparative analysis with tax incentives in India and Vietnam and compare how such incentives have been utilised to address energy crises in those jurisdictions.

CHAPTER 4: TAX INCENTIVES AVAILABLE IN INDIA AND VIETNAM

4.1 Introduction

Chapter 3 provides an in-depth analysis of tax incentives that are available in the electricity sector in South Africa. The purpose of this chapter is to identify and provide a brief illustration of tax incentives available to the electricity sectors in India and Vietnam. These countries are developing countries, with India being part of BRICS. Although they have different political systems, with India also being significantly larger, they have also experienced energy crises and energy sector reforms and have comparable energy mixes. The discussion in this chapter is limited to national tax incentives and it does not provide any analysis of subnational incentives that may be available.

4.2 India

4.2.1 The overview of the energy industry

India has the federal system of government whereby the central and state governments make up the two tiers of government.[369] The prime minister leads the energy portfolio which is spread across central and state governments, with states having autonomy over energy policy.[370] To illustrate this point, to fast-track the adoption of renewable energy, India has adopted national policies such as feed-in-tariffs (FITs) and net metering and many states have also drafted separate policies for both grid connected and off-grid energy.[371] Some state-specific initiatives for renewable energy include tax holidays (Tamilnadu) and rooftop solar subsidies (Gujarat).[372]

[369] Ishita 'comparative study on federalism in relation to India and Switzerland' (2023) 9 *Indian Journal of Integrated Research in Law* 3. Available from HeinOnline (Accessed: 02 October 2024).
[370] IEA (n 20) 36.
[371] RM Elavarasan and others 'A Comprehensive Review on Renewable Energy Development, Challenges, and Policies of Leading Indian States with an International Perspective' (2020) *IEEE Access* 8. Available from doi: 10.1109/ACCESS.2020.2988011 (Accessed: 02 October 2024).
[372] Elavarasan (n 371).

India is the third-largest producer and consumer of electricity worldwide, with an installed power capacity of 409.16 gigawatts (GW) as of 30 November 2022.[373] In 2023, electricity generated using coal accounted for 75 per cent and with renewables at twelve per cent;[374] thus, making it the third-highest emitter of carbon, surpassed only by the United States and China.[375] The history of India is similar to that of South Africa in that until 1991, the sector was state owned under a vertically integrated entity.[376] At the time the sector suffered from endemic power shortages and, poor operational and financial performance.[377] The government restructured the sector and the reforms included unbundling the entity and privatisation.[378] Measures to attract investment in private power generation included tax incentives in the form of tax holidays and exemptions of customs duty for imports.[379] IPPs added generation of about 6 500 MW between 1992 and 2002.[380] By December 2019, 47 per cent of power generation was under private ownership.[381] By 2018, the country had achieved 100 per cent electricity access and 100 per cent household electrification.[382] A village is considered to be electrified when ten per cent of households and all public buildings are connected to the grid.[383] The energy deficit has significantly improved in the past decade from negative 8.5 per cent in 2012 to negative 0.4 per cent in 2022.[384]

Similarly to South Africa, India also made commitments to the United Nations Framework Convention on Climate Change to increase its non-fossil fuel-based

[373] Deloitte *'Indian Power Sector: The future fuel'* (January 2023) 2. Available from https://www2.deloitte.com/content/dam/Deloitte/in/Documents/tax/in-tax-Indian-Power-Sector-The-Future-Fuel-noexp.pdf (Accessed: 11 May 2023).
[374] https://www.iea.org/countries/india/energy-mix (Accessed: 01 September 2024)
[375] K Consalo 'India's use of public-private partnerships to promote rapid expansion of solar electricity facilities' (2022) 195 Florida Journal of International Law 33. Available from HeinOnline (Accessed: 02 October 2024).
[376] HL Bajaj & D Sharma 'Power sector reforms in India' (2006) International Conference on Power Electronic, Drives and Energy Systems. IEEE. Available from https://ieeexplore.ieee.org/abstract/document/4148027?casa_token=iwQ1p1pZ_AAAAAAA:HvDiNIzl61dA6hXS_g4xGiHw4dKRIqY9gyR1h1CnTOB3JxXrBOr5QFm9GQevnsUQ4HIpktGoNw (Accessed: 01 September 2024).
[377] Bajaj & Sharma (n 376).
[378] Bajaj & Sharma (n 376).
[379] Bajaj & Sharma (n 376).
[380] Bajaj & Sharma (n 376).
[381] V Rustagi & M Chadha 'India country report' (2020) 11 *Renewable energy 2*. Available from https://www.energyeconomicgrowth.org/www.energyeconomicgrowth.org/sites/default/files/2021-09/India%20report%2019%20October%202020.pdf (Accessed: 03 October 2024).
[382] Deloitte (n 373) 2.
[383] IEA (n 20) 26.
[384] Deloitte (n 373) 2.

power.[385] Guided by these commitments, India entered into Public Private Partnerships (PPPs) for construction and operation of solar energy facilities.[386] In addition to financial assistance, some accomplishments of the PPPs can be attributable to transparent reverse auctions, which have consequently led to lower prices for solar electricity.[387] The government also launched solar parks, which are large areas of land developed with all necessary infrastructure and clearances for setting up solar projects.[388] To encourage private development in solar parks, there are incentives including enhanced tariff policies, reverse bidding auctions, subsidies, regulatory mandates, low cost financing, and land acquisition assistance.[389] An example of the success of government initiatives is Bhadla Industrial Solar Park in Rajasthan which at 2 245 MW was until 3 June 2024[390], the largest solar park in the world.[391] It is worth mentioning that this power plant was developed by several companies.[392]

4.2.2 Tax incentives

India provides a wide range of tax incentives for the development and operation of infrastructure facilities including the generation, transmission and distribution of electricity.[393] According to India's 2014-15 tax expenditures statement, concessions to encourage infrastructure investment resulted in a tax expenditure of five per cent of Corporate Income Tax (CIT) revenue, with electricity accounting for almost half of that tax expenditure which is not surprising as a tax deduction of 100 per cent of profits was provided.[394] Accelerated tax depreciation allowances provided the largest tax expenditure at 38 per cent revenue forgone in the CIT, and favoured capital intensive

[385] Consalo (n 375).
[386] Consalo (n 375)199.
[387] Consalo (n 375) 210.
[388] Consalo (n 375) 202.
[389] Consalo (n 375) 202.
[390] Proctor 'China brings world's largest solar power plant online' Power Magazine 6 June 2024. Available from https://www.powermag.com/china-brings-worlds-largest-solar-power-plant-online/ (Accessed: 02 October 2024). On 3 June 2024, China brought into operation a 5 GW solar power plant.
[391] K Shah 'India's utility-scale solar parks a global success *story' (2020) 4* Institute for Energy Economics and Financial Analysis. Available from https://ieefa.org/wp-content/uploads/2020/05/Indias-Utility-Scale-Solar-Parks-Success-Story_May-2020.pdf (Accessed: 03 October 2024).
[392] Shah (n 391).
[393] A Thomas *and others* 'Taxation and Investment in India' *OECD Economics Department Working Papers* No. 1397, OECD Publishing, Paris. (2017) 19. Available from https://doi.org/10.1787/4258e11a-en. (Accessed: 08 September 2024).
[394] Thomas and others (n 393) 16.

industries.[395] Due to favourable taxation, India has become an attractive market for investors. Several tax waiver schemes such as FITs, accelerated depreciation and relief from excise and customs duty, have accelerated the quick deployment of wind energy in the country. Some of the relevant tax incentives offered in India are set out below:

	Type of incentive	**Description**
1	Tax holidays	A tax holiday for a specified number of years is offered in respect of activities including generation or distribution of power, power transmission and renovation of existing network for transmission of power.[396]
2	Preferential CIT rate	Concessional tax rate for new manufacturing/power generating companies[397]
3	Accelerated depreciation	Users of renewable energy can depreciate their investment in a renewable energy plant at a much higher rate than general fixed assets and can claim tax benefits on the value depreciated in a given year.[398]
4	Research and Development	100% deduction for expenditure incurred on in-house R&D, and amounts paid to scientific research companies and associations, universities, etc.[399]
5	Lower Good and Services Tax (GST) rate[400]	Lower GST rate on domestic supply of goods used in setting up projects, including battery energy storage system.
6	Exemption from GST[401]	Exemption of electricity generation, transmission and distribution from GST

[395] Thomas and others (n 393) 17.
[396] PKF 'Worldwide tax guide 2024-2025' 489. Available from https://www.pkf.com/publications/tax-guides/worldwide-tax-guide-2024-25/ (Accessed: 08 September 2024).
[397] Deloitte (n 373) 5.
[398] IEA (n 20) 111.
[399] Deloitte 'Survey of global Investment and Innovation incentives' (2020) 171. Available from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-survey-of-global-investment-and-innovation-incentives-india-2020.pdf (Accessed: 07 September 2024).
[400] Deloitte (n 373) 12.
[401] https://www.grantthornton.in/insights/blogs/electricity-and-the-shock-of-gst/ (09 September 2024)

4.3 Vietnam

4.3.1 The overview of the energy industry

In 2019, the South African Department of Public Enterprises issued a paper titled, "Roadmap for Eskom in a Reformed Electricity Supply Industry". This paper outlined proposals and actions to overcome the electricity crisis and transform the electricity supply industry.[402] The paper further took lessons from the Vietnamese electricity reforms which, similarly to South Africa, included restructuring of their vertically integrated state-owned companies, allowing IPPs and passing new electricity laws.[403]

Vietnam is one of the few remaining communist / socialist countries[404] and is considered to be a developing country.[405] As a "socialist market economy", the government's motivations for reforming the power sector in the mid-1990s were to ensure long-term power supply reliability in an efficient and affordable manner to users and to the government, and with minimal spillover effects on the macroeconomy and on wealth distribution across segments of society.[406] South Africa has also implemented a range of socialist policies to reduce inequality and promote economic growth.[407] For example, the NDP envisages that, by 2030, the energy sector will be socially equitable through expanded access at affordable rates.[408]

Vietnam's energy mix consists of coal, oil, natural gas, hydro, wind and solar, and biofuels. In 2023, electricity generated using coal accounted for 46 per cent and with renewables thirteen per cent.[409] The structure of the electricity industry consists of Vietnam Electricity (EVN), a state-owned enterprise group that dominates each part of the electricity sector value chain. It has a majority share of Vietnam's power generation capacity (61 percent of capacity as of 2018). It also owns and operates the electricity

[402] DPE (n 23) 5 Extracted from "Leaning from Power Sector Reform Experiences by Alan David Lee and Franz Gerner".
[403] DPE (n 23) 54.
[404] BN Son 'The law of China and Vietnam in comparative law' (2017) 137 *Fordham International Law Journal*, 41. Available from HeinOnline (Accessed: 03 October 2024)
[405] M Benazic & D Tomic 'Macroeconomic Dynamics in China, Laos and Vietnam: A VAR Analysis' *(2020) 204 Eastern Journal of European Studies* 11. Available from https://www.proquest.com/scholarly-journals/macroeconomic-dynamics-china-laos-vietnam-var/docview/2546918540/se-2. (Accessed: 03 October 2024).
[406] Lee & Gerner (n 22) 5.
[407] https://www.sahistory.org.za/article/socialism (Accessed: 03 October 2024).
[408] DPE (n 23) 8.
[409] https://www.iea.org/countries/viet-nam/energy-mix (Accessed: 02 September 2024).

transmission and distribution network through subsidiaries.[410] Vietnam has experienced power supply shortages where supply could not meet the growing demand which resulted in load shedding.[411] The government's response was to increase electricity imports and more private investment in power generation.[412] The government also supports EVN through tax incentives, especially because the regulated tariffs are not always cost reflective.[413]

Vietnam is the leader in solar and wind electricity adoption in the ASEAN[414] area and in 2019 and 2020, more than 100 000 rooftop solar PVs were installed.[415] In the same period, solar and wind electricity generation rose from 4.7 TWh to 9.5TWh.[416] This rate of increase in the solar and wind share was much faster than that achieved in the broader ASEAN or the world as a whole.[417] Vietnam also made commitments to the Paris Agreement to promote renewable sources and reduce carbon emissions.[418]

4.3.2 Tax incentives

The main drivers for the success in solar and wind expansion have been generous feed-in-tariffs, income tax implications and lease exemptions, along with political and social support and supportive investment environment.[419] The incentives and enabling policies have enhanced energy availability while avoiding upward pressure on electricity prices.[420] Vietnam's tax incentives comprise different forms, including

[410] Lee & Gerner (n 22) 31.
[411] Lee & Gerner (n 22) 17.
[412] Lee & Gerner (n 22) 11.
[413] Lee & Gerner (n 22) 32.
[414] ASEAN stands for Association for Southeast Asian Nations.
[415] T Nam Do and others 'Vietnam's solar and wind power success: Policy implications for the other ASEAN countries' (2021) *Energy for Sustainable Development* 65. Available from https://doi.org/10.1016/j.esd.2021.09.002. (Accessed: 02 September 2024).
[416] Nam Do and others (n 415).
[417] Nam Do and others (n 415).
[418] SY Roy and others 'Comprehensive Evaluation of Electricity Generation and Emission Reduction Potential in the Power Sector Using Renewable Alternatives in Vietnam' (2022) 157 *Renewable and Sustainable Energy Reviews*. Available from https://doi.org/10.1016/j.rser.2021.112009 (Accessed: 03 October 2024).
[419] Nam Do and others (n 415).
[420] Nam Do and others (n 415).

reduced CIT rates, tax holidays and exemptions of indirect taxes.[421] The relevant tax incentives are outlined in the table below:[422]

	Type of incentive	Description
Environmental sustainability: Applicable to power plants that use renewable energy, clean energy and environmental protection		
1	Preferential CIT Rates	Lower CIT rates for a specified number of years.
2	CIT holidays	Tax holiday for a specific number of years followed by a reduced CIT rate for a specified number of years.
3	Import duty exemptions	Import duty exemption for imported goods to form fixed assets
Accelerated depreciation		
1	Accelerated depreciation	Applicable for profitable enterprises with high economic efficiency
Investment projects: This applied to strategic sectors where investment is encouraged, and they include infrastructure development in power plants		
1	Preferential CIT rates	Lower CIT rates for a specified number of years.
2	CIT holidays	Tax holiday for a specific number of years followed by a reduced CIT rate for a specified number of years.
3	Import duty exemptions	Import duty exemption for imported goods to form fixed assets
Innovation: This is in respect of investment in Research and Development.		
1	Preferential CIT rates	Lower CIT rates for a specified number of years applicable to income from specific R&D projects

[421] Oxfam 'Assessing Vietnam's tax incentive policies' Research Report. (2016) 23. Available from https://cng-cdn.oxfam.org/vietnam.oxfam.org/s3fs-public/file_attachments/Oxfam%20Tax%20incentive%20report%20ENG.pdf (Accessed: 02 September 2024).

[422] Deloitte 'Survey of global investment and innovation incentives: Vietnam' (2020). Available from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-survey-of-global-investment-and-innovation-incentives-vietnam-2020.pdf (Accessed: 02 September 2024).

	Type of incentive	Description
2	CIT holidays	Tax holiday for a specific number of years followed by a reduced CIT rate for a specified number of years applicable to: • Income from specific R&D projects • R&D enterprises
3	Import duty exemptions	Import duty exemption for imported goods to form fixed assets applicable to income from specific R&D projects
4	CIT exemption	CIT exemption for a specified period applicable to: • Income from R&D contracts • Income from sale of products resulting from new technology
5	Tax deductions	Deductible expenses of up to a specified percentage of taxable income.

4.4 Comparative analysis

A summary of the countries' profiles is set out below:

	South Africa	India	Vietnam
Population[423]	64 million	1.4 billion	100 million
2023 Electricity generated[424] (Terawatt-hours)	224.4	1 958.2	276.4
2023 Electricity generated from coal	82 per cent	75 per cent	46 per cent
2023 Electricity generated from renewables	eight per cent	twelve per cent	thirteen per cent
Proposed new generation from RE by 2030	19 400 MW[425]	430 000 MW[426] (Total capacity)	18 000 MW[427]
Tax incentives			

[423] https://www.worldometers.info/population/ (Accessed: 04 September 2024).
[424] https://www.energyinst.org/statistical-review (Accessed: 01 September 2024).
[425] Elavarasan (n 371).
[426] IEA (n 20) 50.
[427] Nam Do and others (n 415).

	South Africa	India	Vietnam
Accelerated depreciation	Yes	Yes	Yes
Tax holidays	No	Yes	Yes
Preferential CIT rates	No	Yes	Yes
Indirect tax incentives	No	Yes	Yes
Research & Development	Yes	Yes	Yes
Tax disincentives to address environmental externalities			
Carbon Tax[428]	Yes	coal tax	Coal tax
Sources: https://www.worldometers.info/population https://www.energyinst.org/statistical-review Tax incentives: As per above individual analysis and chapter 3 in the case of South Africa			

4.5 Conclusion

There are a number of similarities and differences between the Vietnamese, Indian and South African approaches to achieving energy security. All these countries face the same challenges of growing demand resulting in energy supply deficit and the need to transition to clean energy. The approach to address these challenges has also been the same in reforming the sector by unbundling the vertically integrated utilities and opening the industry to private investments in the form of IPPs. They have also made commitments to the Paris Agreement to reduce carbon emissions.

In comparison, India has achieved more growth in energy supply. This can be attributable to its willingness to open the industry to private investment. This is an area where South Africa and Vietnam are lagging behind and this could be explained by their socialist-leaning policies, especially the need to maintain low tariffs. This

[428] KPMG 'ESG Tax Tracker – Updated version June 2024' (2024) 4. Available from https://www.meijburg.com/news/updated-esg-tax-tracker-global-developments-esg-related-taxes-incentives-and-grants (Accessed: 08 September 2024).

approach is arguably not sustainable and often leads to the government to provide financial assistance to the power utilities.

The introduction of IPPs and the renewable energy framework are interlinked as IPPs are generally solar and wind energy producing entities. All these countries have similar climates, especially when it comes to solar energy potential however, India's programs are more advanced in comparison. This can be attributable to its PPP and IPP programmes which along with other government initiatives have led to the establishments of solar parks which include the second biggest in the world. It is therefore not surprising that the 2030 target numbers are exponential when compared to those of South Africa and Vietnam.

The South African tax policy offers incentives in the form of accelerated allowances and does not offer preferential CIT rates and tax holidays as Vietnam and India do. The Vietnamese and Indian incentives are arguably more generous; however, they also appear more complex which suggests that they may be costly to administer. It is also important to note that the increased uptake in renewables in these two countries is further encouraged by other non-tax incentives, especially in Vietnam where FIT have been instrumental in encouraging households to install rooftop solar PVs whereby net metering is implemented. In South Africa, there is no national framework currently in place for net metering for households. The recommendation for South Africa is to remove barriers for private participation, retain current tax incentives and provide other non-tax incentives.

CHAPTER 5: CONCLUSION

5.1 Introduction

The motivation for this study is to contribute to an array of ideas put forward to solve the energy crisis that has plagued South Africa. The main objective as outlined in chapter 1 is to demonstrate that tax policy can complement the energy policy, specifically how tax incentives can be effectively used in addressing the energy crisis. To give effect to the main objective, the following analysis is performed in chapters 2 to 4:

i. An analysis of tax incentives in general including benefits, drawbacks and administrative considerations.

ii. An analysis of the effectiveness of tax incentives that are currently available in South Africa and how they can be used to attract investment in the electricity generation sector.

iii. A comparison of tax incentives in South Africa with those in offered in India and Vietnam and an analysis of how tax incentives contributed to address energy crises in those countries.

This chapter consolidates the analysis from the preceding chapters, provides findings therefrom and lastly makes recommendations for the incentives regime in the electricity sector.

5.2 Summary of findings

To address the objective of the study, chapter 2 introduces the concept of tax incentives, including their purpose which is to address externalities. The chapter considers arguments for and against incentives and examines factors that must be considered when developing tax policy, specifically when applying tax incentives. The main takeaways are that the manner in which incentives are designed plays an important role in their effectiveness and that they must be designed in a way that the benefits including social benefits outweigh the costs, including the costs of administration. Administration is found to be a crucial element towards the success of

incentives, particularly administrative efficiency and simplicity. Upstream tax incentives are found to be less costly to administer and, on this basis, are recommended. Lastly, it is found that, once created, incentives may prove hard to remove hence the importance of sunset clauses to ensure that, when their objective is achieved, the incentives are phased-out without additional legislative processes. Furthermore, incentives must be subject to regular evaluation to determine if they achieve the results as intended and thus effective, and this process includes evaluating whether to keep or amend the sunset provisions.

Chapter 3 focuses on tax incentives available in South Africa and provides an in-depth analysis of the rationale and achievements of these incentives as well as tax planning mechanisms that can be utilised to enhance these incentives and encourage investment in electricity generation infrastructure. On the outset, one of the noteworthy findings that is important to mention is that the South African tax system, specifically fiscal reporting, is rated highly for transparency. Regarding the incentive-specific analysis, in as much as there is major focus on renewables currently, there is potential for enhancement of incentives for base load electricity generation.

There has been constant improvement and enhancement in incentives available in the renewable energy value chain, including temporary incentives to respond to some short-term challenges such as the rooftop solar incentive for households. The objective of the temporary rooftop solar incentive for households was to address the load shedding crisis and to give effect to this short-term objective, it was designed with a sunset element, thus applying for one year only. The incentive was also designed in an administrative efficient manner, as it was incorporated into the taxpayers' existing e-filing profiles with minimum documentation required (certificate of installation) which also suggests ease of assessment by SARS.

The energy efficiency incentive is found to not be simple enough. The incentive is too technical and requires a lot of effort and as a result may deter many taxpayers from utilising it, thus becoming ineffective. The R&D incentive is found to be in line with international practice, but the issue of certainty is raised as it pertains to sunset clauses. Lastly, the main finding in respect of carbon tax allowances and exemptions, is that, in as much as these built-in allowances and exemptions aim to address socio-

economic factors, caution must be exercised in extending sunset clauses that allow certain exemptions as they weaken the efforts to achieve the intention of the tax.

Chapter 4 provides a comparative analysis of tax and other related incentives available in the electricity sectors in South Africa, India and Vietnam. The main reasons for choosing these jurisdictions are that of the shared history of energy supply shortages as well as reforms that had taken place to address the challenges. Comparatively, the way in which India has approached its energy challenges has been more ambitious with more positive results to show. Although, tax incentives have played an important role in India's successes, it is also a combination of tax and non-tax incentives and initiatives that India offers that have led to growth such as establishment of solar farms. The Indian government also allowed privately owned companies to generate electricity and achieved more private investment in electricity generation in a short period of time (47 per cent by December 2019). Some of the biggest solar parks in India which are also amongst the biggest in the world were built and are owned and operated by private companies. Therefore, the main finding is that opening the industry to private electricity generators and providing incentives to generate using renewables in line with UNFCCC results in more investment in electricity generation and addresses both the energy and climate change crises. Although, not of the same scale, Vietnam has also relied on both tax and non-tax incentives such as feed-in-tariffs and net meeting. Tax incentives in these countries are found to be more generous but also complicated which could be difficult to administer.

5.3 Recommendations

The following recommendations are made in respect of utilising tax incentives to address the electricity challenges:

5.3.1 When introducing tax incentives, rigorous cost-benefit analyses must be performed, including social benefits. Tax incentives must be designed in such a manner that the benefits outweigh the costs, including ease and costs of administration. The administration of tax incentives by SARS through various tax acts is arguably world class for transparency and enforcement. It is however recommended that, when tax policy makers introduce temporary tax

incentives, the principle of certainty be given serious consideration especially where there is retrospective application with shorter sunset timelines.

5.3.2 Continuing with the principle of certainty, it is recommended that, because of the highly technical nature of the research and development projects that seek the R&D incentive, government assistance on the eligibility must be provided earlier during the application process. It is also recommended that lack of permanence weakens the incentives as many R&D projects tend to be multi-year however, as sunsetting incentives provide certainty in respect of objectives to be achieved and timelines, it is recommended that gradual phase-out approaches be adopted instead.

5.3.3 Favourable accelerated allowances are recommended for base load electricity generation. This is after comparison is made with the mining sector which has favourable allowances to cater for large upfront capital investments.

5.3.4 To complement the enhanced incentives for renewable energy sources, incentives for battery storage must be considered but with serious environmental considerations including disincentives and punitive actions in respect of disposal. Similarly, accelerated allowances must be considered for transmission lines that are integrated to renewable energy sources.

5.3.5 Simplicity is one of the main principles of a good tax system and the energy efficiency incentive is found to not be simple enough. The highly technical nature of the incentive may be costly and may deter taxpayers from utilising it, rendering it ineffective. Proper assessments and evaluations must be done to enable the government to simplify the incentive or alternatively, remove it if it does not meet its objectives.

5.3.1 Regarding the carbon tax REP, the recommendation is that the renewable energy exemptions must, in addition to purchased renewable energy, take into account self-generated renewable energy by taxpayers who traditionally generate electricity using base load electricity. This must be applicable in the event that the current exemption is extended beyond the sunset period.

5.3.2 As a lesson from India and Vietnam, South Africa must consider expanding its framework by complementing tax incentives with national non-tax incentives in the form of feed-in-tariffs and net metering in respect of rooftop solar.

5.3.3 It is recommended that South Africa takes the lessons from India and opens the electricity generation industry to more private IPPs and Public Private Partnerships. Further, as solar and wind power projects required large areas of land, it is recommended that the government makes land available either through lease or low-cost financing to provide opportunities for large scale solar or wind parks by the aforesaid IPPs.

5.4 Final comments

This study has demonstrated an important role that tax policy plays to complement the energy policy. As South Africa moves on to achieve goals of the NDP2030 and beyond, is it necessary for tax policy makers and administrators to work closely with energy policy makers. South Africa arguably already has one of the best tax systems in the world, both in terms of systems and transparency therefore, incentives are administered with ease.

It is also clear that countries the world over face similar challenges of growing electricity demand that surpasses supply and at the same time are required to meet various targets to combat climate change. This means that the whole world is in a similar trajectory of exploring different instruments to address these challenges, including tax incentives. Therefore, there are of lessons to be learnt from interacting and working with other jurisdictions, especially allowing privately owned electricity generators to accelerate investment in renewable energy.

Lastly, there is a need for future empirical research on the impact of the recent temporary household rooftop solar incentive which must consider the following factors:

i. The cost of the tax expenditure to the *fiscus*.

ii. The benefit to the economy through lower demand in the national grid, thus lessening the need for load shedding.

iii. Whether the introduction of the incentive led to a rapid uptake of the solar PVs and, considering households that already have adequate power from solar, whether the uptake slowed down post sunset date, proving effectiveness of the incentive.

iv. When analysing the post sunset date behaviour, it must also be considered that electricity supply from the national grid improved and load shedding ceased which means that there is less pressure to install solar PVs.

v. If it is found that the uptake slowed down, it must be analysed whether the proposed tariff increases are not enough to encourage another uptake and whether extending the sunset date for the incentive will provide more encouragement. It is also important to note that in this instance, the extension of the incentive would not be to address the load shedding externality but a socioeconomic one to assist consumers against high electricity tariffs.

REFERENCES

Legislation (South Africa)

1. Carbon Tax Act 15 of 2019.
2. Customs and Excise Act 91 of 1964.
3. Electricity Regulation Act 4 of 2006.
4. Income Tax Act 58 of 1962.
5. National Energy Act, 34 of 2008.
6. National Environmental Management: Waste Act 59 of 2008.
7. Tax Administration Act 28 of 2011.
8. Taxation Laws Amendment Act, 30 of 2002.
9. Taxation Laws Amendment Act, 17 of 2023.
10. Taxation Laws Amendment Bill, 2024.
11. The Constitution of the Republic of South Africa, 1996.

Government Notices, Bills and Explanatory Memoranda

1. Government Notice No R 971, GG, 9 December 2013, 37136 (Regulations in terms of section 12L of the Income Tax Act, on the allowance for energy efficiency savings).
2. Explanatory Note for the Draft Regulations on the carbon offset. 2016.
3. Taxation Laws Amendment Bill, 2023.
4. Explanatory Memorandum on the Income Tax Bill, 1990.
5. Explanatory Memorandum on the Taxation Laws Amendment Bill, 2000.
6. Explanatory Memorandum on the Revenue Laws Amendment Bill, 2005.
7. Explanatory Memorandum on the Taxation Laws Amendment Bill, 2012.
8. Explanatory Memorandum on the Taxation Laws Amendment Bill 17B of 2016.
9. Explanatory Memorandum on the Carbon Tax Bill, 2018.
10. Explanatory Memorandum on the Taxation Laws Amendment Bill, 2021.
11. Explanatory Memorandum on the Taxation Laws Amendment Bill. 2023.
12. Explanatory Memorandum to Regulations on the Carbon Offset Regulations under the Carbon Tax Act, 2024.

SARS Guides and Interpretation Notes

1. SARS 'Draft Guide on the allowances and deductions relating to assets used in the generation of electricity from specified sources of renewable energy' (2024) www.sars.gov.za (Accessed: 27 August 2024).
2. SARS 'Guide on the Solar Energy Tax Credit provided under section 6C' (2024) www.sars.gov.za (Accessed 26 August 2024).
3. SARS 'Interpretation Note 86 (Issue 3)' 28 July 2021
4. www.sars.gov.za (Accessed 12 August 2023).

Case Law

1. *Blue Circle Cement Ltd v Commissioner for Inland Revenue* 1984 (2) SA 764(A) (46 SATC 21).
2. *Secretary for Inland Revenue v Safranmark (Pty) Ltd 1982 (1) SA 113(A)* (43 SATC 235).

Books and Handbooks

1. Coyle, ED & Simmonds, RA (Eds) *Understanding the Global Energy Crisis* (Purdue University Press 2014) West Lafayette. http://www.jstor.org/stable/j.ctt6wq56p.5 (Accessed: 30 June 2023).
2. Easson, A & Zolt, EM *Tax incentives* (World Bank Institute 2002). https://scholar.googleusercontent.com/scholar?q=cache:DwvodnIIkrcJ:scholar.google.com/+easson+and+zolt&hl=en&as_sdt=0,5 (Accessed: 23 July 2023).
3. Holland, D & Vann, RJ 'Income Tax Incentives for Investment' *Tax Law Design and Drafting, Volume 2*. (International Monetary Fund 1998). https://www.elibrary.imf.org/display/book/9781557756336/C23.xml (Accessed: 12 July 2023).
4. Junquera-Varela, RF & Lucas-Mas, CÓ *Revenue Administration Handbook* (Washington DC World Bank 2024). http://hdl.handle.net/10986/41090 (Accessed: 8 April 2024).
5. Klemm, A *Causes, Benefits, and Risks of Business Tax Incentives* (International Monetary Fund *ProQuest Ebook Central 2009).* https://ebookcentral-proquest-com.uplib.idm.oclc.org/lib/pretoria-ebooks/detail.action?docID=1608158. (Accessed: 01 August 2023).

6. Sanchez-Ugarte, FJ 'Rationality of Income Tax Incentives in Developing Countries: A Supply-Side Look' *Supply-Side Tax Policy USA* (International Monetary Fund 1987). https://doi.org/10.5089/9780939934911.071.ch010 (Accessed: 20 March 2024).
7. Stiglingh, M and others *SILKE: South African Income Tax (*LexisNexis 2022).

Journal articles

1. Bajaj, HL & Sharma, D 'Power sector reforms in India' (2006) International Conference on Power Electronic, Drives and Energy Systems. IEEE. https://ieeexplore.ieee.org/abstract/document/4148027?casa_token=iwQ1p1pZ_AAAAAAA:HvDiNIzl61dA6hXS_g4xGiHw4dKRIqY9gyR1h1CnTOB3JxXrBOr5QFm9GQevnsUQ4HIpktGoNw (Accessed: 01 September 2024).
2. Barradale, MJ 'Impact of public policy uncertainty on renewable energy investment: Wind power and the production tax credit' (2010) *Energy Policy* 38. https://doi.org/10.1016/j.enpol.2010.08.021 (Accessed: 21 July 2024).
3. Baveye, J & Valenduc, C 'Are "environmental" tax incentives efficient?' (2011) 144 *Bulletin de Documentation*, *71*. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=are+environmental+tax+incentives+efficient%3F&btnG= (Accessed: 04 March 2024).
4. Bekker, A and others 'Framework development for the evaluation of conduit hydropower within water distribution systems: A South African case study' (2021) *Journal of Cleaner Production* 283. https://doi.org/10.1016/j.jclepro.2020.125326 (Accessed: 18 July 2024).
5. Benazic, M & Tomic, D 'Macroeconomic Dynamics in China, Laos and Vietnam: A VAR Analysis' *(2020) 204 Eastern Journal of European Studies* 11. https://www.proquest.com/scholarly-journals/macroeconomic-dynamics-china-laos-vietnam-var/docview/2546918540/se-2. (Accessed: 03 October 2024)
6. Best, R and others 'Effects of rooftop solar on housing prices in Australia' (2021) 493. *Aust J Agric Resour Econ*, 65. https://doi.org/10.1111/1467-8489.12431 (Accessed: 18 July 2024).
7. Bird, RM 'The role of the tax system in the developing countries' (1990) 407 *Australian Tax Forum* 7. HeinOnline (Accessed: 23 July 2023).
8. Clark, WS 'Tax Policy for Investment' (2007) 252 *eJournal of Tax Research* 5. HeinOnline (Accessed: 18/07/2023).

9. Cnossen, S 'The C-inefficiency of the EU-VAT and what can be done about it' (2022) 224. *Int Tax Public Finance* 29. https://doi.org/10.1007/s10797-021-09683-0 (Accessed: 28 May 2024).
10. Consalo, K 'India's use of public-private partnerships to promote rapid expansion of solar electricity facilities' (2022) 195 Florida Journal of International Law 33. HeinOnline (Accessed: 02 October 2024).
11. Dippenaar, M 'The role of tax incentives in encouraging energy efficiency in the largest listed South African businesses' (2018) 6. *South African Journal of Economic and Management Sciences* 21. https://doi.org/10.4102/sajems.v21i1.1723 (Accessed: 06 July 2024).
12. Elavarasan, RM and others 'A Comprehensive Review on Renewable Energy Development, Challenges, and Policies of Leading Indian States With an International Perspective' (2020) *IEEE Access* 8. doi: 10.1109/ACCESS.2020.2988011 (Accessed: 02 October 2024).
13. Erero, JL 'Impact of loadshedding in South Africa*: A CGE analysis'* (2023) 91 *Journal of Energy and Power Engineering* 10. https://dx.doi.org/10.1453/jepe.v10i2.2443 (Accessed: 17 March 2024).
14. Fasihi, M & Breyer, C 'Baseload electricity and hydrogen supply based on hybrid PV-wind power plants' (2020) 1. *Journal of Cleaner Production* 243. https://doi.org/10.1016/j.jclepro.2019.118466 (Accessed: 18 July 2024).
15. García-Quevedo, J & Jové-Llopis, E 'Environmental policies and energy efficiency investments. An industry-level analysis' (2021) 2. *Energy Policy* 156. https://doi.org/10.1016/j.enpol.2021.112461 (Accessed: 19 August 2023).
16. Garciano, JL 'Green energy tax policies: state and federal tax incentives for renewable energy and energy efficiency*' (2011) 13 Natural Resources & Environment* 25. HeinOnline (Accessed: 16 July 2024).
17. Hamer, W and others 'Testing concurrent benefits for Section 12L tax incentives in South Africa' (2020) 58 *Journal of Energy in Southern Africa* 31. https://dx.doi.org/10.17159/2413-3051/2020/v31i4a8674 (Accessed: 11 August 2023).
18. Hamilton, R 'Tax Incentives and Innovation: The Canadian Treatment of R&D' (1993) 233 *Canada-United States Law Journal* 19 233-258. HeinOnline (Accessed: 9 July 2023).

19. Hardisty, DJ and others 'A carbon price by another name may seem sweeter: Consumers prefer upstream offsets to downstream taxes' (2019) 7 *Journal of Environmental Psychology* 66. https://doi.org/10.1016/j.jenvp.2019.101342 (Accessed: 01 July 2024).
20. Heath, BL 'The importance of research and development tax incentives in the world market' (2002) 362 *Michigan State University-Detroit College of Law's Journal of International Law* 11. HeinOnline (Accessed: 19 August 2023).
21. Henderson, PGW 'Fiscal incentives for environmental protection: the way forward' (1995) 162 *South African Journal of Environmental Law and Policy* 2. [Online] Available from https://journals-co-za.uplib.idm.oclc.org/doi/epdf/10.10520/AJA10231765_155 (Accessed: 21 July 2024).
22. Horne, C, Kennedy, EH & Familia, T 'Rooftop solar in the United States: Exploring trust, utility perceptions, and adoption among California homeowners' (2021) *Energy Research & Social Science* 82. https://doi.org/10.1016/j.erss.2021.102308 (Accessed: 18 July 2024).
23. Ishita 'comparative study on federalism in relation to India and Switzerland' (2023) 9 *Indian Journal of Integrated Research in Law* 3. HeinOnline (Accessed: 02 October 2024).
24. Kalaba, M 'South Africa's carbon tax: Balancing climate action and economic development' (2020) 3. *South African Institute of International Affairs*. http://www.jstor.org/stable/resrep2953 (Accessed: 27 July 2023).
25. Köppl, A & Schratzenstaller, M 'Aspects of environmentally beneficial tax incentives' (2021) 2 *a literature review*. http://hdl.handle.net/10419/231461 (Accessed: 16 March 2024).
26. Lee, HC, Lee, EB & Alleman, D 'Schedule Modeling to Estimate Typical Construction Durations and Areas of Risk for 1000 MW Ultra-Critical Coal-Fired Power Plants' (2018) 12 *Energies* 11. https://doi.org/10.3390/en11102850 (Accessed: 15 August 2023).
27. Mansur, ET 'Upstream versus downstream implementation of climate policy' (2011) 184 In The design and implementation of US climate policy (pp. 179-193). *University of Chicago Press*. https://www.nber.org/system/files/chapters/c12146/c12146.pdf (Accessed: 10 June 2024).

28. Metcalf, GE & Weisbach, D 'The design of carbon tax' (2009) *516 Harvard Environmental Law Review* 33. HeinOnline (Accessed: 31 July 2022).
29. Milne, JE 'Energy tax incentives in the United States: comparative perspective on state aid' (2017) 34 European State Aid Law Quarterly (ESTAL) 16. HeinOnline (Accessed: 24 March 2023).
30. Moran, C & Ball, C 'Structuring better caps for sustainability incentive programs' (2018) 182 *Idaho Law Review*, 54. HeinOnline (Accessed: 16 April 2024).
31. Morelli, G 'Energy consumption, CO2 and economic growth nexus in Vietnam' (2020) 443 International Journal of Energy Economics and Policy. https://www.econjournals.com/index.php/ijeep/article/download/8248/4917 (Accessed: 02 July 2023).
32. Nam Do, T and others 'Vietnam's solar and wind power success: Policy implications for the other ASEAN countries*'* (2021) *Energy for Sustainable Development* 65. https://doi.org/10.1016/j.esd.2021.09.002. (Accessed: 02 September 2024).
33. Nkomo, JC '*Energy and economic development: challenges for South Africa*' (2005) Abstract *Journal of Energy in Southern Africa*, 16 http://www.erc.uct.ac.za/jesa/jesa-contents.htm (Accessed: 11 July 2024)
34. Oguttu, AW '*International tax competition, harmful tax practices and the 'race to the bottom: special focus on unstrategic tax incentives in Africa*' (2018) 307 *Comparative and International Law Journal of Southern Africa* 51. HeinOnline (Accessed: 5 August 2023).
35. Patterson, CD III '*Environmental taxes and subsidies: what is the appropriate fiscal policy for dealing with modern environmental problems*' (2000) 121 *William and Mary Environmental Law and Policy Review* 24. HeinOnline (Accessed: 16 March 2024).
36. Ranchordas, S *'Sunset Clauses and Experimental Regulations: Blessing or Curse for Legal Certainty'* (2015) 30 *Statute Law Review* 36. HeinOnline (Accessed: 25 July 2023).
37. Roy, SY and others 'Comprehensive Evaluation of Electricity Generation and Emission Reduction Potential in the Power Sector Using Renewable Alternatives in Vietnam' (2022) 157 *Renewable and Sustainable Energy Reviews*. https://doi.org/10.1016/j.rser.2021.112009 (Accessed: 03 October 2024).

38. Shah, K 'India's utility-scale solar parks a global success *story' (2020) 4* Institute for Energy Economics and Financial Analysis. https://ieefa.org/wp-content/uploads/2020/05/Indias-Utility-Scale-Solar-Parks-Success-Story_May-2020.pdf (Accessed: 03 October 2024).
39. Son, BN 'The law of China and Vietnam in comparative law' (2017) 137 *Fordham International Law Journal*, 41. HeinOnline (Accessed: 03 October 2024).
40. Steenekamp, JT & Dockel, JA 'Taxation and tax reform in LDCs: Lessons for South Africa' (1993) 324. *Development Southern Africa* 10. https://doi.org/10.1080/03768359308439697 (Accessed: 11 August 2023).
41. Surrey, SS 'Tax Incentives as a Device for Implementing Government Policy: A Comparison with Direct Government Expenditures' (1970) 714 Harvard Law Review 83(4) 705. HeinOnline (Accessed: 05 August 2023).
42. Talley, J 'The research and development tax credit: moderately effective but hampered by politics' (2011) 90. *DePaul Business & Commercial Law Journal* 10. HeinOnline (Accessed: 19 August 2023).
43. Underhill, K & Ayres, I 'Sunsets are for suckers: an experimental test of sunset clauses' (2002) 105 *Harvard Journal on Legislation* 59. HeinOnline (Accessed: 24 July 2023).
44. Vargas, C & Chesney, M 'End of life decommissioning and recycling of solar panels in the United States. A real options analysis' (2021) 83 *Journal of Sustainable Finance & Investment* 11. https://doi.org/10.1080/20430795.2019.1700723 (Accessed: 03 July 2024).
45. Viswanathan, N '*Sunset Provisions in the Tax Code: A Critical Evaluation and Prescriptions for the Future*' (2007) 681 *New York University Law Review* 82. HeinOnline (Accessed: 24 July 2023).

Reports / Papers

1. Bird, RM 'Tax Challenges Facing Developing Countries' Institute for International Business Working Paper, (9). Inaugural Lecture of the Annual Public Lecture Series of the National Institute of Public Finance and Policy, New Delhi, India, March 12, 2008. (2008) 10. https://scholar.googleusercontent.com/scholar?q=cache:tLyu16WrBQJ:scholar.

google.com/+Tax+Challenges+Facing+Developing+Countries&hl=en&as_sdt=0,5 (Accessed: 23 July 2023).

2. Calitz. E and others 'Depreciation allowances in South Africa' WIDER Working Paper 2020/49 Helsinki: UNU-WIDER (2020) 9. https://doi.org/10.35188/UNU-WIDER/2020/806-1. (Accessed: 10 May 2024).
3. Calitz, E & Wallace, S & Burrows, L 'The impact of tax incentives to stimulate investment in South Africa' Working Papers 19/2013, Stellenbosch University, Department of Economics (2013) 2. https://ideas.repec.org/p/sza/wpaper/wpapers195.html (Accessed: 08 May 2024).
4. Deloitte 'Survey of global Investment and Innovation incentives' (2020) 171. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-survey-of-global-investment-and-innovation-incentives-india-2020.pdf (Accessed: 07 September 2024).
5. Deloitte 'Survey of global investment and innovation incentives: Vietnam' (2020). https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-survey-of-global-investment-and-innovation-incentives-vietnam-2020.pdf (Accessed: 02 September 2024).
6. Deloitte *'Indian Power Sector: The future fuel'* (January 2023) 2. https://www2.deloitte.com/content/dam/Deloitte/in/Documents/tax/in-tax-Indian-Power-Sector-The-Future-Fuel-noexp.pdf (Accessed: 11 May 2023).
7. IEA 'India 2020: Energy Policy Review' (2020) 36. https://www.iea.org/reports/india-2020 (Accessed: 14 May 2023).
8. IEA 'World Energy Investment 2022' (2022) 172. https://www.iea.org/reports/world-energy-investment-2022 (Accessed: 22 March 2023).
9. IISD 'South Africa's Energy Fiscal Policies: An inventory of subsidies, taxes, and policies impacting the energy transition' (2022) 36. https://www.iisd.org/system/files/2022-01/south-africa-energy-subsidies.pdf (Accessed: 06 March 2023).
10. IISD 'Watts in Store Part 1: Explainer on how energy storage can help South Africa's energy crisis' (2023). https://www.iisd.org/system/files/2023-07/south-africa-watts-in-store-part-1.pdf (Accessed: 11 July 2024).

11. IISD '*Watts in Store Part 2: Creating an enabling environment for the deployment of grid batteries in South Africa'* (2024). https://www.iisd.org/system/files/2024-06/south-africa-watts-in-store-part-2.pdf (Accessed: 25 August 2024).
12. IMF, OECD, UN, & World Bank 'Options for Low Income Countries Effective and Efficient Use of Tax Incentives for Investment' (2015)10. https://elibrary.worldbank.org/doi/abs/10.1596/22923 (Accessed: 23 July 2023).
13. IMF 'High-level summary Technical Assistance Report - South Africa: Fiscal Transparency Evaluation' (2024). https://www.imf.org/en/Publications/technical-assistance-reports/Issues/2024/04/15/South-Africa-Technical-Assistance-Report-Fiscal-Transparency-Evaluation-547665 (Accessed: 25 August 2024).
14. IMF 'Technical Assistance Report - South Africa: Fiscal Transparency Evaluation' (2024). https://www.imf.org/en/Publications/technical-assistance-reports/Issues/2024/04/15/South-Africa-Technical-Assistance-Report-Fiscal-Transparency-Evaluation-547665 (Accessed: 25 August 2024).
15. James, S '*Tax and Non-tax incentives and investments: evidence and policy implications*' World Bank (2020). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2401905 (Accessed: 10 July 2023).
16. Koowattanatianchai, N, Charles, M & Eddie, IA 'Accelerated Depreciation: Establishing a historical and contextual perspective' (2009) 16. Conference paper. https://www.researchgate.net/publication/242601137 (Accessed: 14 August 2023).
17. KPMG 'A guide to South African Government and Tax Incentives' (2020). https://kpmg.com/za/en/home/services/tax/global-r-and-d-incentives.html (Accessed: 07 April 2024).
18. KPMG 'ESG Tax Tracker – Updated version June 2024' (2024) 4. https://www.meijburg.com/news/updated-esg-tax-tracker-global-developments-esg-related-taxes-incentives-and-grants (Accessed: 08 September 2024).
19. Kronfol, H & Steenbergen, V 'Evaluating the Costs and Benefits of Corporate Tax Incentives: Methodological Approaches and Policy Considerations' Finance, Competitiveness and Innovation in Focus World Bank, Washington, DC. (2020). http://hdl.handle.net/10986/33433 License: CC BY 3.0 IGO." (Accessed: 23 March 2024).

20. Lee, AD & Gerner, F 'Learning from Power Sector Reform Experiences: The Case of Vietnam' World Bank Policy Research Paper No. 9169. (2020) 5. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3547924 (Accessed: 02 July 2023).
21. Mackay, J and others 'Regulatory assessment of battery energy storage systems in South Africa' (2022). https://res4africa.org/wpcontent/uploads/2023/04/FINALRegulatoryassessmentofBatteryEnergyStorageSystemsinSouthAfrica.pdf (Accessed: 25 August 2024).
22. Marples, D 'Tax expenditures: overview and analysis' Congressional Research Service. (2015). https://sgp.fas.org/crs/misc/R44012.pdf (Accessed: 04 July 2024).
23. Redonda, A and others 'Tax expenditure and the treatment of tax incentives for investment' Economics, *13*(1), 20190012. (2019) 2. https://doi.org/10.5018/economics-ejournal.ja.2019-12 (Accessed: 05 July 2024).
24. OECD *Environmental Taxation A guide for policy makers.* (2011) 3. https://www.oecd.org/investment/investment-policy/oecd-investment-tax-incentives-database-2022-update-brochure.pdf (Accessed: 16 July 2023).
25. OECD 'Investment Tax Incentives Database 2022 update: Tax incentives for sustainable development' (2022). https://www.oecd.org/investment/investment-policy/oecd-investment-tax-incentives-database-2022-update-brochure.pdf (Accessed: 16 July 2023).
26. OECD 'R&D tax incentives database, 2022 edition' (2022) 7. https://one.oecd.org/document/DSTI/STP/NESTI(2023)2/FINAL/en/pdf (Accessed: 19 August 2023).
27. Oxfam 'Assessing Vietnam's tax incentive policies' Research Report. (2016) 23. https://cng-cdn.oxfam.org/vietnam.oxfam.org/s3fs-public/file_attachments/Oxfam%20Tax%20incentive%20report%20ENG.pdf (Accessed: 02 September 2024).
28. Perera, O *'Rethinking Investment Incentives'* The International Institute for Sustainable Development Commentary (2012). https://www.iisd.org/system/files/publications/rethinking_investment_incentives.pdf (Accessed: 23 March 2023).

29. PKF 'Worldwide tax guide 2024-2025' 489. https://www.pkf.com/publications/tax-guides/worldwide-tax-guide-2024-25/ (Accessed: 08 September 2024).
30. Redonda, A & Neubig, T 'Assessing Tax Expenditure Reporting in G20 and OECD *Economies*' (2018) 7. https://www.cepweb.org/wp-content/uploads/2018/11/Redonda-and-Neubig-2018.-Assessing-Tax-Expenditure-Reporting.pdf (Accessed: 23 March 2024).
31. Rustagi, V & Chadha, M *'India country report*. *Renewable energy*' *2*(3) (2020) 11. https://www.energyeconomicgrowth.org/www.energyeconomicgrowth.org/sites/default/files/2021-09/India%20report%2019%20October%202020.pdf (Accessed: 03 October 2024).
32. Stotsky, J 'Tax Investments and Investment' (2024) 10. Governance Briefs | Asian Development Bank (adb.org) (Accessed: 23 March 2024).
33. Tanzi, V & Howell, HZ 'Tax Policy for Emerging Markets' Developing Countries' IMF Working Paper (2020). https://www.imf.org/external/pubs/ft/wp/2000/wp0035.pdf (Accessed: 23 July 2023).
34. Thomas, A *and others* 'Taxation and Investment in India' *OECD Economics Department Working Papers* No. 1397, OECD Publishing, Paris. (2017). https://doi.org/10.1787/4258e11a-en. (Accessed: 08 September 2024).
35. United Nations 'Design and Assessment of Tax incentives in developing countries' (2018). https://www.un.org/esa/ffd/wp-content/uploads/2018/02/tax-incentives_eng.pdf (Accessed: 10 May 2023).
36. World Bank 'South Africa: Sector Study of Effective Tax Burden and Effectiveness of Investment Incentives in South Africa – Firm Level Analysis Part *I*' (2015) 21. https://www.taxcom.org.za/docs (Accessed: 07 April 2023).
37. World Bank 'South Africa: Sector Study of Effective Tax Burden and Effectiveness of Investment Incentives in South Africa – Firm Level Analysis' (2016). https://www.taxcom.org.za/docs (Accessed: 07 April 2023).
38. World Bank '2017/2018 Global Investment Competitiveness Report: Report Investor Perspectives and Policy Implications' (2018). https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1175-3 (Accessed: 11 July 2023).

39. Zolt, EM 'Tax Incentives: Protecting the tax base' Paper for Workshop on Tax Incentives and Base Protection New York, 23-24 April 2015. (2015). https://static.un.org/esa/ffd/wp content/uploads/2015/04/2015TIBP_PaperZolt.pdf (Accessed: 10 July 2023).

Publications by National Treasury

1. National Treasury 'Revenue Trends and Tax proposals' (2002) 84. https://www.treasury.gov.za (Accessed: 10 July 2023).
2. Annual Conference of The International Bar Association The South African Tax Reform Experience Since 1994 (2002) 8. https://www.treasury.gov.za/comm_media/speeches/2002/2002102501.pdf (Accessed: 05 May 2024).
3. National Treasury 'Frequently Asked questions: Enhanced renewable energy incentive for business' (2013) 1. https://www.treasury.gov.za (Accessed: 16 April 2024).
4. National Treasury '2020 Budget Review' (2020) 39. https://www.treasury.gov.za/documents/national%20budget/default.aspx (Accessed: 10 July 2024).
5. National Treasury 'Discussion Document: Reviewing the design, implementation and impact of South Africa's Research and Development tax incentive' (2022). https://www.treasury.gov.za (Accessed: 8 August 2024).
6. National Treasury '2022 *Budget Review*' (2022) 38. https://www.treasury.gov.za/documents/national%20budget/default.aspx (Accessed: 15 July 2024).
7. National Treasury. 2023 Budget Speech (2023). https://www.treasury.gov.za (Accessed: 12 August 2023).
8. National Treasury '2023 Budget Review (2023) 13. https://www.treasury.gov.za (Accessed: 21 April 2024).
9. National Treasury '2024 Budget Speech' (2024). https://www.treasury.gov.za (Accessed: 12 August 2023).
10. National Treasury '2024 Budget Review' (2024). https://www.treasury.gov.za (Accessed: 2 March 2024).

Publications by Government Departments, Entities, Agencies and Commissions

1. CSIR 'Statistics of utility-scale power generation in South Africa 2022 (1 Jan 2022 – 31 Dec 2022)' (2023). https://www.csir.co.za/csir-statistics-on-power-generation-south-africa-2022 (Accessed: 07 May 2023).
2. CSIR 'Incentives for Municipalities to Divert Waste from Landfill in South Africa' Final Report (2021). https://wasteroadmap.co.za/wp-content/uploads/2021/05/20-CSIR-Final_Technical-report.pdf. (Accessed: 03 July 2024).
3. DMRE 'Integrated Resource Plan (IRP 2019)' (2019) 47.
4. Department of Minerals and Energy 'Energy security masterplan- Electricity 2007-2025'. https://www.gov.za/sites/default/files/gcis_document/201409/energysecmasterplan0.pdf (Accessed: 07 May 2023).
5. DMRE *'Strategic Plan 2020-2025'.* https://www.dmre.gov.za/ (Accessed: 04 April 2023).
6. DMRE 'The South African Energy Sector Report 2021' (2021). https://www.dmre.gov.za/Portals/0/Energy_Website/files/media/explained/2021-South-African-Energy-Sector-Report.pdf (Accessed: 22 March 2023).
7. DMRE 'Integrated Resource Plan 2023' (2023). www.gov.za (Accessed: 20 July 2024).
8. DPE 'Roadmap for Eskom in a reformed electricity supply industry' (2019) 61. https://www.gov.za/sites/default/files/gcis_document/201910/roadmap-eskom.pdf (Accessed: 02 April 2023).
9. DSI 'Research and Development tax incentive programme report to Parliament 2018-19'. https://www.dst.gov.za/rdtax/index.php/annual-reports (Accessed: 19 May 2024).
10. Eskom. Draft Environmental & Social Impact Assessment report for Komati Power Station shutdown & dismantling which highlights the key environmental legislation in SA and their possible relevance to the Project. https://www.eskom.co.za/wp-content/uploads/2022/08/P177398-Component-A-ESIA-Part-I.pdf (Accessed: 19 July 2024).
11. Eskom '2023 Integrated Report' (2023) 9. www.eskom.co.za (Accessed: 16 May 2024).

12. Eskom 'Integrated Report 2022' (2022). www.eskom.co.za (Accessed: 13 July 2024).
13. Eskom 'Tariffs & Charges booklet 2024/25 (2024) 30 Available from https://www.eskom.co.za/distribution/wp-content/uploads/2024/05/ESK114-Eskom-Digital-Tariff-Booklet-2024_Final.pdf (Accessed: 30 June 2024).
14. NERSA 'Eskom Holdings SOC Limited's MYPD5 Revenue application for the 2023/24 and 2024/25 Financial years. Paragraph 8.13'. https://www.nersa.org.za (Accessed: 11 June 2024).
15. SANEDI 'Demand projection model in support of IRP update' (2023). https://www.energy.gov.za/IRP/2023/Electricity%20demand%20projection%20model%20ESRG%20SANEDI%20Report%20Rev%201.pdf (Accessed: 16 May 2024).
16. Statistics South Africa 'Electricity generated and available for distribution (Preliminary) April 2023. Statistical Release P4141' *(2023).* https://www.statssa.gov.za/publications/P4141/P4141April2023.pdf (Accessed: 29 June 2023).
17. The Presidency: National Planning Commission 'National Development Plan 2030'. https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf (Accessed: 10 May 2023).
18. The Presidency 'Confronting the energy crisis: an action plan to end load shedding' (2022). https://www.gov.za/sites/default/files/gcis_document/202207/confronting-energy-crisisan-action-plan-end-load-shedding.pdf (Accessed: 02 April 2023).
19. The Presidency 'Just Energy Transition Investment Plan, 2023 – 2027'. https://www.stateofthenation.gov.za/assets/downloads/JET%20Implementation%20Plan%202023-2027.pdf (Accessed: 07 March 2023).
20. The Presidency 'Statement: President Ramaphosa assents to climate change Bill' (2024). https://www.thepresidency.gov.za/president-ramaphosa-assents-climate-change-bill (Accessed: 27 August 2024).
21. Wright, JG & Calitz, JR 'Statistics of utility-scale power generation in South Africa H1-2021' (2021). https://researchspace.csir.co.za/dspace/handle/10204/13493 (Accessed on 16 July 2024).

Publications by Committees

1. Davis Tax Committee '*Final Report on Macro analysis of the tax system and inclusive growth in South Africa'* (2016). https://www.taxcom.org.za (Accessed: 12 August 2023).
2. Davis Tax Committee '*Second and Final Report on Hard Rock Mining*' (2016) 46. https://www.taxcom.org.za/ (Accessed: 15 August 2023).
3. Davis Tax Committee '*The review of the efficiency of South Africa's Corporate Income Tax System'* (2018). https://www.taxcom.org.za (Accessed: 12 August 2023).

Magazine and Newspaper articles

1. Burkhardt, P & Cele, S 'South African Presidency Maps Out Vision to End Loadshedding' *Bloomberg (Africa Edition) 8 June 2023.* https://www.bloomberg.com/news/articles/2023-06-08/south-african-presidency-maps-out-vision-to-end-loadshedding (Accessed: 02 July 2023).
2. Creamer media reporter 'the impact of load shedding on manufacturers' Engineering News 17 August 2023. https://www.engineeringnews.co.za/article/the-impact-of-load-shedding-on-manufacturers-2023-0817#:~:text=Production%20Disruption%3A%20Load%20shedding%20disrupts,challenges%20in%20maintaining%20production%20schedules. Accessed: 17 March 2024).
3. Creamer, T 'energy-regulator-approves-25-year-transmission-licence-for-ntc-with-two-more-approvals-to-follow' Engineering News 28 July 2023. https://www.engineeringnews.co.za/article/energy-regulator-approves-25-year-transmission-licence-for-ntc-with-two-more-approvals-to-follow-2023-07-28 (Accessed: 16 August 2023).
4. Fraser, L 'South Africa's biggest retailer is spending over R3 million a day to beat load shedding. Business' Tech7 March 2023. https://businesstech.co.za/news/business/670803/south-africas-biggest-retailer-is-spending-over-r3-million-a-day-to-beat-load shedding/#:~:text=The%20group's%20electricity%20and%20water,stores%20due%20to%20load%20shedding. (Accessed: 09 May 2023).

5. Gupta, AP & Sathaye, J 'Electrifying India' IEEE Power & energy magazine September /October 2009 53. IEEE Xplore (Accessed: 11 May 2023).
6. Lombard, E 'Uncertain future for tax incentives' Tax Breaks March 2022 8. Sabinet (Accessed: 27 July 2023).
7. Lehto, E 'After 18 years, Europe's largest nuclear reactor starts regular output' Reuters 16 April 2023. https://www.reuters.com/world/europe/after-18-years-europes-largest-nuclear-reactor-start-regular-output-sunday-2023-04-15/ (Accessed: 20 August 2023).
8. Mail & Guardian staff reporter 'Prepare for a month of load shedding' Mail & Guadian 29 January 2008. https://mg.co.za/article/2008-01-29-prepare-for-a-month-of-loadshedding/ (Accessed: 06 May 2023).
9. McLaughlin, T 'Creaky U.S. power grid threatens progress on renewables, EVs' Reuters 12 May 2022. https://www.reuters.com/investigates/special-report/usa-renewables-electric-grid/ (Accessed: 16 August 2023).
10. Niselow, T 'Sunday Read: Load shedding through the years and how Eskom has struggled to keep the lights on' News24 24 March 2019. https://www.news24.com/fin24/economy/sunday-read-load-shedding-through-the-years-and-how-eskom-has-struggled-to-keep-the-lights-on-20190324 (Accessed: 02 July 2023).
11. Orderson, C 'In South Africa, 'load shedding' takes a toll on small businesses' Aljazeera *9 February 2023.* https://www.aljazeera.com/features/2023/2/9/in-south-africa-load-shedding-takes-a-toll-on-small-businesses (Accessed: 30 July 2023).
12. Payton, B 'Africa's race for transmission investment' African Business' 24 May 2023. https://african.business/2023/05/energy-resources/africas-race-for-transmission-investment (Accessed: 16 August 2023).
13. Power Magazine 'Whistling in the dark inside South Africa's power crisis' Power Magazine 1 November 2008. https://www.powermag.com/whistling-in-the-dark-inside-south-africas-power-crisis/ (Accessed: 07 May 2023).
14. Proctor, D 'South Africa Energy Crisis at Critical Stage as Load-Shedding Continues' Power Magazine 1 March 2023. https://www.powermag.com/south-africa-energy-crisis-at-critical-stage-as-load-shedding-continues/ (Accessed: 30 June 2023).

15. Proctor, D 'China brings world's largest solar power plant online' Power Magazine 6 June 2024. https://www.powermag.com/china-brings-worlds-largest-solar-power-plant-online/ (Accessed: 02 October 2024).
16. Styan, JB 'Inside the Eskom crisis – a critical analysis' TechCentral 6 December 2018. https://techcentral.co.za/inside-the-eskom-crisis-a-critical-analysis/201543/ (Accessed: 30 July 2023).

Websites

1. https://www.dbsa.org/article/how-can-we-reduce-carbon-footprint-africa (Accessed: 20 August 2023).
2. https://www.dmre.gov.za/news-room/post/2084/media-statement-call-for-comments-on-the-draft-south-africa-renewable-energy-masterplan-sarem (Accessed: 17 August 2023).
3. https://www.dst.gov.za/rdtax/index.php/administration-of-the-incentive (Accessed: 20 August 2023).
4. https://www.energyinst.org/statistical-review (Accessed: 01 September 2024).
5. https://www.eskom.co.za/distribution/battery-energy-storage-system/ (Accessed: 17 August 2023).
6. https://www.eskom.co.za/heritage/history-in-decades/eskom-2003-2012/ (Accessed: 08 May 2023).
7. https://www.explorelesmines.com/en/mining-industry/mining-cycle.html (Accessed: 15 August 2023).
8. https://www.gov.za/events/fifth-brics-summit-general-background (Accessed: 02 July 2023).
9. https://www.grantthornton.in/insights/blogs/electricity-and-the-shock-of-gst/ (09 September 2024).
10. https://www.iea.org/countries/india/energy-mix (Accessed: 01 September 2024).
11. https://www.iea.org/countries/south-africa/emissions (Accessed: 27 August 2024).
12. https://www.iea.org/countries/viet-nam/energy-mix (Accessed: 02 September. 2024)
13. https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions/executive-summary (Accessed: 19 July 2024).

14. https://www.imf.org/en/About/Factsheets/Sheets/2023/Standards-and-Codes-the-role-of-the-IMF (Accessed: 25 August 2024).
15. https://loadshedding.eskom.co.za/LoadShedding/Description (Accessed: 29 June 2023).
16. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/enabling-renewable-energy-with-battery-energy-storage-systems (Accessed: 25 August 2024).
17. https://pmg.org.za/committee-meeting/24550/ (Accessed: 20 August 2024).
18. https://www.resbank.co.za/en/home/publications/publication-detail-pages/quarterly-bulletins/quarterly-bulletin-publications/2023/FullQuarterlyBulletinNo307March2023 (Accessed: 05 July 2023).
19. https://www.sahistory.org.za/article/socialism (Accessed: 03 October 2024).
20. https://sanedi12ltax.org.za/#!/content/home (Accessed: 17 August 2023).
21. https://sanedi12ltax.org.za/document/60c0d25b87e85-1623249499-SANEDI-woolworths-NW22.pdf (Accessed: 19 August 2023).
22. https://www.sars.gov.za/customs-and-excise/trade-statistics/ (Accessed: 05 July 2023).
23. https://www.sars.gov.za/customs-and-excise/excise/environmental-levy-products/electricity-generation/ (Accessed 30 June 2024).
24. https://world-nuclear.org/nuclear-essentials/where-does-our-electricity-come-from.aspx (Accessed: 15 August 2023).
25. https://world-nuclear.org/nuclear-reactor-database/details/VOGTLE-4 (Accessed: 28 July 2024).
26. https://www.worldometers.info/population/ (Accessed: 04 September 2024).

Dictionaries

1. Oxford Dictionary of Law, Fifth Edition, 2001.
2. Oxford English Online Dictionary: https://www.oed.com/dictionary/grandfatherclause_n?tab=meaning_and_use#2671119 (Accessed: 24 April 2024).