A COMPARATIVE ANALYSIS OF TAX AND OTHER INCENTIVE AND DISINCENTIVE MEASURES INTRODUCED IN SOUTH AFRICA, AUSTRALIA AND CANADA, AIMED AT REDUCING GREENHOUSE GAS EMISSIONS

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ABSTRACT

The impact of greenhouse gas emissions is obvious in global warming and climate change. Governments worldwide use tax policies to prevent global warming, and tax policy is an important instrument in government's "toolbox". South Africa, as party to the Paris Agreement, is mandated to take appropriate measures to stabilise greenhouse gas concentration at a level that would prevent dangerous anthropogenic interference with the climate system. The objective of this thesis was to compare tax incentives and disincentives, as well as other measures, introduced in South Africa, Australia and Canada, aimed at combatting greenhouse gas emissions and mitigating global warming. To address the objective of the thesis, tax incentives and disincentives provided in terms of South African, Australian and Canadian tax legislation, as well as financial incentives by the public and private sector, were identified, discussed and compared.

The study was situated within the post-positivist paradigm, applied a doctrinal research methodology, comparing legislation in the three jurisdictions. The qualitative method applied involved a thematic analysis of the data.

The comparison of similarities and differences in the tax incentives provided by South Africa, Australia and Canada revealed that while South Africa has implemented a number of legislative measures aimed at reducing global warming caused by greenhouse gases, Australia and Canada provide a wider range of tax incentives that also encourage the reduction of the emission of greenhouse gases, as well as measures to promote carbon sequestration and other incentives. The comparison of tax incentives and disincentives in the three jurisdictions revealed several possible tax measures that could be introduced in South Africa, based on the tax measures implemented in Australia and Canada.

Key words: greenhouse gas emissions; global warming; carbon dioxide; tax incentives and disincentives

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CCS	Carbon capture storage
CDM	Clean Development Mechanism
CEFC	Clean Energy Finance Corporation
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CH_4	Methane
GDP	Gross domestic product
GHGs	Greenhouse gas emissions
HFCs	Hydrofluorocarbons
N_2O	Nitrous oxide
PFCs	Perfluorocarbons
SARS	South African Revenue Service
SF_6	Sulphur hexafluoride
SMEs	Small and medium enterprises
UCG	Underground coal gasification
USAID	United States Agency for International Development

CHAPTER 1: INTRODUCTION

1.1 CONTEXT OF THE STUDY

Boluk and Kaplan (2021:13) and Houghton (2001:247) explain that the concept of sustainability evolved as a result of global warming and increasing environmental degradation, which is caused by the increased concentration of carbon dioxide and other greenhouse gases in the atmosphere due to human activities, especially the burning of fossil fuel, coal, oil, and gas. According to Gopal (2020:949), when carbon dioxide and other greenhouse gases are abundant in the atmosphere, they lead to negative effects of global warming, including warmer weather conditions, which will cause more heat waves, more severe storms and droughts, and compromise human health.

The main objective of a tax system is generally to raise revenue for government functions. Equally, governments may use the tax system to promote sustainability (Joseph, 2013:1). Sustainability is defined as "a dynamic equilibrium in the process of interaction between a population and the carrying capacity of its environment such that the population develops to express its full potential without producing irreversible, adverse effects on the carrying capacity of the environment upon which it depends" (Ben-Eli, 2018:4). Schratzenstaller (2015:60) and Lozano (2008:1845) indicate that the terms "sustainability" and "sustainable development" have been developed, refined and modified over time as alternatives to help to understand, manage, and lower current and potential future economic imbalances, environmental degradation, and social injustice.

Governments worldwide use tax policies to promote sustainability and tax policy is an important instrument in government's "toolbox". Holtmann (2023:2) explains that tax incentive and punitive measures play an essential role in achieving sustainable goals for two reasons: first, to incentivise the desired behaviour and disincentivise undesired behaviour by companies and individuals; and secondly, an efficient tax policy can generate government revenue that allows the financing of necessary investments for sustainable transformation. Matkin (2007:18) defines tax incentives "as a broad term that refers to a diverse group of policy strategies that share a common logic for using the tax system as an indirect mechanism to achieve policy goals". Thus, promoting sustainability using tax policy is an integral strategy. Ernst & Young (2023:5) state that:

> Sustainability incentives can generally be divided into three categories, those that encourage a reduction in natural resource consumption, those that encourage a switch to renewable or alternative energy sources, or those that encourage innovation of new low-carbon products and manufacturing processes. Many programs are a mix of the three containing multiple elements. Tax credits, grants and loans are frequently used measures.

KPMG (2017:4) explains that countries that did not previously focus on a green tax policy, which is one of the tax incentive policies, are now increasing investments in the area, and countries worldwide have implemented measures in the form of tax incentives to promote a sustainable environment.

Each national government has the responsibility to adopt strategies that ensure sustainability, encourage safeguarding of the environment, promote economic stability, ensure social equity, and address global challenges, while fostering innovation, ethical responsibility, and the long-term well-being of the planet (Ali, *et al.*, 2023:1). The authors also submit that governments must foster a sustainable environmental mindset, encouraging their citizens to embrace greener lifestyles to promote environmental sustainability.

Reducing greenhouse gases is one strategy adopted to promote a sustainable environment. Governments worldwide use tax policies and other measures to encourage the reduction in carbon dioxide and other greenhouse gas emissions, that may in turn help to reduce global warming and environmental degradation. Measures to achieve this have been introduced in Australia and Canada. Australia revised its Safeguard Mechanism Reforms in 2023, which took effect on 1 July in the same year. This document applied from 2023-24 and required the largest emitters to reduce emissions by a certain number of tonnes a year. Ernst and Young (2023:23) point out that, in 2016, Canada adopted the Pan-Canadian Framework, which focused on pricing carbon pollution, actions to reduce emissions economy-wide, adaptation and climate resilience, clean technology, and innovation. Additionally, Ernst and Young confirm that Canada's sustainability tax incentives at both the Federal and Provincial levels have been in place for years and continue to evolve.

South Africa, Australia and Canada have been chosen for comparison purposes in this study. Australia and Canada, together with South Africa, rank amongst the top twenty largest emitters of greenhouse gas emissions per capita over the past decade (Statista, 2023). South Africa's emissions are dominated by the energy sector, which accounts for 84%, while the agriculture

and food sectors contribute 7% (Ntombela, Bohlmann & Kalaba, 2019:892). Another reason for examining Australia and Canada is that the National Treasury has previously looked to these jurisdictions' policies and treatment for guidance.

In South Africa, the government has implemented various income tax incentives for companies to promote a "greener" economy, as well as punitive taxes such as carbon taxes and other levies. Currently, South Africa has implemented a tax incentive in the form of research and development (section 11D of the Income Tax Act, No. 58 of 1962, as amended (the Income Tax Act)), which promotes innovation and could provide an incentive to develop new "green" technologies. Section 12B of the Income Tax Act provides a deduction for qualifying companies in respect of certain machinery, plant, utensils and articles used for *inter alia*, the production of renewable energy. Section 12U of the Income Tax Act provides an additional deduction in respect of roads and fences in relation to the production of renewable energy, section 12L provides for a deduction in respect of energy efficiency savings, and section 12I of the Income Tax Act provides a deduction to encourage the use of new technology in the company's manufacturing process. Section 12V of the Income Tax Act provides a deduction in respect of the production of battery electric and hydrogen produced vehicles.

The tax on carbon (Carbon Tax Act, No. 15 of 2019 (the Carbon Tax Act)) is a relatively new tax introduced in South Africa in response to climate change and is aimed at reducing greenhouse gas emissions in a sustainable, cost effective and affordable manner. Ntombela, *et al.* (2019:907) state that the carbon tax is an effective tool to mitigate greenhouse gas emissions as it leads to large emission reductions. An environmental levy on vehicle and industrial process carbon emissions is levied in terms of Schedule 1, Part 3 of the Customs and Excise Act, No. 91 of 1964 (the Customs and Excise Act), and is another tax measure aimed at promoting environmental sustainability.

The Climate Change Act, No. 22 of 2024 (the Climate Change Act), was signed into law by the President of South Africa on 23 July 2024 (Centre for Environmental Rights, 2024: Online). The Climate Change Act was implemented as a response to climate change. It provides a national legal framework across the government, provinces and municipalities to manage, monitor, and mitigate greenhouse gas emissions.

The government of South Africa has, through the Department of Forestry, Fisheries and the Environment, implemented the Green Fund in 2011 to support the transition to a low carbon

and resource efficient and climate resilient development (Department of Forestry, Fisheries and the Environment, 2024: Online). The Green Fund aims, *inter alia*, to promote innovative green programmes and projects.

KPMG (2017) notes that Canada and Australia have each introduced a range of measures to address carbon emissions and global warming including, in Canada, federal tax incentives for clean energy equipment in respect of energy generation and energy conservation projects (Income Tax Regulation, CRC, c 945), deductible expenditure relating to the development of eligible clean energy generation and energy conservative projects (section 1219 of the Income Tax Regulation), the Greenhouse Gas Pollution Pricing Act (2018), and a Clean Energy Fund. KPMG also note that in Australia an immediate deduction is provided for capital and non-capital expenditure incurred for environmental protection activities (sections 40-755 to 40-765 of subdivision 40-H of the Income Tax Assessment Act, No. 38 of 1997 (the Income Tax Assessment Act)), expenditure incurred for establishing trees in carbon sink forests and carbon sequestration by trees (section 40-1015 of subdivision 40-J of the Income Tax Assessment Act), and the Renewable Energy Demonstration Program has been created, which provides grant support for renewable energy technologies for power generation.

Over the years tax incentives promoting sustainability have clearly gained the attention of many researchers globally. As far as could be determined, a comparative analysis of all available tax incentives and punitive measures, as well as other interventions aimed at reducing greenhouse gasses and the consequent global warming in Australia, Canada and South Africa, has not been conducted, and for this reason the focus of this research is to analyse and compare these interventions. This study does not deal with tax incentives for the mining sector, as these incentives deal mainly with preventing land and water degradation.

1.2 GOALS OF THE RESEARCH

The main goal of this study is to compare tax incentives and disincentives, as well as other measures, introduced in South Africa, Australia and Canada that are aimed at combatting greenhouse gas emissions and mitigating global warming.

To address the main goal of the study, the following sub-goals apply:

- to identify and discuss tax incentives and disincentives and other measures available in South Africa that are aimed at combatting greenhouse gas emissions;
- to identify and discuss measures available in Australia and Canada that are aimed at combatting greenhouse gas emissions;
- to compare and comment on similarities and differences in tax incentives, disincentives and other measures introduced in these three countries to combat greenhouse gas emissions; and
- to recommend tax measures that could be introduced in South Africa, based on incentive and disincentive measures implemented in Australia and Canada.

1.3 METHODS, PROCEDURES AND TECHNIQUES

This research is situated within the post-positivist paradigm, which accepts that reality is not perfect, it cannot be completely comprehended, and truth is not certain, but likely and possible to estimate (Kivunja & Kuyini, 2017; De Vos, *et al*., 2011). Researchers in the post-positivist paradigm concentrate on finding and formulating reliable and valid information relating to the presence of phenomena, instead of generalisation (Maree, 2014). A doctrinal research methodology is applied in this study. McKerchar (2008:18-19) describes this research methodology as "the traditional or 'black letter law' and is typified by the systematic process of identifying, analysing, organising and synthesising statutes, judicial decisions and commentary". The author further states that the doctrinal research methodology analyses the relationships between rules, explains areas of difficulty and is based purely on documentary data. According to Punch (2013:3), qualitative research includes data in the form of words rather than numbers. The present research is based purely on the comparison, analysis, and interpretation of tax legislation, academic theses, journal and newspaper articles, and government publications, thus making this study qualitative in nature (Busetto, Wick & Gumbinger, 2020:2). Aspers and Corte (2019:139) define a qualitative method "as an iterative process in which improved understanding of the scientific community is achieved by making new significant distinctions resulting from getting closer to the phenomenon studied".

The documentary data used for this research consist of:

- legislation in the form of Income Tax Acts and Regulations in the countries included in the research;
- Interpretation Notes, notices, government publications and similar pronouncements issued by the Revenue Services in the countries included in the research; and

- textbooks, academic theses, journal and newspaper articles.

The present research is conducted in the form of an extended natural language argument supported by documentary evidence. The validity, reliability and conclusions of this research are promoted by:

- adhering to the rules of interpretation of statute and common law;
- placing greater evidential weight on legislation and the writing of the experts in the field; and
- concluding based on facts and evidence.

As all the data used for this study are publicly available, no application for ethical approval was required using the ERAS system of Rhodes University. An application for ethical approval was, however, submitted to the Department of Accounting Ethics Committee, and approval was granted. Where the work of others has been referred to or quoted, this has been acknowledged by complete and accurate references.

1.4 OVERVIEW OF THE CHAPTERS

This study consists of six chapters. Chapter 1 provides the background of the study and includes a description of the importance of using tax policies by governments nationwide to promote sustainability. Additionally, chapter 1 provides a brief explanation of tax incentives and disincentives implemented in South Africa, Australia and Canada aimed at reducing greenhouse gas emissions. The chapter outlines the problem statement, primary and secondary objectives of the study that will be achieved throughout the study. Finally, the chapter describes the research methodology adopted for the study.

Chapter 2 consists of a literature review, which provides an understanding of greenhouse gas emissions, climate change and global warming, and strategies in place and policies implemented by the Governments to combat greenhouse gas emissions.

Chapter 3 discusses income tax incentives, tax disincentive measures, and financial incentives implemented in South Africa to address the problem of greenhouse gas emissions. Chapter 4 discusses income tax incentives, tax disincentive measures, and financial incentives implemented in Australia and Canada to mitigate greenhouse gas emissions.

Chapter 5 provides a comparative analysis of tax incentives, disincentives and other measures introduced in these three countries to combat greenhouse gas emissions.

Chapter 6 provides a conclusion, discussing the findings of the research, and recommending tax measures that could be introduced in South Africa based on incentive and disincentive measures implemented in Australia and Canada.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Snyder (2019:1) states that "a literature review is an excellent way of synthesizing research findings to show evidence on a meta-level and to uncover areas in which more research is needed …". Snyder further explains that a literature review can help to provide an outline of areas in which the research is diverse and versatile. Similarly, Lewis, Saunders and Thornhill (2007:57) state that "reviewing the literature critically will provide the foundation on which your research is built". Lewis *et al*. further state that "…. its main purpose is to help you to develop a good understanding and insight into relevant previous research and the trends that have emerged".

The present chapter reviews current literature on the topic of this research. It begins by discussing greenhouse gas emissions, its contributors, and its impact. In addition, this chapter discusses commitments made and targets set by South Africa, Australia and Canada to reduce greenhouse gas emissions to net-zero by 2050.

The main goal of this research is to compare tax incentives and disincentives, as well as other measures, introduced in South Africa, Australia and Canada that are aimed at combatting greenhouse gas emissions and mitigating global warming. Reviewing the literature on these three countries will help to identify tax incentives and disincentives, as well as other measures, implemented by each country aimed at combatting greenhouse gas emissions, to aid the discussion in the chapters that follow.

2.2 GREENHOUSE GAS EMISSIONS

Greenhouse gas is defined in Part 1 of the Carbon Tax Act and in Chapter 1 of the National Environmental Management: Air Quality Act, No. 39 of 2004 (the Air Quality Act) and means "gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation, and includes carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6)". Emissions are defined in Part 1 of the Carbon tax Act, as:

(a) The release of greenhouse gases or their precursors, or

(b) The release of greenhouse gases and their precursors, into the atmosphere, over a specified area and period of time.

Similarly, the Air Quality Act defines emissions in Chapter 1 as "any emission or entrainment process emanating from a point, non-point or mobile source that results in air pollution."

The most serious contributor to greenhouse gas emissions is carbon dioxide emissions from fuel combustion, industrial processes, and fugitive emissions, with fuel combustion being the major contributor of the three (Kone & Buke, 2010; Walker & Swift, 2015). The words "combustion", "industrial processes" and "fugitive emissions" are defined in Part 1 of the Carbon Tax Act. Combustion means "the exothermic reaction of a fuel with oxygen." Industrial processes mean "a manufacturing process that chemically or physically transforms materials." Fugitive emissions mean "emissions that are released into the atmosphere by any other means than through an intentional release through stack or vent including extractions, processing, delivery and burning for energy production of fossil fuels, including leaks from industrial plant and pipelines."

The United States Environmental Protection Agency (2024a: Online) states that, according to the Intergovernmental Panel on Climate Change Report (2007), carbon dioxide, methane (CH_4) and nitrous oxide (N_2O) are the main anthropogenic (human-induced) greenhouse gases. Carbon dioxide is emitted into the atmosphere during the burning of coal, natural gas, and oil, solid waste, trees and other biological materials, and also as a result of certain chemical reactions through cement production. The United States Environmental Protection Agency explains that methane (CH_4) is emitted into the atmosphere during the production and transportation of coal, natural gas, and oil, and as a result of livestock and other agricultural practices, land use, and by the decay of organic waste in municipal solid waste landfills, that nitrous oxide (N_2O) is emitted during agricultural land use and industrial activities, combustion of fossil fuels and solid waste, as well as during treatment of wastewater, and that carbon dioxide is sequestrated (removed) from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

2.3 IMPACT OF GREENHOUSE GAS EMISSIONS

The impact of greenhouse gas emissions is obvious in global warming and climate change.

2.3.1 Global warming

LiveScience (2021: Online) states that "behind the phenomena of global warming and climate change lies the increase in greenhouse gases in our atmosphere". Heshmati (2020:2) states that:

> Climate change and global warming are often used interchangeably but have distinct meanings and refer to different physical phenomena. Climate change includes warming and side effects of warming (e.g., heavy precipitation and increased wind speeds) while global warming refers only to long-term Earth's rising global mean surface temperature.

Global warming is defined as "the long-term trend of increasing average global temperatures" (Lineman *et al.*, 2015:3). According to the Intergovernmental Panel on Climate Change (2018:18), it is estimated that human activities have caused approximately 1.0℃ of global warming above pre-industrial levels and is likely to reach 1.5℃ between 2030 and 2050 if no measures are taken to mitigate it. Global warming, if it remains unmitigated, may lead to considerable climate changes, which will have adverse effects on human health, biodiversity and ecosystems (Houghton, 2001:247; Pielke, 2004:515; Heshmati, 2020:16).

These human-induced greenhouse gases contribute to increases in temperature, which in turn lead to global warming and climate change (Aizebeokhai, 2009:868). Canada's National Report on Climate Change (1994:v) states that "there is general agreement in the international scientific community that increasing the atmospheric concentration of greenhouse gases emissions will result in global warming." The degree to which greenhouse gases may influence global warming depends on the following factors: its abundance in the atmosphere, the amount of time it stays in the atmosphere, and its global warming potential, which is how strongly the greenhouse gases may impact the atmosphere (United States Environmental Protection Agency, 2024b:Online; LiveScience, 2021:Online). According to National Aeronautics and Space Administration (2019:Online), when carbon dioxide has entered the atmosphere and humans continue to emit it, the emissions remain for about 300 to 1,000 years and become abundant. Methane lasts for only 9 to 15 years in the atmosphere (Intergovernmental Panel on Climate Change: Second Assessment Report, 1995:11). The World Bank Group (2024:Online) explains that nitrous oxide has an atmospheric lifetime of 114 years, and that the "Global warming potential of nitrous oxide per kilogram is nearly 310 times that of carbon dioxide within 100 years". LiveScience (2021:Online) confirms that scientists consider carbon dioxide to be the dominant greenhouse gas because its warming potential outlives those of methane and nitrous

oxide. Walker and Swift (2015) explain that although methane and nitrous oxide have significant global warming potential compared with carbon dioxide, the abundance of carbon dioxide emitted into atmosphere and its long period of stay in the atmosphere, makes it the more dominant greenhouse gas. The Intergovernmental Panel on Climate Change Report (2007:5) confirms that, since pre-industrial times, global greenhouse gas emissions have grown exponentially, with an increase of 70 percent between 1970 and 2004 resulting from the increase in industrial and agricultural activities.

2.3.2 Climate change

"Climate change is a serious global problem that requires both a concerted international response and national efforts to reduce greenhouse gas emissions" (National Treasury, 2010:3). The United Nations Framework Convention on Climate Change (1992:7) defines climate change "as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods". Similarly, Lineman *et al*. (2015:3) define climate change "as a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed to the increased levels of atmospheric carbon dioxide arising from the use of fossil fuels."

Heshmati (2020:2) states that climate change is not something new, but its rapid rate of change and its resulting significance occurring now are of great concern, and therefore mitigating the causes is urgently needed. Pielke (2004:515) states that "climate change is real, and actions are needed to improve energy policies and to reduce the vulnerability of humans and ecosystems to climate effects". Climate change is real, and South Africa is especially vulnerable to its adverse effects (National Climate Change Response Policy White Paper, 2014:5). "Adverse effects of climate change" means changes in the physical environment or biota resulting from climate change, which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems, or on the operation of socio-economic systems, or on human health and welfare (United Nations Framework Convention on Climate Change, 1992:7).

2.4 THE PARIS AGREEMENT

The Paris Agreement, adopted on 12 December 2015 under the United Nations Framework Convention on Climate Change, is a legally binding international treaty aimed at addressing climate change and its negative impacts. Its central goal is to limit the global temperature rise to well below 2°C above pre-industrial levels, while pursuing efforts to limit the increase to 1.5°C. The Paris Agreement, entered into force on 4 November 2016, has global participation. It represents a collective commitment by nations to combat climate change through cooperative action, flexible national strategies, and a shared framework for accountability and ambition.

The key elements of the Paris Agreement include the following:

- Nationally Determined Contributions: Each party must prepare, communicate, and maintain successive climate action plans, outlining the targets for reducing greenhouse gas emissions.
- Global Stocktake: Every five years, each party must collectively assess progress toward meeting the Paris Agreement's long-term goals.
- Transparency Framework: Each party must have a system to ensure accountability, requiring parties to regularly report on emissions and progress toward their target.
- Adaptation and Resilience: Recognition of the need to strengthen adaptive capacity, reduce vulnerability, and enhance resilience to climate impacts.
- Finance and Support: Developed country parties are expected to provide financial resources to assist developing country parties in the mitigation and adaptation efforts.
- Long-term goals: Achieve a balance between greenhouse gas emissions and removals by the second half of the century

2.5 COMMITMENT TO REDUCING GREENHOUSE GASES

This section discusses the commitments by the South African, Australian and Canadian governments to reducing greenhouse gases.

2.5.1 South Africa

South Africa, Australia and Canada, as parties to the Paris Agreement, are mandated in terms of Article 2 of the United Nations Framework Convention on Climate Change (1992:9) to take appropriate measures to stabilise greenhouse gas concentration in the atmosphere at a level that

would prevent dangerous anthropogenic interference with the climate system. The South African National Treasury (2010:11) states that "South Africa announced willingness to undertake nationally appropriate mitigation actions to deviate from business-as-usual GHG [greenhouse gas] emissions by 34 per cent by 2020 and by 42 per cent by 2025." National Treasury, however, warns that the country's announcement was conditional upon the availability of adequate, predictable levels of funding by developed countries to support the action, technology transfer and capacity building.

According to the Department of Forestry, Fisheries and the Environment (2020:58), South Africa is committed to reducing the country's net greenhouse gas emissions to net-zero by 2050. To achieve this, the government of South Africa has implemented policies and measures. The Department of Forestry, Fisheries and the Environments (2023:3) states that "…South Africa has been implementing key policies and measures including the Integrated Energy Plan, Integrated Resource Plan, National Energy Efficiency Strategy, Green Transport Strategy, Waste Management Strategy, the National Forests Act, and the Carbon tax Act." Additionally, various tax incentives with the potential to contribute to emission reduction in the industrial sector legislated in the Income Tax Act of South Africa have been implemented (Department of Forestry, Fisheries and the Environment, 2020:35). In 2024, the Government of South Africa implemented the Climate Change Act, No. 22 of 2024 (the Climate Change Act) promulgated in the *Government Gazette* on 23 July 2024 "to enable the development of an effective climate change response and a long-term just transition to a low-carbon and climate-resilient economy and society for South Africa in the context of sustainable development, and to provide matters connected therewith". Additionally, the Climate Change Act develops a legal and institutional framework that aims to reduce greenhouse gas emissions while adapting to the impact of climate change. The Green Hydrogen Commercialisation Strategy was approved by the Cabinet through the Department of Trade, Industry and Competition in November 2022 for release to the public for comments, and it has been updated with input from the public (Department of Trade, Industry and Competition, 2023:103).

2.5.2 Australia

"Only global action can reduce greenhouse gas emissions to a level that significantly reduces the risks of dangerous climate change" (Australia's Low Pollution Future, 2008:2). According to the Australia's Low Pollution Future (2008:18), the Government of Australia has identified

climate change response as one of its highest priorities, and therefore the climate change policy is built on three pillars:

- Reducing Australia's greenhouse gas emissions;
- Adapting to climate change that cannot be avoided; and
- Helping to shape a global solution.

The Australian Minister of Finance stated in the Net Zero Government Operations Strategy Report (2023:3) that:

> In June 2022, the Australian Government committed to the United Nations and the Australian community to increase action on climate change in a way that is ambitious and can be responsibly achieved. The Net Zero in Government Operations Strategy is an important step forward and represents significant action to give effect to our election commitment to achieve net zero in the Australian Public Service by 2030.

Net Zero "broadly refers to reducing greenhouse gas emissions through a combination of energy efficiency, renewable energy and other measures, and usage of offsets" (Net Zero, in Government Operations Strategy Report, 2023:6).

The Australian government has implemented the Climate Change Act No. 37 of 2022 (the Australian Climate Change Act), which "set[s] out Australia's greenhouse gas emissions reduction targets, to provide for annual climate change statements, to confer advisory functions on the Climate Change Authority, and related purposes" (section 1 of Part 1 of the Australian Climate Change Act). Section 10 of Part 2 of the Australian Climate Change Act states that:

> (1) Australia's greenhouse gas emissions reduction targets are as follows:
>
> (a) reducing Australia's net greenhouse gas emissions to 43% below 2005 levels by 2030:
>
> (i) implemented as a point target; and
>
> (ii) implemented as an emissions budget covering the period 2021 – 2030;
>
> (b) reducing Australia's net greenhouse gas emissions to zero by 2050.

According to the Climate Change Authority (2023:5), the Australian government intends to meet the estimated target mostly from its 82 per cent renewable energy target and the reformed Safeguard Mechanism.

2.5.3 Canada

Canada made it clear by signing and ratifying the United Nations Framework Convention on Climate Change that it will take necessary steps to reduce its greenhouse gas emissions (Canada's National Report on Climate Change, 1994:7). According to Environment and Climate Change Canada (2021:2) the country initially committed to reduce its greenhouse gas emissions by 30 per cent below 2005 levels by 2030. However, in 2021 the Government of Canada committed to reducing greenhouse gas emissions to 40 - 45 per cent below the 2005 level by 2030 (Canadian Net-Zero Emissions Accountability Act 2030 Emissions Reduction Plan, 2023:1). Section 6 of the Canadian Net-Zero Emissions Accountability Act (S.C. 2021, c. 22) states that "the national greenhouse gas emissions target for 2050 is net-zero emissions". Net-zero emissions are defined in section 2 of the Canadian Net-Zero Emissions Accountability Act and means "that the anthropogenic emissions of greenhouse gases into the atmosphere are balanced by anthropogenic removals of greenhouse gases from the atmosphere over a specified period".

2.6 CONCLUSION

Countries around the world are vulnerable to the global warming and climate change effects of human-induced greenhouse gases emitted in the atmosphere. Carbon dioxide, methane and nitrous oxide are the main anthropogenic greenhouse gas emissions. Each country is required to take action to reduce its greenhouse gas emissions. South Africa, Australia and Canada are among the countries that signed the Paris Agreement, committing to reduce their greenhouse gases.

These three countries have different sets of targets and measures in place, aiming to reduce greenhouse gases. South Africa undertook to reduce its emissions by 34 per cent by 2020 and by 42 per cent by 2025 below 2005 levels. Australia undertook to reduce its emissions by 43 per cent below 2005 by 2030. Canada is committed to reduce its greenhouse gas emissions by 40-45 per cent below 2005 levels by 2030. All three countries are committed to net-zero emissions by 2050. Measures in place differ according to each country's capacity and the category of emissions (carbon dioxide, methane and nitrous oxide).

Literature on the three countries was reviewed to understand the meaning of greenhouse gas emissions, global warming, and climate change, as well as each country's greenhouse gas emissions reduction target, and plans to meet the targets.

The next chapter identifies and discusses tax incentives and disincentives, and other measures implemented in South Africa aimed at combating greenhouse gas emissions.

CHAPTER 3: TAX AND OTHER MEASURES AIMED AT COMBATING GREENHOUSE GASES IN SOUTH AFRICA

3.1 INTRODUCTION

The first sub-goal of the research is to identify and discuss tax incentives and disincentives and other measures available in South Africa aimed at combatting greenhouse gas emissions. This chapter addresses this sub-goal by discussing tax incentives and disincentives and other measures available in South Africa to address the problem of global warming and climate change. The chapter starts by discussing different types of tax incentives available to taxpayers carrying on a trade in the Republic, designed to encourage the production of electricity from renewable energy, to promote the use of new technology aimed at improved energy efficiency and cleaner production technology, and the use of innovative processes. This is followed by a discussion of tax disincentive measures that discourage the use of non-renewable energy resources, and finally the financial incentives provided by the public and private sector.

3.2 TAX INCENTIVES

This section discusses tax incentives implemented by the South African government.

3.2.1 Types of incentives in South Africa

To encourage the switch from using non-renewable electricity generation to renewable electricity generation, innovations and a clean environment, South Africa has the following measures available in the form of tax incentives for taxpayers operating a trade in the country.

3.2.1.1 Section 12B: deduction for the production of renewable energy

"The government is committed to promoting clean, renewable energy sources through implementing special tariffs (feed-in tariffs) for renewable electricity generation through a competitive bidding process" (National Treasury, 2013a:17). The Intergovernmental Panel on Climate Change Special Report (2011:178) defines renewable energy as:

> any form of energy from solar, geophysical or biological sources that is replenished by natural process at a rate that equals or exceeds its rate of use. Renewable energy is obtained

> from the continuing or repetitive flows of energy occurring in the natural environment and includes resources such a biomass, solar energy, geothermal heat, hydropower, tide and waves and ocean thermal energy, and wind energy.

Similarly, Twidell (2022:3) defines renewable energy as "energy obtained from naturally repetitive and persistent flows of energy occurring in the local environment." Thus, wind, solar and other renewable energy sources are continuously and naturally available in the environment.

Guney (2019:389) and Amin *et al*. (2022:33113) argue that the use of renewable energy, rather than non-renewable energy sources, is crucial to promoting a safe and clean environment and must be encouraged. In this regard, section 12B(1)(h) of the Income Tax Act provides a deduction in respect of the cost of machinery, plant, implement, utensil or article owned by the taxpayer or acquired by the taxpayer as purchaser in terms of an instalment credit agreement and brought into use for the first time for the purpose of trade in the generation of electricity from:

(i) wind power;
(ii) (aa) photovoltaic solar energy of more than 1 megawatt;
(bb) photovoltaic solar energy not exceeding 1 megawatt; or
(cc) concentrated solar energy;
(iii) hydropower to produce electricity of not more than 30 megawatts; or
(iv) biomass comprising organic wastes, landfill gas or plant material

Any foundation or supporting structure on which the machinery, plant, implement, utensil or article is mounted or affixed is deemed to be part of that machinery, plant, implement, utensil or article, and the useful life of the foundation or supporting structure is limited to the useful life of the machinery, plant, implement, utensil or article (section 12B(1)).

In terms of section 12B(1)(i) of the Income Tax Act, where taxpayers incur expenditure for the improvement (other than repairs) to any machinery, plant, implement, utensil or article referred to in section 12B(1)(h), including any foundation or supporting structure that is deemed to be part of the machinery, plant, implement, utensil or article, this expenditure can be deducted in terms of this section. In terms of section 12B(2)(a)(i), (ii) and (iii) taxpayers calculate and claim the deduction of an amount equal to 50 per cent on the cost of the equipment in the first year the equipment is brought into use, 30 per cent in the second year and 20 per cent in the third

year, for equipment used in the generation of renewable energy from photovoltaic solar energy not exceeding one megawatt. In the case of the equipment used in the generation of renewable energy from photovoltaic solar energy exceeding one megawatt, taxpayers claim a deduction equal to 100 per cent of the cost incurred (section 12B(2)(b)).

3.2.1.2 Section 12BA: enhanced deduction for the production of renewable energy

Section 12B of the Income Tax Act was expanded temporarily by the introduction of section 12BA, with the aim of accelerating private investment to alleviate South Africa's energy crisis (Tax Chronicles Monthly – Issue 67, 2024a:5). National Treasury (2023:6) stated that:

> Given the country's continued struggle to produce reliable electricity through the national grid, Government is proposing to enhance the attractiveness of the tax incentive to encourage greater private investment in renewable energy. To encourage rapid private investment to alleviate this energy crisis, in the 2023 Budget Review, Government proposed to temporarily enhance the current renewable energy tax incentive available in section 12B of the Act.

Section 12BA, which expanded on section 12B, was introduced by section 16 of the Taxation Laws Amendment Act, No. 17 of 2023 (the Taxation Laws Amendment Act) promulgated in the *Government Gazette* on 22 December 2023. This tax incentive was available for a period of two years beginning from 1 March 2023 to 1 March 2025 (section 12BA(1)).

Section 12BA(1) of the Income Tax Act provided for a deduction in respect of any new and unused machinery, plant, implement, utensil and article, including the foundation or supporting structure, owned by the taxpayer or acquired by the taxpayer as the purchaser in terms of an instalment credit agreement and which was brought into use for the first time by the taxpayer for the purpose of the taxpayer's trade on or after 1 March 2023 and before 1 March 2025, to be used by the taxpayer or the lessee of the taxpayer, in the generation of electricity in the Republic from:

(a) wind power;
(b) photovoltaic solar energy;
(c) concentrated solar energy;
(d) hydropower to produce electricity; or biomass comprising organic wastes, landfill gas or plant material

Section 12BA(2) explained that the deduction contemplated in subsection 12BA(1) is equal to an amount of 125 per cent of the cost incurred by the taxpayer for the acquisition of the asset. The cost of an asset acquired by the taxpayer is the lesser of the actual cost incurred or the direct cost under a cash transaction concluded at an arm's length on the date on which the purchase transaction was concluded, including the direct cost of installation or erection of the asset as well as the cost of a foundation or supporting structure (section 12BA(3)).

Tax Chronicles Monthly (Issue 67, 2024a:5) documents the following important differences between assets that qualify for section 12BA and those that qualified for section 12B:

- Unlike section 12B, there is no restriction on the generation capacity under the enhanced incentive.
- The incentive only applies to assets used in the generation of electricity in South Africa.
- The taxpayer must bring the assets into use for the first time for purposes of its trade. The assets must be used by the taxpayer or the taxpayer's lessee in the generation of electricity. (If the taxpayer lets the asset, its deductions, as the lessor, could be limited in terms of section 23A of the Act.)

The machinery, plant, implement, utensil, and article had to be new or unused (section 12BA(1)). In terms of section 12BA(1), read together with section 23A(2) of the Income Tax Act, if the affected assets were used by the lessee of the taxpayer in the production of renewable energy, the taxpayer was allowed to deduct an amount not exceeding the taxable income (as determined before making the deduction) derived by the taxpayer during the year from rental income.

3.2.1.3 Section 12U: additional deduction in respect of the production of renewable energy

Section 12U of the Income Tax Act provides an additional deduction for expenditure actually incurred during the year of assessment in respect of roads and fences used for the purpose of the trade of the person in the generation of renewable energy. In terms of section 12U(1)(*a*) and (*b*), a person is granted a deduction for any amount actually incurred in respect of the construction and improvement (other than repairs) of these roads or the erection of these fences, including the foundation or supporting structure designed for a fence, for the purpose of the trade of that person for electricity generation exceeding 5 megawatts from:

(i) wind power;
(ii) solar energy;
(iii) hydropower to produce electricity of not more than 30 megawatts; or
(iv) biomass comprising organic wastes, landfill gas or plant material.

Section 12U(3) states that a person contemplated under subsection 12U(1) will be allowed to claim as a deduction any expenditure:

(a) actually incurred by that person prior to the commencement of and in preparation for carrying on that trade;
(b) which would have been allowed as a deduction in terms of section 12U(1) had that expenditure been incurred after that person commenced carrying on trade; and
(c) which was not allowed as a deduction in any previous year of assessment.

3.2.1.4 Section 12L: deduction in respect of energy efficiency savings

In the Energy Efficiency Strategy of the Republic of South Africa (2005:5) it is stated that:

> Energy efficiency is one of the most cost-effective methods of reducing greenhouse gas emission, and thereby combating climate change. Addressing climate change opens the door to utilising novel financing mechanisms, such as the clean development mechanism (CDM), to reduce carbon dioxide emissions.

Regulations issued by National Treasury (2013b:5) in terms of section 12L define the term "energy efficiency savings" as:

> The difference between the actual amount of energy used in the carrying out of an activity or trade, in a specific period and the amount of energy that would have been used in the carrying out of the same activity or trade during the same period under the same conditions if the energy savings measure was not implemented.

The International Energy Agency (2024: Online) states that:

> Energy efficiency is called the "first fuel" in clean energy transition, as it provides some of the quickest and most cost-effective carbon dioxide mitigation options while lowering energy bills and strengthening energy security. Together, efficiency, electrification,

> behavioural change and digitalisation shape global energy intensity – the amount of energy required to produce a unit of gross domestic product (GDP), a key measure of energy efficiency of the economy.

Section 12L of the Income Tax Act was first introduced in 2013. Stiglingh *et al*. (2024:482) state that section 12L "was introduced to give taxpayers a tax benefit or notional allowance for energy efficiency savings." The authors further state that the "notional allowance seeks to stimulate investment in the conversion by taxpayers of old technologies to new ones to address the challenges of climate change and improved energy usage." In this regard, section 12L(1) provides for a deduction from the income of a person of an amount in respect of energy efficiency savings by that person in respect of that year of assessment. A deduction for energy efficiency savings is granted to any person carrying on any trade in respect of any year of assessment ending before 1 January 2026 (section 12L(1)). In terms of section 12L(2) the amount of the deduction contemplated in subsection 12U(1) must be calculated at 95 cents per kilowatt hour or kilowatt hour equivalent of energy efficiency savings.

According to the regulations issued by the National Treasury (2013b:6), a person claiming the deduction in terms of section 12L must, in respect of each year of assessment in which the allowance is claimed –

(a) register with South African National Energy Development Institute in the form of and manner and at the place that the South African National Energy Development Institute determine;
(b) appoint a measurement and verification professional to compile a report containing a computation of the energy efficiency savings in respect of that person for that year of assessment;
(c) submit the report to the South African National Energy Development Institute; and
(d) obtain a certificate from South African National Energy Development Institute.

The current sunset clause for section 12L is 31 December 2025.

3.2.1.5 Section 12I: additional deduction for investment in respect of industrial policy projects

Section 12I of the Income Tax Act states that:

(10) The Minister of Finance, in consultation with the Minister of Trade and Industry, must make regulations prescribing–

(g) the extent to which the project must improve energy efficiency and the factors to be taken into account in determining the extent to which the project must utilise new technology that results in improved energy efficiency and cleaner production technology.

Stiglingh *et al.* (2024:482) explain that "section 12I provides an incentive to assist the transformation of current production processes and methods to attain cost reductions and greater efficiency in the use of resources." Section 12I of the Income Tax Act supports capital investment in greenfield projects, which utilise innovative processes and new technology that result in improved energy efficiency and cleaner production technology, as well as capital investment in brownfield projects, which expand or upgrade the existing industrial project. Section 12I(2) of the Income Tax Act provides for the deduction of an additional investment allowance in respect of the cost of new or unused manufacturing assets used in an industrial policy project. In terms of section 12I(1) of the Income Tax Act, "manufacturing asset" means any building, plant or machinery acquired, contracted for or brought into use by a company, which –

(a) will mainly be used by that company in the Republic for the purposes of carrying on an industrial project of that company within the Republic; and
(b) will qualify for a deduction in terms of section 12C(1)(a), 13 or 13*quat*,

and includes any improvement to such building, plant or machinery.

In terms of section 12I(2) of the Income Tax Act, taxpayers are entitled to deduct an additional investment allowance equal to 55 per cent of the cost of manufacturing assets, which in terms of section 12I(3)(a) of the Income Tax Act may not exceed R900 million in the case of greenfield projects with preferred status, or 100 per cent if the project is located in a special economic zone. The additional investment allowance is reduced to 35 per cent of the cost of manufacturing assets and may not exceed R550 million in the case of any other greenfield project. If the project is located in a special economic zone, the investment allowance rate is 75 per cent. In the case of a brownfield project with a preferred status, the investment allowance is equal to 55 per cent of the cost of manufacturing assets and may not exceed R550 million or 35 per cent of the cost of manufacturing assets and may not exceed R350 million in the case of any other brownfield project.

According to the South African Revenue Service (SARS) (2021:9), there is no limit to the number of manufacturing assets on which the taxpayer may claim an additional allowance, and section 12I does not specify that all the manufacturing assets must be on the same premises. The main requirement is that the manufacturing assets are new and unused.

The taxpayer must own the manufacturing asset to be eligible to claim the additional investment allowance (SARS, 2021:10). In terms of section 12I(1A), if a taxpayer completes an improvement as contemplated in section 12N of the Income Tax Act (improvements on property not owned by the taxpayer), the improvement will be deemed to be a new and unused manufacturing asset and the expenditure incurred by the taxpayer to complete the improvement will be deemed to be the cost of that new and unused manufacturing asset. Similarly, section 12I(1B) deems the improvement completed by the taxpayer on the land not owned by the taxpayer, to be owned by the taxpayer.

In terms of section 12I(2), the manufacturing asset must be acquired and contracted for on or after the date of approval by the Minister of Trade and Industry and brought into use within four years from the date of approval. Accordingly, if the manufacturing asset was acquired and contracted for before the date of approval, the taxpayer will not qualify for an additional investment allowance (SARS, 2021:10).

In terms of section 12I(7)(a) of the Income Tax Act, an industrial project constitutes an industrial policy project if the Minister of Trade and Industry is satisfied that the cost of all manufacturing assets to be acquired by the taxpayer for the purposes of the project will exceed R50 million in the case of any greenfield projects, and the higher of R30 million, or the lesser of R50 million, or 25 per cent of the expenditure incurred to acquire assets previously used in the project.

In terms of section 12I(7)(d) of the Income Tax Act, the application for approval of the project by the company must have been received by the Minister of Trade and Industry before or on 31 December 2020. However, section 12I(18)(aA) of the Income Tax Act does provide for COVID-19 pandemic-related exceptions.

3.2.1.6 Section 11D: deduction in respect of scientific or technological research and development

The Department of Energy (2016:21) states that:

> Research and development should focus on innovative solutions and in particular on solar energy, as this has the greatest potential to address electricity challenges for small-scale energy consumers in a fairly short timeframe. Solar energy also has the potential to address the need for energy access in remote areas; create semi-skilled jobs; and increase localisation. More funding should be targeted at long-term research focus areas in clean coal technologies such as carbon capture storage (CCS) and underground coal gasification (UCG) as these will be essential in ensuring that South Africa continues to exploit its indigenous minerals responsibly and sustainably.

According to the Department of Energy (2016:19) solar technologies should be promoted as they present opportunities to diversify the electricity mix. For this reason, taxpayers who conduct research on solar energy may claim a deduction of expenditure incurred in conducting the research. The research and development tax incentive is provided for in section 11D of the Income Tax Act and is currently based on a pre-approval system (Tax Chronicles Monthly: Issue 71, June 2024b:12). According to Tax Chronicles Monthly, taxpayers intending to conduct research and development activities in South Africa must apply for pre-approval to the Department of Science and Innovation indicating that their intended activities will fall within the definition of "scientific or technological research and development" as defined in section 11D(1) of the Income Tax Act.

For the purposes of section 11D(1) of the Income Tax Act "scientific or technological research and development" means:

> systematic investigative or systematic experimental activities aimed at resolving scientific or technological uncertainty and the resolution of which is not readily deducible by a person skilled in the relevant scientific or technological field for the purpose of–
>
> (a) discovering new scientific or technological knowledge;
> (b) creating or developing new or significantly improved products, processes or services;
> (c) ……
> (d) creating or developing a multisource pharmaceutical product, as defined in the World Health Organisation Technical Report Series, No. 937, 2006 Annex 7 Multisource

(generic) pharmaceutical products: guidelines on registration requirements to establish interchangeability issued by the World Health Organisation, conforming to Regulation 344 of 23 April 2015 and any requirements as must be prescribed by regulations made by the Minister after consultation with the Minister of Higher Education Science and Innovation; or

(e) conducting a clinical trial as defined in Appendix F of the Guidelines for good practice in the conduct of clinical trials with human participants in South Africa issued by the Department of Health (2006), conforming to Regulation 346 of 23 April 2015 and any requirements as must be prescribed by regulations made by the Minister after consultation with the Minister of Higher Education, Science and Innovation.

In terms of section 11D(2)(*a*), taxpayers are entitled to deduct from income an amount equal to 150 per cent of so much of any expenditure actually incurred by that taxpayer directly and solely in respect of carrying on of scientific or technological research and development in the Republic if –

(i) that expenditure is incurred in the production of income;
(ii) that expenditure is incurred in the carrying on of any trade;
(iii) that scientific or technological research and development is approved in terms of subsection (9); and
(iv) that expenditure is incurred within six months prior to or on or after the date of receipt of the application by the Department of Science and Innovation for approval of that scientific or technological research and development in terms of subsection (9).

Tax Chronicles Monthly (Issue 71, June 2024b:12), explains that:

> Research and development is crucial for the sustainability of the automotive industry in the evolving technological space of electric vehicles. Deepening South Africa's participation in the value chain will require technology adoption, adaption and innovation. All these processes require ongoing investment in research and development.

Therefore, expenditure incurred on research conducted on electric vehicles may be claimed by the taxpayers as a deduction in terms of section 11D of the Income Tax Act.

In terms of section 11D(22) of the Income Tax Act, no deduction will be granted in respect of applications received after 31 December 2033.

3.2.1.7 Section 12V: deduction in respect of the production of battery electric and hydrogen produced vehicles

The Department of Trade, Industry and Competition (2023:88) states that:

> Green hydrogen has been recognised as an alternative fuel for the mobility sector in the EU. In South Africa, hydrogen powered vehicles, in particular buses and heavy-duty vehicles, might play a significant role in climate change mitigation within the transport sector and the development of the green hydrogen economy.

In October 2023, the South African Cabinet approved the Green Hydrogen Commercialisation Strategy (Department of Trade, Industry and Competition, 2023:103). According to the Department of Trade, Industry and Competition (2023:10-11), the Green Hydrogen Commercialisation Strategy highlights the following potential for significant growth for South Africa:

- The production and domestic use of green hydrogen to decarbonise South Africa's economy, with a specific focus on the hard-to-decarbonise value chain;
- The production and export of green hydrogen and beneficiated products into future global green energy trading markets;
- South Africa already has key capabilities and advantages in green hydrogen;
- Supporting the Just Energy Transition; and
- The development of industrial capabilities in the entire value chain, including in the manufacturing and supply of equipment used in the green hydrogen value chains.

The Department of Trade, Industry and Competition (2023:9) defines green hydrogen as "hydrogen that is produced through the electrolysis of water which requires an electricity input that is generated from renewable sources, where the full life-cycle greenhouse gas emissions of the production of renewable hydrogen are negligible". According to the Department of Trade, Industry and Competition (2023:86), the Green Hydrogen Commercial Strategy 2023 acknowledges that the costs to produce green hydrogen are high and "could be lowered by reducing the taxes and fees within the green hydrogen value chain". The Department of Trade, Industry and Competition (2023:86) explains that "the introduction of clean energy tax incentives has historically been provided for in section 12 of the Income Tax Act and has resulted in increased renewable energy uptake and numerous energy efficiency measures". For

this reason, the Department of Trade, Industry and Competition (2023:86-87) recommends that section 12B(1)(h) be amended to include machinery, plant, implements, utensils or articles used in the production of green hydrogen, the extension of sections 11D and 11A to include green hydrogen research and development, that provisions in section 12C(1)(gA) could be applied to existing machinery to be retrofitted for green hydrogen storage, that provisions in section 13(1)(b) could apply to buildings that would be needed as part of research and development for green hydrogen projects, and that section 12I could be amended to include green hydrogen projects as Industrial policy projects in order to receive the additional investment and training allowances.

According to the National Treasury (2024:10), the Income Tax Act has been amended through the Taxation Laws Amendment Act, No. 42 of 2024, to include section 12V. Section 12V(1) of the Income Tax Act provides taxpayers who are motor vehicle manufacturers with a deduction in respect of the cost of any building, new and unused machinery, plant, implement, utensil or article, or improvement to such building, machinery, plant, implement, utensil or article, including the foundation or supporting structure of such machinery, plant, implement, utensil or article, acquired or owned by the taxpayer and used mainly in the production of battery electric or hydrogen-powered vehicles in the Republic (National Treasury, 2024:10). Taxpayers are granted a deduction equal to 150 per cent of the cost of the building, machinery, plant, implement, utensil or article, including the cost of improvements, a foundation or supporting structure, brought into use on or after 1 March 2026 and before 1 March 2036 (National Treasury, 2024:10). National Treasury (2024:3) defines a hydrogen-powered vehicle "as any vehicle powered by hydrogen fuel cells" and battery electric vehicle as "any fully electric vehicle powered by rechargeable batteries". According to the Department of Trade, Industry and Competition (2023:9) a fuel cell "is an electrochemical cell that converts the chemical energy of a fuel (often hydrogen) and an oxidizing agent (often oxygen) into electricity through a pair of chemical reactions".

Table 3.1: Summary of tax incentives aimed at reducing greenhouse gas emissions

Instrument	Description
Renewable energy depreciation allowance (section 12B)	An accelerated depreciation allowance applies for capital equipment used for renewable electricity generation from wind, solar, small-scale hydro and biomass, at the rate of 50: 30: 20 per cent over three years, and 100 per cent in the case of photovoltaic solar energy equipment not exceeding 1 megawatt.
Renewable energy depreciation allowance (section 12BA)	An accelerated depreciation allowance applied for capital equipment brought into use for the first time on or after 1 March 2023 and before 1 March 2025 for use in renewable electricity generation from wind, solar, small-scale hydro and biomass, at the rate of 125 per cent.
Industrial policy incentive (section 12I)	An accelerated depreciation allowance applies for manufacturing equipment used in an industrial policy project that applies improved energy efficiency and cleaner production technologies, at the rate of 35 to 100 per cent for applications received by no later than 31 March 2020, with some COVID-19 related exceptions.
Energy efficiency savings deduction (section 12L)	Businesses can claim a deduction against taxable income in respect of any year of assessment ending before 1 January 2026 in the form of an amount equal to the monetary value of proven energy efficiency savings.
Renewable energy roads and fences deduction (section 12U)	A deduction applies in respect of roads constructed and fences erected in respect of production of renewable energy. The deduction available is 100 per cent on costs incurred in constructing roads and erecting fences.
Research and development tax incentive (section 11D)	An income tax deduction of 150 per cent applies for scientific and technological research and development expenditure, and research and development capital expenses can be written off at the rate of 50: 30: 20 per cent over three years. The sunset date for section 11D is 31 December 2033.
Battery electric and hydrogen produced vehicles depreciation allowance (section 12V)	An accelerated depreciation allowance applies for capital equipment brought into use on or after 1 March 2026 and before 1 March 2036 for the manufacture of battery electric and hydrogen produced vehicles, at the rate of 150 per cent.

Source: Own Summary.

3.3 TAX DISINCENTIVE MEASURES

To discourage the manufacture of, and the importation of certain goods and services into South Africa and the production of electricity from coal, that contribute to greenhouse gas emissions and climate change, the government introduced four main types of environmental taxes aimed at reducing greenhouse gas emissions: tax on electricity generated in the Republic, electric

filament lamps tax, carbon dioxide emissions on motor vehicles tax, and a carbon tax (Ambareen, 2023:1045). These taxes are levied in terms of the Customs and Excise Act, No. 91 of 1964 (the Customs and Excise Act) and the Carbon Tax Act, No. 15 of 2019 (the Carbon Tax Act).

According to the International Institute for Sustainable Development (2022:v), in relation to South Africa's Energy Fiscal Policies, the current environmental taxes do not measure up to the social costs related to the burning of fossil fuels, and the Institute further states that "societal costs related with air pollution and greenhouse gas emissions from fossil fuels in South Africa are estimated to be a minimum of ZAR 550 billion (USD 33 billion) per year".

The Corporate Finance Institute (2025: Online) states that "Pigouvian tax is a tax on economic activities that generate negative externalities, which create costs that are borne by unrelated third parties". According to the Corporate Finance Institute (2025: Online), Pigouvian taxes are imposed to correct and discourage harmful activities, including environmental pollution, harmful substances (tobacco and alcohol), and congestion that lead to negative externalities. Tax on electricity generated in the Republic, electric filaments tax, carbon dioxide emissions on motor vehicles tax, and a carbon tax are referred to as Pigouvian taxes.

3.3.1 Carbon Tax

National Treasury (2019:2), in a Media Statement, states that: "the carbon tax is an integral part of government's package of policy measures to mitigate climate change as outlined in the National Climate Change Response Policy, National Development Plan and its National Determined Contribution Commitments under the 2015 Paris Agreement." Tax Statistics (2021:5) state that "the Carbon Tax (CBT), which was introduced as a new tax to combat climate change, is aimed at reducing greenhouse gas emissions." The International Institute for Sustainable Development (2022:36), in relation to South Africa's Fiscal Policies state that:

> The carbon tax is creating a mechanism to price externalities, but exemptions are weakening the strength of this signal. Placing a price on carbon is a very positive development. Should such a tax be applied across the economy and at a level that is proportional to the external cost of the emissions, it would generate considerable revenues that could allow for increased spending or reduction in taxation on other priority areas.

In terms of section 4(1) of the Carbon Tax Act, the carbon tax is levied on carbon emissions resulting from fuel combustion, fugitive emissions and industrial processes. Fuel combustion, fugitive emissions and industrial processes are defined in section 1 of the Carbon Tax Act as follows: combustion means "the exothermic reaction of a fuel with oxygen"; fugitive emissions means "emissions that are released into the atmosphere by any other means than through an intentional release through a stack or vent including extraction, processing, delivery and burning for energy production of fossil fuels, including leaks from industrial plant and pipelines"; and an industrial process means "a manufacturing process that chemically or physically transforms materials".

Gillingham and Stock (2018:53) are of the opinion that the carbon tax may be an efficient way to reduce greenhouse gas emissions:

> What is the most economically efficient way to reduce greenhouse gas emission? The principles of economics deliver a crisp answer: reduce emissions to the point that the marginal benefits of the reduction equal its marginal benefits of the reduction equal its costs. This answer can be implemented by a Pigouvian tax, for example a carbon tax where the tax rate is the marginal benefit of the emissions reduction or, equivalently, the monetised damages from emitting an additional ton of carbon dioxide (CO_2).

Pigouvian taxes are corrective, they aim to cure the negative environmental externalities brought about by polluting activities that have gone untaxed (Cornes & Sandler: 1985). Carbon tax, a Pigouvian tax, is defined in section 1 of the Carbon Tax Act as "a tax on the carbon dioxide (CO_2) equivalent of greenhouse gas emissions". In terms of the preamble to the Carbon Tax Act, the carbon tax ensures that taxpayers responsible for harming the environment pay the costs of remedying pollution, environmental degradation and consequent adverse health effects, and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects.

The Carbon Tax Act imposes a tax on the carbon dioxide equivalent of greenhouse gas emissions and matters connected with it (Eskom, 2021:111). In terms of the preamble to the Carbon Tax Act, the South African government "is of the view that imposing a tax on greenhouse gas emissions and concomitant measures such as providing tax incentives for rewarding the efficient use of energy, will provide appropriate price signals to help nudge the economy towards a more sustainable growth path". Section 4(1) of the Carbon Tax Act provides

that a carbon tax is levied in respect of the sum of the greenhouse gas emissions of a taxpayer in respect of a tax period, expressed as the carbon dioxide equivalent. "Carbon dioxide (CO_2) equivalent" is defined in section 1 of the Carbon Tax Act as the concentration of carbon dioxide that would cause the same amount of radiative forcing (the difference between sunlight absorbed by the Earth and energy radiated back to space) as a given mixture of carbon dioxide and other greenhouse gases.

Taxpayers that produce direct greenhouse gas emissions from fuel combustion, fugitive emissions and industrial processes are subject to the carbon tax on greenhouse gas emissions above a given threshold, as stipulated in Schedule 2 of the Carbon Tax Act. According to Part 3F of the Customs and Excise Tariff, as from 1 April 2024, the carbon tax rate is R190 per tonne of emissions exceeding the threshold.

The Department of Trade, Industry and Competition (2023:84) states that:

> In South Africa, the government introduced the Carbon Tax Act (Act 15 of 2019) as South Africa's primary explicit carbon pricing mechanism. An initial headline tax rate of R120 per ton carbon dioxide equivalent (CO_2e) was introduced in 2019, however, various tax-free allowances result in an effective tax rate that varies between R6.00 (US$0.4) and R48.00 (US$4.22) per ton of carbon dioxide equivalent (CO_2e). The World Bank reported that carbon prices of at least US$40-80 per ton of carbon dioxide (CO_2) by 2020 and US$50 - $100 per ton of carbon dioxide (CO_2) by 2030 are required to cost-effectively reduce emissions in line with the temperature goals of the Paris Agreement.

In 2019, the carbon tax was initially implemented at R120 (US$6.52) per tonne of carbon dioxide. The carbon tax rate has gradually increased over the years to R190 (US$10.35) per tonne of carbon dioxide equivalent in 2024 and is expected to reach R462 (US$25.31) per tonne of carbon dioxide equivalent by 2030. The Department of Trade, Industry and Competition (2023:84-85) explains that the South African carbon tax rates of R120 in 2019 and R462 by 2030 are "significantly lower compared to the carbon price [US$40-80 by 2020 and US$50 – 100 by 2030] required to reach the climate change commitment target set out in the Paris Agreement."

In terms of sections (7), (8) (9) and (10) of the Carbon Tax Act, a taxpayer that is liable for the carbon tax in respect of greenhouse gas emissions receives a basic tax-free allowance equal to sixty per cent in respect of fuel combustion, fugitive emissions and industrial processes, and a

maximum allowance of ten per cent in respect of trade exposure. Additionally, if a taxpayer has implemented measures to reduce the greenhouse gas emissions, the taxpayer receives a performance allowance in terms of section (11) of the Carbon Tax Act, of a maximum of ten per cent, and if the taxpayer participates in the carbon budget system, a taxpayer receives, in terms of section 12, of the Carbon Tax Act a carbon budget allowance of five per cent of the total greenhouse gas emissions in respect of a tax period. The carbon budget is defined in the Carbon Tax Act as "an amount of greenhouse gas emissions permitted, against which direct emissions arising from the operations of a person during a defined time period will be accounted for". Lastly, in terms of section 13(1) and (2) of the Carbon Tax Act, a taxpayer must reduce the amount of carbon tax liability by an offset allowance equal to ten per cent in respect of fuel combustion emissions and five per cent in respect of fugitive emissions and industrial processes. The sum of the allowances should not exceed 95 per cent of the total greenhouse gas emissions of the taxpayer in a tax period (section 14 of the Carbon Tax Act).

As pointed out by the International Institute for Sustainable Development (2022:36) and the Department of Trade, Industry and Competition (2023:84), the tax rate is inadequate to compensate for the negative externalities of carbon emissions, and the allowances clearly reduce the effectiveness of the carbon tax.

3.3.2 Other environmental taxes

Four additional taxes introduced to reduce greenhouse gas emissions are discussed below.

3.3.2.1 Levy on electricity generated in the Republic

"Electricity plays a significant role in the betterment of human life. Apart from its social benefits, electricity is also a driving factor in the economy. Its usage ranges from communication and transportation to production (National Treasury, 2008:109). However, electricity is largely generated from non-renewable energy that pollutes the environment. USAID South Africa Climate Change Country Profile: Fact Sheet (2023:1) states that "South Africa's dependence on coal as a primary fuel source for electricity generation makes it one of the world's top 15 greenhouse gas emitters". According to the New Development Bank (2023:5), South Africa's energy sector contributes approximately 80% of the country's total greenhouse gas emission, 50% is from electricity generation and liquid fuel production. For these reasons an environmental levy on electricity generated in the Republic is imposed to

discourage the production of electricity from non-renewable energy. The environmental levy on electricity came into effect on 1 October 2009 at a rate of 2 cents per kilowatt hour. In 2012, the levy was increased to 3.5 cents per kilowatt hour, and it has remained the same to date.

The electricity sector in the South Africa is controlled by Eskom Holdings SOC Limited (Behr & Bracher, 2023:6). According to Part 3B(3) of Customs and Excise Tariff, electricity generated at an electricity generation plant is liable for an environmental tax calculated on the quantity generated at the time the generation of electricity takes place. The tax rate on electricity generated is 3,5 cents per kwh (Part 3B of Customs and Excise Tariff). Part 3B(2) of the Customs and Excise Tariff, states that:

> Electricity generated under the following circumstances will not be liable for the payment of environmental tax –
>
> (a) electricity generated by electricity generation plants with an installed capacity not exceeding 5 megawatts;
> (b) electricity generated from renewable sources; and
> (c) electricity generated from co-generation by using -
> (i) waste heat or energy from waste co-generation;
> (ii) combined heat and power co-generation; or
> (iii) renewable co-generation;
> (d) electricity generated from -
> (i) concentrated solar power; and
> (ii) non-renewable sources of which the energy input does not exceed 15 per cent of the total energy input, over a calendar year.

3.3.2.2 Electric filament lamps levy

Electric filament lamps ("tungsten halogen incandescent" lamps) have been subject to the environmental tax since 1 November 2009 (BusinessTech, 2022: Online; Engineering News, 2015: Online). According to Engineering News, the primary purpose of the levy is to increase the price of electric filament lamps to promote a preference for energy-saving light bulbs that are durable and affordable. The levy will make these lamps expensive and in return the consumers will be discouraged from buying them.

These lamps are not as energy efficient as is assumed, and their mercury content is harmful to the environment (BusinessTech, 2024: Online; Engineering News, 2015: Online). According to Engineering News, when the electric filament lamps are disposed of, the mercury in them evaporates and pollutes air and water. Energy-saving light bulbs reduce the greenhouse gas emissions because they last longer, are safe to use and, consume less electricity (BusinessTech, 2022: Online).

According to BusinessTech (2024: Online), the sale of a range of incandescent and compact fluorescent lamps light bulbs is banned by the Department of Trade, Industry, and Competition, starting on 24 May 2024. The ban on the sales of these light bulbs is to promote the use of light bulbs that are safe, enhance performance, and are energy efficient (BusinessTech, 2024: Online). An environmental tax on electric filament lamps manufactured in or imported into the Republic was introduced at a rate of R3 per lamp on 1 November 2009 (BusinessTech, 2022: Online) and increased over the years to R20 per lamp from 1 April 2024 (Part 3C of the Customs and Excise Tariff). According to Part 3C of the Customs and Excise Tariff, an environmental tax is payable on –

(a) tungsten halogen: of a power of 15 W or more but not exceeding 1000 W and for a voltage exceeding 100 V but not exceeding 260 V;
(b) other, of a power not exceeding 200 W for a voltage exceeding 100 V: other, of a power of 15 W or more and for a voltage not exceeding 260 V; and
(c) other: other, vacuum type, of less than 15 W, and of a power exceeding 200 W but not exceeding 1000 W and for a voltage exceeding 100 V but not exceeding 260 V.

3.3.2.3 Levy on carbon dioxide emissions of motor vehicles

Tax Chronicles Monthly (Issue 71, 2024b:10) confirms that "at global level, the transport sector accounts for more than a third of greenhouse gas emissions. This has meant that the sector is amongst those that are prioritised for reducing emission". The Department of Environmental Affairs (2010, in Green Transport Strategy: 2018–2050:8) states that "emissions from the transport sector account for 10.8% of the country's total greenhouse gas emissions, with road transport being responsible for 91.2% of these greenhouse gas emissions."

According to the Department of Transport (2018:8), South Africa is determined to reduce the country's total greenhouse gas emissions by committing to a five per cent reduction in the transport sector's emissions by 2050. To achieve the five per cent reduction of greenhouse gas

emissions in the transport sector, the Department of Transport will adopt strategies that will include “shifting passengers from private transport to public transport and freight from road to rail; switching to cleaner fuels and adopting new technologies such as alternative energy vehicles, while making our cities and towns friendlier places for cyclists and pedestrians”.

According to South Africa’s Greenhouse Mitigation Potential Analysis (2014:68), a range of mitigation measures that could potentially be applied to reduce the country’s transport sector emissions by 2050 were identified and are categorised into the following types:

- modal shift;
- demand reduction measured;
- more efficient vehicle technologies;
- more efficient operations; and
- alternative lower-carbon fuels.

In South Africa, the motor vehicle emissions tax for passenger vehicles was introduced on 1 September 2010, and on 1 March 2011 for double-cab vehicles (National Treasury, 2010; BusinessTech, 2022: Online). The goal of this tax is to promote an ecologically friendly environment by encouraging motor vehicle owners in South Africa to become more energy-efficient (BusinessTech, 2022: Online). An environmental levy is imposed on carbon dioxide emissions of new motor vehicles manufactured in or imported into the Republic (Part 3D of Schedule 1 of the Customs and Excise Act). Engineering News (2015: Online) is of the opinion that the “older motor vehicles are more likely to cause pollution that newer ones” and therefore the levy should be imposed on old motor vehicles. Engineering News further explains that imposing a fuel levy would be ideal compared to a levy on new motor vehicles, because the fuel levy would apply to all consumers of fuel and therefore satisfy the “polluter pays” principle.

According to Part 3D of the Customs and Excise Tariff, the motor vehicle emission tax rate payable is R146.00 per g/km of carbon dioxide emissions exceeding 95 g/km on motor cars and other vehicles principally designed for transport of persons, including station wagons and racing cars; for motor vehicles for the transport of goods, the tax rate payable is R195.00 per g/km of carbon dioxide emissions exceeding 175 g/km.

Table 3.2: Summary of tax disincentive measures introduced to mitigate greenhouse gas emissions

Instrument	Description
Environmental levy on carbon emissions (carbon tax)	An environmental levy is payable on carbon emissions resulting from fuel combustion, fugitive emissions and industrial processes as a carbon tax. The carbon tax rate is R190 per tonne of carbon dioxide equivalent emissions.
Levy on electricity generated in the Republic	An environmental levy is payable on electricity generated by coal. The levy is imposed a rate of 3,5 cents per kilowatt hour on electricity generated.
Electric filament lamps levy	An environmental levy is payable on electric filament lamps manufactured in and imported into the Republic. The levy is imposed at R20 per lamp.
Levy on carbon dioxide emissions of motor vehicles	An environmental levy is payable on carbon dioxide emissions of motor vehicles. The levy is imposed at R146 per g/km carbon dioxide emissions exceeding 95 g/km on motor cars and R195 per g/km exceeding 175 g/km on goods transport motor vehicles.

Source: Own summary

3.3.3 The Climate Change Act

In terms of section 26(1) of Chapter 5 of the Climate Change Act, the Minister must publish by notice in the *Gazette* a list of greenhouse gases which the Minister reasonably believes cause or are likely to cause or worsen climate change. The Minister must also publish by notice in the *Gazette* a list of activities that emit or have the potential to emit or one or more of the greenhouse gases listed (section 26(2) of Chapter 5 of the Climate Change Act). Section 1 of Chapter 1 of the Climate Change Act defines Minister as "the Cabinet Minister responsible for environmental affairs". In terms of section 26(3) of Chapter 5 of the Climate Change Act, the published notice of activities that emit greenhouse gases must apply to activities that have already commenced, as well as new emitting activities. The greenhouse gas emission threshold expressed in carbon dioxide equivalent must be determined, it must be specified in the notice that the notice does not apply to activities that emit below a quantified threshold, and the date from which the notice takes effect must be determined. Carbon dioxide equivalent means "the number of metric tons of carbon dioxide emissions with the same global warming potential as one metric ton of another greenhouse gas" (section 1 of Chapter 1 of the Climate Change Act). According to the Department of Forestry, Fisheries, and the Environment (2025a:1-2), the provisions of section 26 (section 26(2) to (6)) of Chapter 5 of the Climate Change Act will be

deferred to a later date as there is groundwork that must still be done, including consultation with the interested and affected parties and the public participation process.

Section 27(1) of Chapter 5 of the Climate Change Act provides that, after publication of the list of greenhouse gases and activities, the Minister must assign a carbon budget to any person who emits greenhouse gas emissions. A carbon budget is defined in section 1 of Chapter 1 of the Climate Change Act as "an assigned amount of greenhouse gas emissions allocated to a person in terms of section 27 [of the Climate Change Act] for direct emissions arising from the operations of that person over a defined time period". In terms of section 27(3) of Chapter 5 of the Climate Change Act, a carbon budget must have a duration of at least three successive five-year periods, and the maximum quantity of greenhouse gas emissions that may be emitted during the first five-year period must be specified. A greenhouse gas emission mitigation plan must be prepared and submitted to the Minister for approval by a person to whom a carbon budget is allocated (section 27(4)(a) of Chapter 5 of the Climate Change Act). The greenhouse gas emission plan must state the mitigation measures the person plans to implement to remain within the allocated carbon budget and must comply with any requirements of the plan as may be prescribed by the Minister in further regulations that may be published under section 30 of Chapter 5 of the Climate Change Act, including requirements pertaining to processes, procedures and reporting. The Department of Forestry, Fisheries and the Environment (2025a:2) explains that the provisions of section 27 of Chapter 5 of the Climate Change Act are deferred to a later date since section 30 of Chapter 5 of the Climate Change Act requires the Minister to first develop detailed regulations for the implementation of the provisions of this section.

In terms of section 35(1) of Chapter 6 of the Climate Change Act, any person who fails to prepare and submit for approval to the Minister a greenhouse gas mitigation plan and provides misleading information or fails to provide the information required, commits an offence. In terms of section 35(2) of Chapter 6 of the Climate Change Act that person will be liable to a fine of not more than R5 million or imprisonment for a period no longer than five years, and a fine of not more than R10 million, or imprisonment for a period no longer than 10 years, or both fine and imprisonment in the case of a second or subsequent conviction. A person may appeal against the decision by the Minister in terms of section 36 of Chapter 6 of the Climate Change Act.

3.4 FINANCIAL INCENTIVES

This section discusses various financial incentives by both the public and the private sector.

3.4.1 Financial incentives by the public sector

The Government of South Africa has introduced two financial incentives to support the transition to a climate change path.

3.4.1.1 Green Fund

In 2012 the Government of South Africa, through the Department of Environmental Affairs, launched the Green Fund to support the transition to a low carbon, resource efficient and climate change growth path (Department of Environmental Affairs, 2016:4). The Department of Environmental Affairs (2016:1) states that:

> By 2016, the Fund had approved a total of 55 projects and disbursed R782 million to investment projects, research initiatives and capacity-building programmes for implementation. The projects cover a diverse range of sectors important to South Africa's economic growth, including agriculture, mining and transport. The Fund also supports the country in realising its international commitments, particularly the Sustainable Development Goals and Paris Agreement, by strengthening South Africa's ability to adapt to and recover from climate change impacts and reduce greenhouse gas emissions.

According to the Department of Environmental Affairs (2016:4), the Government provided financial support amounting to R1.1 billion for the Green Fund between 2012 – 2016. The Development Bank of Southern Africa was appointed by the Department of Environmental Affairs as the implementing agent of the Green Fund (Department of Environmental affairs, 2012: Online).

3.4.1.2 Just Energy Transition Investment Plan

The Government of South Africa launched its Just Energy Transition Investment Plan on 4 November 2022 for an initial period of five years, from 2023 – 2027 (The Presidency, 2023:19). According to the Political Declaration on the Just Energy Transition in South Africa (2021:18), an initial amount of $8.5 billion will be mobilised between 2023 and 2027, through a

combination of appropriate financial instruments, which may include grants, concessional loans, guarantees and private investments, and technical support to enable the just transition with a view to longer term engagements. The Presidency (2023:16) stated that:

> South Africa's Nationally Determined Contribution to the global effort, compatible with the Paris Accord, was signed in 2021, contingent on securing financial support from developed economy countries. To this end, the world's first Just Energy Transition Partnership was forged, with initial funding committed by our international partners. In 2022, South Africa produced its Just Energy Transition Investment Plan 2023–2027, setting out the scale and scope of investment that is needed to meet our ambitious climate targets.

The Political Declaration on the Just Energy Transition in South Africa (2021:16), states that the Just Energy Transition Plan resolves to:

> establish an ambitious long-term partnership to support South Africa's pathway to low emissions and climate resilient development, to accelerate the just transition and the decarbonisation of the electricity system, and to develop new economic opportunities such as green hydrogen and electric vehicles amongst other interventions to support South Africa's shift towards a low carbon future.

3.4.1.3 Renewable Energy Independent Power Producer Procurement Programme

According to the NDC Partnership (2025: Online), South Africa's Renewable Energy Independent Power Producer Procurement Programme uses a competitive tender process to attract private investment in renewable energy projects, such as wind and solar, to increase the country's electricity capacity. The programme was launched by the Government of South Africa in 2011. The NDC Partnership (2025: Online) states that "since the launch of this public-private partnership, US$16 billion in private-sector investment has been committed for 79 awarded projects totalling 5,243 MW of renewable energy. The program has resulted in significant reductions in tariff rates for solar photovoltaics (PV) and wind over a short period".

3.4.1.4 Green Finance support by Development Finance Institutions

The Institute for Economic Justice (2025: Online) states that "Development Finance Institutions are critical players in climate finance mobilisation, bridging the gap between public and private funding". According to the Institute for Economic Justice (2025: Online), current financial

levels fall short of global needs; South Africa requires between R334 billion and R535 billion annually to meet its climate goals. However, the Institute for Economic Justice (2025: Online) explains that the Development Finance Institutions were able to mobilise only R131 billion on average between 2019 and 2021.

3.4.1.5 Municipal Energy Efficiency and Demand Side Management Grant

According to the Department of Electricity and Energy (2025: Online), the Municipal Energy Efficiency and Demand Side Management Grant is a government fund initiative managed by the Department of Energy that provides funding for municipalities to implement energy-saving projects. The Department of Electricity and Energy (2025: Online), explains that selected municipalities receive grant funding to implement energy efficiency traffic lights, street lights, building lights, and water service infrastructure.

3.4.1.6 Water and Climate Resilience Grants

The Water and Climate Resilience Grant is managed through the Green Climate Fund. According to the South African National Biodiversity Institute (2025: Online), the grant aims to support and improve the resilience of communities that are vulnerable to climate change aggravated floods, droughts and wildfires. According to the South African National Biodiversity Institute (2025: Online), the grant is implemented to "enhance the ability of ecosystems, catchments and landscapes to act as natural buffers and offer essential services that both protect built infrastructure and communities from these hazards".

3.4.1.7 Green Climate Fund and Global Environment Facility Projects

The Department of Forestry, Fisheries and the Environment (2025b: Online), states that:

> the Global Environment Facility (GEF) is the largest independent financial organisation in the environment sector that provides assistance or grants to both government and non-government entities for the implementation of projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

According to the Department of Forestry, Fisheries, and the Environment (2025b: Online), since its inception, the Global Environment Facility has been successful in supporting the developing countries and countries with economies in transition.

3.4.2 Financial incentives by the private sector

This section discusses financial assistance provided by two major financial institutions in the form of investments in renewable energy.

3.4.2.1 Old Mutual

The Old Mutual believes that working together to reduce greenhouse gas emissions is the only way to protect the planet from harm (Daily Maverick, 2024: Online). For this reason, to ensure that the target to reduce carbon emissions by 2030 is met, Old Mutual increased its investments in renewable energy to R30.7 billion in 2023, up from R26.7 billion in 2022. Daily Maverick (2024: Online) state that:

> Since the first bid window under the South African Renewable Energy Independent Power Producer Procurement Programme in 2012, the Future Growth Power Debt Fund supports 30 renewable energy projects in the Northern Cape, Western Cape, Eastern Cape and Free State, while Old Mutual Alternative Investments manages an additional portfolio of long-dated project finance loans extended to 26 renewable energy projects across South Africa and Africa. To date, Old Mutual and its subsidiaries have funded 39% (2.6 Gigawatts) of South Africa's total renewable energy output (up from 2GW in 2021), placing Old Mutual among the largest investors of climate change solutions.

3.4.2.2 Standard Bank

Standard Bank is among major financial service providers pumping billions into renewable energy projects (Daily Investor, 2024: Online). Standard Bank Newsroom (2023: Online) states that:

> Standard Bank South Africa has made significant strides in its commitment to sustainable finance and renewable energy initiatives. making the Group one of the largest investors in green energy in the country. This demonstrates Standard Bank's dedication to supporting renewable energy efforts.

Standard Bank launched its climate policy in March 2022, and in that same year the bank exceeded its goal by financing R55 billion worth of renewable energy projects (Standard Bank Newsroom, 2023: Online). Daily Investor (2024: Online) explains that: "Standard Bank revealed that it aims to have financed R65 billion worth of renewable energy projects by the end of 2024 as part of its targeted R250 billion sustainable finance by the end of 2026". To align with Paris Agreement, the Bank aims to achieve net-zero carbon emissions from its operations by 2040 and from its portfolio of financed emissions by 2050 (Standard Bank Newsroom, 2023: Online).

3.5 CONCLUSION

The Government of South Africa has in place mitigating measures in the form of tax incentives, tax disincentives, and financial incentive measures aimed at combating greenhouse gas emitted into the atmosphere. Tax incentives and financial incentives are currently available mainly to encourage the production of electricity from renewable energy, energy efficiency and research and development activities.

Tax disincentive measures are imposed in the form of environmental taxes: a carbon tax; a levy on electricity generated in the Republic, an electric filament lamps levy, and a levy on carbon dioxide emissions of motor vehicles. These environmental taxes are aimed at discouraging the generation of non-renewable energy, the production and use of electric filament lamps, and motor vehicle emissions. In addition, in terms of the Climate Change Act, any person who fails to prepare and submit for approval to the Minister a greenhouse gas mitigation plan and provides misleading information or fails to provide the information required, commits an offence and will be subject to severe penalties.

The generation of electricity in South Africa is largely dependent on burning coal which, in turn, increases the carbon emissions into the atmosphere. The carbon tax and the levy on electricity generated in the Republic are implemented to discourage the burning of coal while promoting the generation of electricity through renewable energy such as wind power, photovoltaic and concentrated solar energy, hydropower, and biomass comprising organic wastes and landfill gas or plant material.

Filament electric lamps are not energy efficient and after their lifetime they pollute the environment by releasing a poisonous gas that is harmful to both humans and the environment.

For this reason, the Government of South Africa discourages the use of these lamps by imposing an environmental levy on electric filament lamps manufactured and imported into the Republic.

As a measure to decrease carbon emissions by motor vehicles in South Africa, an environmental levy on carbon dioxide emissions of motor vehicles is imposed to discourage the use motor vehicles that consume fuel and promote the use of battery electric and hydrogen motor vehicles and encourage the use of public transport by the citizens of the country.

The public sector and private sector both provide financial incentives to support clean energy generation projects.

The following chapter discusses tax incentives, tax disincentives and financial incentives by the public and private sectors, available in Australia and Canada, that are aimed at combating greenhouse gas emissions.

CHAPTER 4: TAX AND OTHER INCENTIVE AND DISINCENTIVE MEASURES INTRODUCED IN AUSTRALIA AND CANADA

4.1 INTRODUCTION

The second sub-goal of the research is to identify and discuss measures available in Australia and Canada that are aimed at combatting greenhouse gas emissions. The purpose of the analysis of these measures is to identify measures that could be applied in South Africa to aid in the prevention of greenhouse gas emission. This chapter addresses this sub-goal by discussing the tax incentives, tax disincentives and other measures available in Australia and Canada. The chapter starts by discussing different types of tax incentives available to entities carrying on earning activities in Australia, followed by a discussion of tax disincentives and financial incentives by the public and private sector. The chapter then discusses different types of tax incentives, tax disincentives and financial incentives provided by the public and private sector that are available to entities carrying on business in Canada.

4.2 AUSTRALIA

This section discusses the tax incentives and disincentives, as well as the financial incentives provided by both the public and private sectors in Australia.

4.2.1 Tax incentives

The Australian Government has introduced various tax incentives aimed at combating greenhouse gas emissions.

4.2.1.1 Deduction of expenditure for establishing trees in carbon sink forests

Eckert and McKellar (2008:30) explain that:

> Organic carbon sequestration through vegetation growth is the only realistic means of removing carbon dioxide from the atmosphere. Increasing vegetation and biomass stocks can, therefore, be a valuable means to limit atmospheric carbon dioxide concentrations until energy efficiency, low greenhouse gas emitting energy, agricultural options, and other

> emission reduction initiatives can be implemented at a scale required to limit the growth and, ultimately reduce, the amount of global greenhouse gas emissions.

Food and Trees for Africa (2024: Online) agrees, stating that "it is a well-established fact that forests play a key role as major global carbon sinks and are key to climate change mitigation. They are the largest land-based absorbers of carbon, removing about 7.6 billion tonnes of carbon dioxide from the atmosphere annually". According to Forests and Wood Products Australia (2023:3), an estimated 10.5 billion tonnes of carbon is sequestrated by forests in Australia; this, when converted to carbon dioxide emissions, is equivalent to 77 times Australia's greenhouse gas emissions in 2021. Additionally, an estimated 11.5 billion tonnes of carbon is stored in forest soil in Australia (Forest and Wood Products Australia. 2023:3). Therefore, "companies may implement tree-planting schemes and initiatives" (Deloitte (2020: Online) and receive a tax benefit in the form of a deduction for expenditure incurred for planting those trees.

Forest and Wood Products Australia (2023:8) states that:

> Forests in Australia cover 134 million hectares, 17% of the country's land area. They sequester carbon as individual growing trees absorb carbon dioxide from the atmosphere through photosynthesis. Carbon is stored in the tree biomass in the form of carbon compounds such as carbohydrates (including cellulose and hemicellulose) and lignin. One tonne of carbon sequestrated represents 3.67 tonnes of carbon dioxide removed from the atmosphere.

For these reasons, section 40.1005 of subdivision 40-J of the Income Tax Assessment Act, 1997 (the Income Tax Assessment Act), provides a deduction for expenditure incurred in establishing trees in carbon sink forests. For a taxpayer to qualify for a deduction, the taxpayer must primarily be carrying on business with carbon sink trees in Australia and for the purpose of carbon sequestration (section 40.1005(1) of subdivision 40-J). Section 40.1015 of subdivision 40-J of the Income Tax Assessment Act defines carbon sequestration by trees as "the process by which trees absorb carbon dioxide from the atmosphere". The land occupied by the trees must at least be 0.2 hectors or more, and at the time the trees are planted it must be clear that they will attain a crown cover of 20% or more and will reach a height of at least two metres. The trees must be clearly distinct from any other trees (section 40.1010(1) of subdivision 40-J). The taxpayer may carry on business on leased land, but the trees must be owned by the taxpayer (section 40.1005(5) of subdivision 40-J).

In terms of section 40.1005(2) of subdivision 40-J of the Income Tax Assessment Act, the entity is eligible to deduct an amount as determined by the following formula:

$$\text{Establishment expenditure} \times \frac{\text{Write-off days in income year}}{365} \times \text{Write-off rate}$$

"Establishment expenditure" is the amount of expenditure incurred in terms of section 40.1005(1). "Write-off days" in the income year is the number of days in the income year that occur within the period starting on the first day of the income year in which the trees are established and ending 14 years and 105 days after that day. The "write-off rate" is a fixed 7 per cent.

4.2.1.2 Extra deduction for destruction of trees in a carbon sink forest

Taxpayers may claim a deduction for the loss suffered for trees destroyed. Section 40.1030 of the Income Tax Assessment Act provides an extra deduction for carbon sink forest trees destroyed during the income year. In terms of section 40.1030(1) of the Income Tax Assessment Act, the taxpayer will be eligible to deduct the loss incurred as a result of the trees destroyed if the taxpayer has incurred capital expenditure, which is expenditure to plant and grow the trees, the land occupied by the trees is used for the primary and principal purpose of carbon sequestration by trees, the trees are destroyed during the income year, and the taxpayer owned the trees before they were destroyed, even if the land was leased.

In terms of section 40.1030(2) of the Income Tax Assessment Act, the deduction for trees destroyed in the income year is calculated in two steps. In terms of the first step, taxpayers work out the total amount they could have deducted starting from the first day of the income year in which the trees were established and ending on the day when the trees were destroyed, but only if the taxpayers owned the trees. In the second step, in terms of section 40.1010 of the Income Tax Assessment Act, taxpayers subtract the amount calculated in the first step and any amount received from an insurance policy for the trees destroyed from the capital expenditure incurred for the trees. If the remaining amount is positive, taxpayers deduct the amount.

4.2.1.3 Research and development

KPMG (2021:1) explains that "the research and development tax incentive remains the Federal Government's primary program to support Australian industry-based research and development." Section 355.5 of the Income Tax Assessment Act provides that:

> (1) The object of this Division is to encourage industry to conduct research and development that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy.
>
> (2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).

The research and development tax incentive is claimable in the form of a tax offset, which can be refundable or non-refundable depending on entity's aggregated turnover per annum (section 355.1 of the Income Tax assessment Act). Section 355.1 of the Income Tax Assessment Act states that:

> A research and development entity may be entitled to a tax offset for research and development activities. The tax offset may be a refundable tax offset if the research and development entity's aggregated turnover is less than $20 million. To be entitled to the tax offset, the research and development entity needs one or more notional deductions under this Division. There are two kinds of notional deductions. One is for expenditure on research and development activities. The other is for the decline in value of tangible depreciating assets used for research and development activities.

For entities with an aggregated turnover of less than $20 million, the refundable tax offset is equal to entity's corporate tax rate for the income year, which is 30% plus a fixed 18.5 percentage points (section 355.100(1) of the Income tax Assessment Act). For entities with an aggregated turnover of $20 million or more, the non-refundable tax offset will be equal to entity's corporate tax rate, which is 30% plus a percentage point determined by the research and development expenditure as a proportion of entity's total expenditure for the income year. Entities with research and development expenditure of 2% or less of total expenditure are granted 8.5% percentage points, and entities incurring research and development expenditure

exceeding 2% of the entity's total expenditure are granted 16.5% percentage points (section 355.100(1A) of the Income Tax Assessment Act).

4.2.1.4 Hydrogen production tax incentive

The Treasury (2024:2) states that: "Renewable hydrogen can be used for high-temperature industrial processes and is a key feedstock for producing chemicals such as ammonia and methanol. When used as a fuel, the only by-product is water and there are no carbon emissions at that point". According to the Treasury, the Australian Government announced in the 2024-25 budget that approximately AU$6.7 billion was committed over ten years from the 2024-25 tax year to support investment in renewable hydrogen through hydrogen production tax incentives. The Treasury (2024:3) clarified that the tax incentive would be set at AU$2 per kilogram of eligible hydrogen produced and provided as a refundable tax offset against the income tax payable.

4.2.1.5 Environmental protection activities

Section 40.755(1) of the Income Tax Assessment Act provides an immediate tax deduction for any expenditure incurred "in an income year for the sole or dominant purpose of carrying on environmental protection activities." Section 40.755(2) of the Income Tax Assessment Act states that environmental protection activities are any of the following:

(a) Preventing, fighting or remedying:

  (i) Pollution resulting, or likely to result, from your earning activity; or

  (ii) Pollution of or from the site of your earning activity; or

  (iii) Pollution of or from a site where an entity was carrying on any business that you have acquired or carry on substantially unchanged as your earning activity.

The entity claims a deduction for expenditure incurred in preventing pollution. The term "pollution" is not defined in the Australian Income Tax Assessment Act, and therefore its ordinary meaning is obtained from the *Advanced Learner's Dictionary* (Oxford University Press, 2010:1133), which defines pollution as "the process of making air, water and soil dirty." Section 40.755(3) defines "earning activity" as an activity carried on, being carried on, or is being proposed to carry on:

(a) For the purpose of producing assessable income for an income year (except a net capital gain); or

(b) For the purpose of exploration or prospecting; or

(c) For the purpose of mining site rehabilitation; or

(d) For the purposes that include one or more of those purposes.

Table 4.1: Summary of tax incentives aimed at reducing greenhouse gas emissions in Australia

Instrument	Description
Carbon sink forest expenditure (section 40.1005)	A deduction of expenditure incurred for carbon sequestration trees is provided as follows: established expenditure multiplied by (write-off days in the income year divided by 365 days) multiplied by 7 per cent.
Carbon sink forest extra deduction for trees destroyed (section 40.1030)	A deduction applies in respect of carbon sink forest trees destroyed during the income year.
Research and development tax incentive (section 355.5)	Taxpayers with an aggregated turnover of less than $20 million claim a refundable tax credit equal to the 30% corporate rate plus a fixed 18.5 percentage points. Taxpayers with an aggregated turnover of more than $20 million claim a non-refundable tax credit equal to the 30% corporate tax rate, plus either 8.5 percentage points or 16.5 percentage points, depending on the research and development expenditure percentage of the entity's total expenditure.
Proposed hydrogen production tax incentive (Division 421)	A tax incentive for clean hydrogen production is proposed, to be provided at AU$ 2 per kilogram.
Environmental protection activities (section 40.755)	A deduction applies in respect of environmental protection activities expenditure incurred at the rate of 100 per cent.

Source: Own summary

4.2.2 Tax disincentives

Australia does not impose an environmental tax on carbon emissions (carbon tax) or provide for an emissions trading scheme (PWC, 2024b: Online). To achieve the country's emission reduction target, the Australian Government reformed its Safeguard Mechanism (the Department of Climate Change, Energy, the Environment and Water, 2024:1). According to the Department of Climate Change, Energy, the Environment and Water, the Safeguard Mechanism had been in place since 2016 and was reformed on 1 July 2023. KPMG (2023a:29) confirms that:

> The new government has built on existing legislation by reforming the so-called Safeguard Mechanism to introduce binding emissions baselines, emissions trading and therefore carbon pricing to all non-electricity facilities that generate more than 100 000 tonnes CO_2 equivalent a year, affecting industry, oil and gas production and mining.

The Department of Climate Change, Energy, the Environment and Water (2024:1) explains that the Safeguard Mechanism applies to those facilities that emit more than 100,000 tonnes of carbon dioxide equivalent in a year, excluding electricity facilities. The Department of Climate Change, Energy, the Environment and Water states that the reformed Safeguard Mechanism "sets legislated targets, known as baselines, on the net greenhouse gas emissions of covered safeguard facilities", and that the Safeguard Mechanism requires that the net greenhouse gas emissions from all non-electricity facilities should not exceed 100 million tonnes of carbon dioxide equivalent by 2030. According to the Department of Climate Change, Energy, the Environment and Water, to achieve this, the Safeguard Mechanism reforms set a carbon dioxide emissions baseline decline rate in a predictable and gradual way over a five-year rolling block at 4.9 per cent per year to 2030. The Department of Climate Change, Energy, the Environment and Water (2024: 2) explains that the "Safeguard baseline is calculated based on the sum of the quantity of production for each production variable multiplied by the relevant emissions intensity value(s) and emissions reduction contribution", and that the emissions intensity values used to determine the emissions baseline depend on whether it is an existing or new facility. The Department of Climate Change, Energy, the Environment and Water (2024:8) confirms that failure to comply with the Safeguard Mechanism requirements results in civil penalties, and that: "The civil penalty was updated through the reforms so that it reflects both the number of days a facility is in exceedance and the quantity of a facility's excess emissions". According to the Department of Climate Change, Energy, the Environment and Water (2024:8) "the maximum civil penalty is set at 1 penalty unit per tonne of excess emissions per year and the infringement notice charge at one-third of the maximum civil penalty to a maximum of 150,000 penalty units. As of 1 January 2023, a penalty unit is $275 Australian Dollars." The Carbon Market Institute (2023:3) explains that one Australian Safeguard Mechanism Credit will be purchased and surrendered for each excess tonne of carbon dioxide equivalent.

4.2.3 Financial incentives

This section discusses financial incentives provided by both the public and private sectors.

4.2.3.1 Financial incentives by the public sector

Chance (2024:1) states that "a number of government funding programmes have been established to facilitate investment in alternative technologies."

- **The Clean Energy Finance Corporation**

Deloitte (2018:10) explains that: "The Clean Energy Finance Corporation (CEFC) was established in 2012 with the object to facilitate increased flows of finance into the energy sector, which is defined under the Act by reference to renewable energy, energy efficiency and low emission technologies (collectively clean technologies)." According to Deloitte (2018:11), the Clean Energy Finance Corporation is an Australian statutory authority clean energy financier established under the Clean Energy Finance Corporation Act, 2012. Australia's Long-term Emissions Reduction Plan (2021:106) ensures that the Clean Energy Finance Corporation supports clean technologies through loans and equity investments, and explains that, since 2013, the Clean Energy Finance Corporation funded more than AU$9.5 billion in clean technology projects worth more than AU$32.8 billion. According to Australia's Long-term Emissions Reduction Plan (2021:106), the following funds are administered by the Clean Energy Finance Corporation: Clean Energy Innovation Fund, Advancing Hydrogen Fund, Australian Recycling Investment Fund, Sustainable Cities Fund, Reef Fund, and Grid Reliability Fund.

- **Clean Energy Regulator**

The Emissions Reduction Fund and Climate Solution Fund are administered by the Clean Energy Regulator (Australia's Long-term Emission Reduction Plan, 2021:107). The Emissions Reduction Fund is a voluntary scheme that encourages carbon abatement activities by individuals or businesses who run projects that reduce emissions or store carbon, ranging from reforestation to energy efficiency (Clean Energy Regulator, 2024a: Online; Department of Agriculture, Fisheries and Forestry, 2024: Online). The scheme is the Australian Carbon Credit Units (Australia's Long-term Emissions Reduction Plan, 2021:107). According to Chance (2024:2), the Carbon Credit Units are financial incentives provided to those individuals or businesses running the projects under Australian Carbon Credit Units; for every one tonne of

carbon dioxide equivalent that would have otherwise been released into the atmosphere, the individuals or businesses earn one Australian Carbon Credit Unit. The Carbon Credit Units may be sold to the government or traded in a secondary private market, where the buyers may purchase them to offset their carbon footprint or meet emissions reduction obligations (Clean Energy Regulator, 2024a: Online; Department of Climate Change, Energy, the Environment and Water, 2023:1).

- **Carbon capture and storage funding**

According to Chance (2024:1), carbon capture and storage involves the capture of carbon dioxide emissions from industrial processes, compressing and transporting it via pipelines, trucks or ships, and storing it permanently underground. Chance reports that currently, Australia has announced 16 Carbon Capture Storage projects at various stages of completion, which aim to capture and store 20 million tonnes of carbon dioxide a year by 2035. Chance (2024:2) further explains that in the 2024-25 Federal Budget, the Australian Government allocated AU$566.1 million over ten years for the development of Carbon Capture and Storage projects.

- **Renewable Energy Target**

According to the Clean Energy Regulator (2024b: Online), the Renewable Energy Target is a government scheme aimed at reducing carbon dioxide emissions in the electricity sector by promoting renewable electricity generation. The target is to deliver an extra 33 000 gigawatt-hours of renewable electricity from wind and solar every year. Australia's Long-Term Emissions Reduction Plan (2021:108) explains that the scheme is administered as large-scale and small-scale Renewable Energy Schemes; Renewable Energy Targets provides large-scale generation certificates to power stations for wind farm and commercial solar plants, and under small-scale technology certificates are provided for the installation of rooftop solar panels and solar water heaters. According to the Clean Energy Regulator (2024b: Online), for every one megawatt-hour of renewable electricity generated and fed into the grid, one certificate is earned. The Clean Energy Regulator explains that renewable energy certificates may be traded in a secondary market to financial institutions.

- **Australian Renewable Energy Agency**

The Australian Renewable Energy Agency "provides grant funding to early-stage low emissions technology to accelerate pre-commercial innovation" (Australia's Long-Term Emissions Reduction Plan, 2021:106). According to the Australia's Long-Term Emissions Reduction Plan, the Australian Government has committed over AU$1.8 billion to early-stage and research and development since 2012. In terms of Australia's Long-Term Emissions Reduction Plan, the grant funding is mainly provided for solar, wind and other renewable technologies, including energy storage and grid integration. Under Australia's Long-Term Emissions Reduction Plan, additional grant funding amounting to AU$1.62 billion for the period up to 2031-32 has been committed by the Government.

- **Community Zero Emissions Grants**

According to ACT Government (2025:4), the programme funds community-led projects that reduce greenhouse gas emissions from transportation and fossil fuel use, build climate resilience, and encourage climate-wise behaviours.

- **State-Based Grants and Rebates**

According to Energy Action (2025: Online), state and territory governments offer a large and varying suite of grants, rebates and assistance programs for household and business uptake of renewable energy, batteries, electric vehicle incentives, and energy-efficiency measures.

- **National Climate Finance**

The Department of Foreign Affairs and Trade (2024:1) states that "Australia is committed to delivering high-quality climate finance that responds to the needs of our development partners." According to the Department of Foreign Affairs and Trade (2024:1), Australia's climate finance supports the development partners to strengthen resilience to climate change impacts and achieve renewable energy transition goals.

4.2.3.2 Financial incentives by the private sector

KPMG (2023b:2) explains that "as Australia mobilises towards a greener future, financial institutions are facing increased pressure to support and accelerate the system-wide transition to a net zero economy." According to KPMG (2023b:4), Australia needs to invest approximately AU$1.5 trillion by 2030 and AU$7 trillion by 2050 "across large emitters, the energy, industrial, mobility, manufacturing and agriculture sectors." Corporate Knights (2022: Online) poses the question: "The real question is, are the world's banks ready to fund the development of renewable technologies at scale and updating all the infrastructure in between?" According to Corporate Knights, three Australian banks were among the top 60 global banks that financed energy transition; the top 60 banks were ranked "based on their income from sustainable financing activities as a percentage of total revenue". Corporate Knights stated that the Australia and New Zealand Banking Group Limited ranked 14th, followed by the Commonwealth Bank of Australia at position 28, and the National Australia Bank Limited at position 41.

4.3 CANADA

This section discusses the tax incentives and disincentives, as well as the financial incentives provided by both the public and private sector in Canada.

4.3.1 Tax incentives

"Canada's sustainability tax programs at both the federal and provincial levels have been in place for several years and continue to evolve" (Ernst & Young, 2023:23). To encourage clean energy generation that does not produce greenhouse gas emissions, Canada has various measures in the form of income tax incentives for clean energy generation equipment and conservation projects.

4.3.1.1 Clean energy generation equipment

"Clean technologies are a key component of the Government's approach to promoting sustainable economic growth and can contribute to a reduction in emissions of greenhouse gases and air pollutants" (Natural Resources Canada, 2023:1). The way to encourage clean technologies is to allow businesses to reduce their taxable income in the early years of an asset's

operation by deducting a capital cost allowance at a high rate (Income Tax Folio S3-F8-C2, 2024: Online).

Natural Resources Canada (2019:9-10) states that:

> The Government of Canada provides an accelerated Capital Cost Allowance (CCA) rate for Class 43.1 and Class 43.2 properties as an incentive to encourage businesses to invest in specified clean energy generation and energy conservation equipment. Both classes include a variety of stationary equipment that generates or conserve energy by:
>
> - Using a renewable energy source (e.g., wind, solar, small-scale hydro);
> - Using fuels from waste (e.g., landfill gas, wood waste, manure);
>
> or
>
> - Making efficient use of fossil fuels (e.g., high efficiency cogeneration systems).

Class 43.1 and 43.2 of Schedule II to the Canadian Income Tax Regulations (C.R.C., c. 945), provide an accelerated capital cost allowance for qualifying clean energy generation and energy conservation equipment situated in Canada, acquired by the taxpayer for use by the taxpayer for the purpose of earning income from a business carried on in Canada, or from a property situated in Canada, or acquired by the taxpayer in order to be leased to a lessee who will use the property for income earning purposes, and that has not been used for any purpose before the taxpayer acquired the property. In terms of section 1100(a)(1)(xxix.2) of the Canadian Income Tax Regulations, the taxpayer is eligible to claim an allowance of 50 per cent on the declining balance basis on Class 43.2 specified clean energy property meeting higher efficiency standards, that was acquired after 2005 and before 2025. For Class 43.1 the taxpayer claims a 30 per cent allowance on the declining balance basis on specified clean energy property meeting lower efficiency standards (section 1100(a)(1)(xxix.1) of the Canadian Income Tax Regulations).

4.3.1.2 First year enhanced clean energy generation equipment

Property included in Class 43.1 or 43.2 of Schedule II of the Canadian Income Tax Regulations is eligible for an enhanced first-year Capital Cost Allowance, if it was acquired after 20 November 2018 and is available for use before 2028 in the production of clean energy. The enhanced allowance initially provided a 100 per cent deduction if the property was available

for use in 2023 and for property that is available for use in 2024 and 2025, the enhanced allowance is 75 per cent, and 55 per cent if the property is available for use in 2026 and 2027 (Natural Resources Canada, 2023:1).

4.3.1.3 Canadian renewable and conservation expense

Canadian renewable and conservation expense is defined in section 1219(1) of Canadian Income Tax Regulations and means:

> an expense incurred by a taxpayer, and payable to a person or partnership with whom the taxpayer is dealing at arm's length, in respect of the development of a project for which it is reasonable to expect that at least 50% of the capital cost of the depreciable property to be used in the project would be the capital cost of any property that is included in Class 43.1 or 43.2 in Schedule II, or that would be so included if this Part were read without reference to this section, and includes such an expense incurred by the taxpayer.

Natural Resources Canada (2014:5) states that:

> In Budget 1996, tabled March 6, 1996, the Government of Canada introduced a category of expenses known as Canadian renewable and conservation expense in respect of certain start-up expenses associated with the development of project for which it is reasonable to expect that at least 50% of the capital cost of the depreciable property to be used in the project would be the capital cost of any property that is included in Class 43.1 or 43.2.

According to Natural Resources Canada (2014:5), the Canadian renewable and conservation expense is designed to promote investments in clean energy generation and energy conservation projects by providing an income tax incentive for certain start-up expenses of a project that can contribute to a reduction in greenhouse gas and air pollutant emissions and provide a more diversified energy supply. In terms of section 66.1(1) of the Canadian Income Tax Act, Canadian renewable and conservation expenses are fully deducted in the year incurred or carried forward indefinitely and deducted in future years.

4.3.1.4 Atlantic Investment Tax Credit

The Atlantic Investment Tax Credit is a credit based on the capital cost of prescribed energy generation and conservation properties that are used mainly for the purpose of farming, fishing, logging, manufacturing and processing, storing grain, and harvesting peat in Atlantic provinces, including their associated offshore regions (Canada Revenue Agency, Online).

In terms of section 127(9) of the Canadian Income Tax Act, the Atlantic Investment Tax Credit is provided for energy generation and conservation properties described in Class 43.1 and 43.2 of Schedule II of the Canadian Income Tax Regulations acquired by the taxpayer after 28 March 2012, and energy generation and conservation properties that are leased in the ordinary course of carrying on business in Canada by a corporation. Taxpayers are eligible to deduct 10% of the capital cost of prescribed energy generation and conservation properties.

4.3.1.5 Clean technology investment tax credit

Section 127.45(17) of the Canadian Income Tax Act provides taxpayers with a refundable clean technology investment tax credit. According to the Canada Revenue Agency (2023:8), the investment tax credit equals 30 per cent of the capital cost of eligible clean technology equipment acquired and brought into use after 27 March 2023 and before 31 December 2034. In 2034, the investment tax credit rate will be reduced to 15 per cent and after 2034, the investment tax credit rate will be nil.

In terms of section 127.45(1) of the Canadian Income Tax Act, eligible clean technology equipment includes equipment used in generating clean electricity described in class 43.1 (d)(ii), (iii.1), (v), (vi) or (xiv) of Schedule II of the Canadian Income Tax Regulations, stationary electricity storage equipment for zero-emission energy described in class 43.1(d)(xviii) or (xix), heating equipment and air and ground source heat pumps described in class 43.1(d)(i), zero-emission vehicles designed for off-road use described in class 56, concentrated solar energy equipment, and a small modular nuclear reactor. According to the Canada Revenue Agency (2023:89), taxpayers can benefit fully from the clean technology equipment and Atlantic investment tax credit.

4.3.1.6 Investment tax credit for carbon capture, utilization and storage

Section 127.44 of the Canadian Income Tax Act provides a refundable investment tax credit for carbon capture, carbon utilisation and carbon storage on the capital cost of the acquired equipment used to capture, utilise and store carbon. According to the Canada Revenue Agency (2023:89), carbon capture, utilization and storage "is a suite of technologies that capture carbon dioxide emissions from fuel combustion, industrial processes, or directly from the air, to either store the carbon dioxide or use it in the industry." In terms of section 127.44 of the Canadian Income Tax Act, taxpayers are eligible to claim the deduction of a refundable investment tax

credit from the tax payable. The investment tax credit rate varies depending on what the equipment is used for and the year it was acquired.

Table 4.2: The equipment usage and applicable investment tax rates

Equipment used:	Rates		
	Equipment available for use from 1 January 2022 to 31 December 2030	Equipment available for use from 1 January 2031 to 31 December 2040	Equipment available for use after 2040
to capture carbon dioxide directly from the air	60%	30%	NIL
to capture carbon dioxide from other sources	50%	25%	NIL
to transport carbon dioxide	37.5%	18.75%	NIL
to store carbon dioxide	37.5%	18.75%	NIL
in carbon usage	37.5%	18.75%	NIL

Source: Environmental Resources Management Policy Alert (2024:4)

4.3.1.7 Clean hydrogen investment tax credit

Section 127.48 of the Canadian Income Tax Act provides a refundable clean hydrogen investment tax credit on the capital cost of equipment acquired for use in clean hydrogen projects. In terms of section 127.48 of the Canadian Income Tax Act, the equipment must have been acquired by the taxpayer and available for use on or after 28 March 2023 and before 31 December 2033.

According to the Canada Revenue Agency (2023:87), the investment tax credit rate varies depending on the carbon intensity of the production process, the year the equipment is acquired and available for use and is calculated on the cost of purchasing and installation of the equipment used in the clean hydrogen project. The production "processes with lowest carbon intensity (measured as kilograms of carbon dioxide equivalent per kilogram of hydrogen produced) would earn the highest rate" (Canada Revenue Agency, 2023:87).

An investment tax credit is available as set out in Table 4.4 below.

Table 4.3: Carbon intensity in kilograms and applicable investment tax rates

	Rates		
Carbon intensity in kilogram(s) of produced clean hydrogen	Equipment available for use from 28 March 2023 to 31 December 2033	Equipment available for use in 2034	Equipment available for use after 2034
Less than 0.75 kg	40%	20%	NIL
1.5 kg or more and less than 2 kg	25%	12.5%	NIL
2 kg or more and less than 4 kg	15%	7.5%	NIL

Source: Ernst & Young Global Ltd (2024: Online), Canada Revenue Agency (2023:88)

4.3.1.8 Clean electricity investment tax credit

Section 127.491 of the Canadian Income Tax Act provides a refundable clean electricity investment tax credit "to support eligible entities that make eligible investments to accelerate the supply and transmission of clean electricity" (Canada Revenue Agency, 2023:88). In terms of section 127.491(8)(b) of the Canadian Income Tax Act, the investment tax credit rate is 15 per cent of the capital cost of equipment acquired on or after 16 April 2024 and before 1 January 2035 and used in clean electricity generation. The investment tax credit reduces the amount of the taxpayer's tax liability for the year (section 127.491(2)(a) of the Canadian Income Tax Act).

4.3.1.9 Clean technology manufacturing investment tax credit

Section 127.49 of the Canadian Income Tax Act provides "a refundable clean technology manufacturing investment tax credit for investment in clean technology manufacturing and processing, and critical mineral extraction and processing" (Canada Revenue Agency, 2023:88). In terms of section 127.49 of the Canadian Income Tax Act, taxpayers are eligible to claim a deduction from tax payable of an investment tax credit equal to 30 per cent of the capital cost of machinery and equipment, including certain industrial vehicles used in the manufacturing, processing, or critical mineral extraction.

4.3.1.10 Scientific research and experimental development tax credit and refund

Scientific research and experimental development expenditure incurred by a taxpayer to develop new technologies for renewable energy equipment is eligible for deduction as an

investment tax credit against the taxpayer's tax payable, or obtain a refund (Canada Revenue Agency, 2024: Online). Generally, the investment tax credit is 15 per cent of the scientific research and experimental development qualified expenditure pool at the end of the tax year and is non-refundable. However, Canadian-controlled private corporations are eligible to claim an enhanced refundable investment tax credit equal to 35 per cent, limited to $3 million of eligible yearly expenditure (Canada Revenue Agency, 2023:86). The expenditure limit is based on the taxable capital employed of the Canadian-controlled private corporation for the previous year. The expenditure limit decreases when the capital employed reaches $10 million, and when the expenditure limit reaches $50 million and more, the expenditure limit becomes nil (Canadian Revenue Agency, 2023:86). Section 127.3(1)(a) and (b) of Canadian Income Tax Act provides for a deduction from the tax payable of an amount not exceeding the total of taxpayer's scientific research and experimental development tax credit for the year, and any unused tax credits that were not deducted in the prior year.

4.3.1.11 Carbon capture utilization and storage

Class 57 and Class 58 of Schedule II of the Canadian Income Tax Regulations provide for the deduction of a capital cost allowance on certain properties used to capture, utilise and store carbon. Section 127.44 of the Canadian Income Tax Act defines the carbon capture, utilization and storage process as "the process of carbon capture, utilization and storage that includes the capture of carbon dioxide that would otherwise be released into the atmosphere, or directly from the ambient air, and storage or use of the captured carbon." In terms of section 1100(1)(a)(xliii) and (xliv) of the Canadian Income Tax Regulations, the taxpayer is eligible to claim the deduction of an 8 per cent capital cost allowance for Class 57 property, and 20 per cent for Class 58 property. Class 57 property includes the equipment used for capturing, transporting, and storing carbon dioxide, and related monitoring and control equipment, dual-use heat and power equipment, and equipment for preparing and compressing carbon dioxide for transporting, buildings or structures used for installing, or operating equipment used for capture, transport or storage of carbon dioxide. Class 58 property includes the equipment that utilises carbon dioxide in industrial production.

4.3.1.12 Rate reduction for zero-emission technology manufacturers

Section 125.2 of the Canadian Income Tax Act provides a corporate tax rate reduction applicable to zero-emission technology manufacturing profits. According to Canada Revenue

Agency (2023: 4), the reduced corporate rates will be 4.5 per cent until 2031 and will increase to 5.625 per cent in 2032, 6.75 per cent in 2033, and 7.875 per cent in 2034 for small businesses. For other businesses, the reduced corporate tax rates will be 7.5 per cent until 2031 and will increase to 9.375 in 2032, 11.25 per cent in 2033, and 13.125 per cent in 2034. Taxpayers are eligible for a reduced corporate tax rate if they manufacture energy conversion equipment, wind conversion equipment, water energy conversion equipment, geothermal energy equipment, equipment for ground source heat pump systems, electrical energy storage equipment used for storage of renewable energy, zero-emission vehicles, batteries and fuel cells for zero-emission vehicles, electric vehicle charging systems and hydrogen refuelling stations for vehicles, equipment used in the production of hydrogen by electrolysis of water, and the production of solid, liquid or gaseous fuel from either carbon dioxide or specified waste material.

Table 4.4: Summary of tax incentives aimed at reducing greenhouse gas emissions in Canada

Instrument	Description
Renewable energy capital cost allowance (class 43.1 and 43.2)	An accelerated capital cost allowance applies for capital equipment used for renewable electricity generation, at the rate of 30 per cent on a declining basis over the useful life of the equipment.
Enhanced renewable energy capital cost allowance (class 43.1 and 43.2)	An accelerated capital cost allowance applies for capital equipment used for renewable electricity generation, at the rate of 100 per cent.
Canadian renewable and conservation tax incentive (section 66.1)	A deduction applies in respect of expenditure incurred for a start-up development project at the rate of 100 per cent.
Atlantic investment tax credit (section 127.1)	An Atlantic investment tax credit applies to the capital cost of equipment used in renewable electricity generation in the Atlantic region at the rate of 10 per cent on the cost of the equipment.
Clean technology investment tax credit (section 127.45)	A new refundable clean technology investment tax credit applies for capital cost equipment used in clean technology at the rate of 30 per cent of the capital cost of the equipment.
Investment tax credit for carbon capture, utilization and storage (section 127.44)	An investment tax credit applies at the rate of 60 per cent for direct air capture equipment, 50 per cent for other capture equipment, and 37.5 per cent for equipment used to transport, store and utilise carbon.
Clean hydrogen investment tax credit (section 127.48)	An investment tax credit applies to the equipment used in the production of clean hydrogen at the rate of 40 per cent for carbon intensity of less than 0.75 kg of produced hydrogen, the investment tax rate decreases to 25 per cent for 1.5 kg or more and less than 2 kg of produced

	hydrogen, and for 2 kg or more and less than 4 kg of produced hydrogen the investment tax credit rate is 15 per cent.
Clean electricity investment tax credit (section 127.491)	An investment tax credit applies to the capital cost of equipment used in clean energy generation at the rate of 15 per cent on the cost of the equipment.
Clean technology manufacturing investment tax credit (section 127.49)	A new investment tax credit is available for clean technology manufacturing and processing, and critical mineral extraction and processing, equal to 30 per cent of the cost of the equipment used in clean technology manufacturing.
Scientific research and development tax credit and refund (section 127.3)	A non-refundable investment tax credit at the rate of 15 per cent applies for scientific research and experimental development for all other companies, and an enhanced investment tax credit or refund at the rate of 35 per cent on scientific research and experimental development for Canadian-controlled private companies.
Carbon capture, utilisation and storage (class 57 and 58)	An accelerated capital cost allowance applies for equipment used to capture, store, transport, and utilise carbon dioxide at the rate of 8 per cent and 20 per cent for Class 57 and 58 equipment, respectively.
Rate reduction for zero-emission technology manufacturers (section 125.2)	Zero-emission technology manufacturers are taxed at reduced corporate tax rates. The corporate tax rates will be reduced by 4.5 per cent until 2031 and this will increase to 5.625 per cent in 2032, 6.75 per cent in 2033, and 7.875 per cent in 2034 for small businesses. For other businesses, the reduced corporate tax rates will be 7.5 per cent until 2031 and will increase to 9.375 in 2032, 11.25 per cent in 2033, and 13.125 per cent in 2034.

Source: Own summary

4.3.2 Tax disincentive – carbon pricing

According to Canada's Ecofiscal Commission (2019:6), carbon pricing is a pricing system that includes "carbon taxes, cap-and-trade systems, output-based pricing systems, and hybrid systems that combine these different elements into a larger scheme." Carbon pricing is regulated under the Greenhouse Gas Pollution Pricing Act, 21 of 2018 (the Greenhouse Gas Pollution Pricing Act). In terms of the preamble to the Greenhouse Gas Pollution Pricing Act:

> The Government of Canada is committed to achieving Canada's Nationally Determined Contribution – and increasing it over time – under the Paris Agreement by taking comprehensive action to reduce emissions across all sectors of the economy, accelerate clean economic growth and build resilience to the impacts of climate change.

For this reason, pricing greenhouse gas emissions may encourage emitters to switch to cleaner alternatives and technologies, promote innovation, and increase energy efficient products, which is necessary for effective action against climate change. The Pan-Canadian Framework on Clean Growth and Climate Change (2016:7) states that "carbon pricing is broadly recognised as one of the most effective, transparent, and efficient policy approaches to reduce greenhouse gas emissions". The David Suzuki Foundation (2024: Online) agrees, stating that "pricing carbon emissions through a carbon tax is one of the most powerful incentives that governments have to encourage companies and households to pollute less by investing in cleaner technologies and adopting greener practices."

The carbon pricing under the Greenhouse Gas Pollution Pricing Act has two components: a fuel charge and a levy on industrial greenhouse gas emissions. Part 1, Division 1 of the Greenhouse Gas Pollution Pricing Act imposes a fuel levy on gasoline, diesel and propane fuel that emit greenhouse gas emissions in Canada. According to PWC (2024a: Online) the fuel levy started at CA$ 20 per tonne of carbon dioxide equivalent in April 2019 and was increased by CA$ 10 per tonne of carbon dioxide equivalent each year until 2022, thereafter it was increased by CA$ 15 per tonne of carbon dioxide equivalent until it reaches CA$ 170 per tonne of carbon dioxide equivalent in 2030.

Section 174(1) of the Greenhouse Gas Pollution Pricing Act provides that carbon pricing is charged in respect of the greenhouse gas emissions of the taxpayer exceeding the emissions limit in respect of a tax period, expressed as the carbon dioxide equivalent. Part II, Division 1 of the Greenhouse Gas Pollution Pricing Act imposes a pricing mechanism levy on greenhouse gas emissions emitted by the industrial emitters exceeding the emissions limit.

Table 4.5: Summary of tax disincentive measures introduced to mitigate greenhouse gas emissions in Canada

Instrument	Description
Fuel charge (carbon tax)	An environmental levy in the form of a carbon tax is payable on carbon dioxide emissions of motor vehicles resulting from gasoline, diesel and propane fuel. The carbon tax rate is CA$ 95 per tonne of carbon dioxide equivalent emissions.
Levy on Industrial greenhouse gas emissions (carbon tax)	An environmental levy is payable on carbon emissions resulting from industrial greenhouse gas emissions in the form of a carbon tax. The carbon tax rate is CA$ 95 per tonne of carbon dioxide equivalent emissions.

Source: Own summary

4.3.3 Financial Incentives

This section discusses financial incentives provided by the public and private sectors.

4.3.3.1 Financial incentives by the public sector

KPMG (2023b:34) explains that "the federal government is encouraging investment in renewable energy and related technology through a range of funding mechanisms and working with provinces to enable development of related projects and industries across the country".

- **Climate Action Incentives Fund**

The Saskatchewan Chamber of Commerce (2019:1) states that the Climate Action Incentives Fund is available in selected provinces: Ontario, Saskatchewan, Manitoba, and New Brunswick, and aims to encourage energy efficiency projects that reduce carbon pollution. The Saskatchewan Chamber of Commerce explains that the programme is funded by a portion of the proceeds from carbon tax revenues to help support actions related to energy efficiency and the reduction of greenhouse gas emissions. According to the Saskatchewan Chamber of Commerce (2019:2), the Climate Action Incentives Fund is intended for small and medium enterprises (SMEs) and is comprised of two distinct funding streams: a project-based stream and rebate-based stream.

The Climate Action Incentives Fund programme provides financial support to SMEs to help them to undertake larger and more project categories and activities that are mainly focused on replacing outdated and inefficient machinery and equipment with high efficiency ones, fuel switching to lower emitting energy sources, and energy management installs (Saskatchewan Chamber of Commerce, 2019:2).

- **New Efficient Construction Grant**

According to Natural Resources Canada (2022: Online), the New Efficient Construction Grant provides a financial incentive to encourage the construction of energy efficient buildings that will reduce their operating expenses and increase their resale value. Énergir (2024: Online) states that:

> Improving the energy performance of a building right from the design phase has several advantages: reducing your energy consumption and greenhouse gas emissions, as well as providing better thermal and acoustic insulation, compared to a similar building that didn't implement energy efficiency measures. These significant benefits will help increase the value of the asset and will benefit its occupants throughout the lifespan of the building.

- **EcoPerformance**

Natural Resources Canada (2018: Online) reveals that EcoPerformance is an energy transition programme that "seeks to reduce energy use and greenhouse gas emissions of businesses by funding projects or resources linked to the improvement of processes related to the consumption and production of energy". According to Natural Resources Canada, this programme is available in the form of energy management and monitoring, a financial incentive, and a retrofit for businesses, institutions and municipalities that consume fossil fuels or use processes that generate fugitive greenhouse gas emissions, to enable them to make the transition to reducing emissions.

- **Growth Fund and Infrastructure Bank**

KPMG (2023b:34) notes that to continue to promote a clean economy, the Canadian Government committed a 20 billion Canadian dollar fund to support investment in clean electricity, hydrogen, technology adoption, technology manufacturing, and carbon capture, utilization and storage. KPMG explains that to support clean electricity and growth infrastructure projects to strengthen electricity grid, the Canadian Government committed 15 billion and 20 billion Canadian dollars for a Canadian Growth Fund and a Canadian Infrastructure Bank respectively.

- **Low Carbon Economy Fund**

Canada.ca (2025a: Online) states that "the Low Carbon Economy Fund supports projects to reduce Canada's greenhouse gas (GHG) emissions, generate clean growth, build resilient communities, and create good jobs for Canadians". According to Canada.ca (2025: Online), the Low Carbon Economy Fund supports projects through four different funding envelopes: Low Carbon Economy Challenge, Indigenous Leadership Fund, Low Carbon Economy Leadership Fund, and Implementation Readiness Fund. This funding aims to promote the use of low-carbon

technologies, support clean energy and energy efficiency projects, and support provinces and territories to help them deliver on commitments to reduce greenhouse gas emissions.

- **Strategic Innovation Fund – Net Zero Accelerator**

According to Canada.ca (2025b: Online), the Strategic Innovation Fund was implemented in 2020 to support the Canadian Government in strengthening its climate plan to meet the ambitious target of reducing greenhouse gas emissions by 40% to 45% by 2030 and achieve net zero by 2050. Canada.ca explains that the Strategic Innovation Fund, amounting to $8 billion, is available to support large-scale investment in key sectors across Canada.

- **Indigenous Climate Leadership and Adaptation Program**

According to Canada.ca (2025c: Online), a set of Indigenous-targeted streams is delivered by various federal funding streams. The Indigenous Leadership Fund, a stream of the Low Carbon Economy Fund, provides funding amounting to CA $180 million to Indigenous-led renewable energy, energy efficiency and low-carbon heating projects (Canada.ca, 2025: Online). According to Canada.ca (2025: Online), the First Nations Adapt Program, which is delivered through Crown-Indigenous Relations and Northern Affairs Canada, provides funding to community-led climate adaptation projects for First Nations south of the 60th parallel.

- **Agricultural Climate Solutions – On-Farm Climate Action Fund**

Canada.ca (2025: Online) states that Agricultural Climate Solutions "… is focused on sequestering carbon, reducing greenhouse gas emissions and delivering environmental benefits." According to Canaca.ca (2025: Online), Agricultural Climate Solutions is a multi-stream program that was implemented to support farmers in adopting beneficial management practices that store carbon and mitigate greenhouse gas emissions.

- **Zero Emission Vehicle Infrastructure Program**

According to Natural Resource Canada (2025a: Online), the Canadian Government supported the transition to net zero emissions, including accelerating the transition to zero emission vehicles. Canada.ca (Online), explains that the program has now closed and ended.

- **Smart Renewables and Electrification Pathways Program**

According to Natural Resource Canada (2025b: Online), Smart Renewables and Electrification Pathways funding amounting to $4.5 billion, was launched in 2021 and is expected to end in 2036, aiming to support the deployment of grid modernisation, energy storage, and renewable energy technologies in every region of Canada.

- **Clean Fuels Fund**

According to Natural Resources Canada (2025c: Online), the Clean Fuels Fund was launched to support capital investment in the construction of new or the expansion of domestic clean fuel production capacity, as well as feasibility and front-end engineering and design studies in Canada.

4.3.3.2 Financial incentives by the private sector

"Clearly, banks have a crucial role to play in funding the economy-wide transition to net zero carbon emissions, but are they moving fast enough? Who is leading the charge and who is lagging behind?" (The Banker, 2023: Online). Corporate Knights (2022: Online) points out that seven Canadian banks were among the top 60 banks that finance energy transition. According to Corporate Knights, Vancity, a Canadian Bank, ranked first in terms of their sustainable revenue ratio, compared with 60 top leading global banks, with 34.12% in 2021, and in 2022 Vancity held the same ranking position, although the sustainable revenue ratio decreased to 24.3%. According to The Banker (2023: Online), Vancity "earned significant sustainable revenue via loan support to borrowers from high-emitting sectors to improve emission measurement and reporting practices, as well as developing climate transition". Corporate Knights (2022: Online) reported that BMO Financial Group held position nine, followed by the Royal Bank of Canada, National Bank of Canada, TD Bank Group, Canadian Imperial Bank of Commerce, and Scotiabank, at positions 22, 29, 36, 50 and 58 respectively.

4.4 CONCLUSION

In this chapter various tax incentives, tax disincentives and financial incentives were discussed that are provided in Australia and Canada. In Australia, the government supports the reduction of greenhouse gas emissions by providing tax incentives for carbon sink forests, research and

development, production of renewable hydrogen, and environmental protection activities that include preventing, fighting or remedying pollution resulting from carrying on income earning activities. Tax disincentive measures are imposed in the form of the Safeguard Mechanism Scheme for emitters other than the energy sector. An entity pays for any emissions exceeding the set baseline emission. Additionally, financial incentives are provided by the public sector in the form of loans and equity investments in the energy sector to finance the transition from non-renewable energy production to renewable energy production, energy efficiency and low emissions technologies. The private sector finances large emitters with loans to support the transition to low-carbon technologies.

In Canada, tax incentives for clean energy generation equipment, Canadian renewable and conservation expenses, prescribed energy generation and conservation properties, scientific research and experimental development, and carbon capture utilization and storage are made available by the government to support renewable energy generation and low emissions technologies. A tax disincentive measure is imposed in the form of carbon pricing on fuel and industrial emissions. The fuel levy is charged per tonne of carbon dioxide equivalent, and the carbon price is charged per tonne of carbon dioxide equivalent on industrial emission exceeding the emissions limit. Additionally, financial incentives by the public sector in the form of grants, loans and equity investment are provided to entities carrying on business operations in Canada to encourage investment in carbon capture utilization and storage equipment, clean energy generation equipment, research and development, and the construction and renovation of energy efficiency buildings. The private sector provides financial incentives in the form of loans to high-emitting companies to encourage them to invest in renewable energy generation equipment, energy efficiency, and carbon capture utilization and storage facilities.

The next chapter provides a comparative analysis of similarities and differences in tax incentives, disincentives and other measures to combat greenhouse gas emissions introduced in South Africa, Australia and Canada.

CHAPTER 5: COMPARISON OF TAX MEASURES AND FINANCIAL INCENTIVES INTRODUCED IN SOUTH AFRICA, AUSTRALIA AND CANADA AIMED AT COMBATING GREENHOUSE GAS EMISSIONS

5.1 INTRODUCTION

The third sub-goal of the research is to compare and comment on similarities and differences in tax incentives, disincentives and other measures introduced in South Africa, Australia and Canada that are aimed at combating greenhouse gas emissions. This chapter addresses this subgoal by evaluating similarities and differences in tax incentives, tax disincentives and other measures introduced in these countries. The comparison will reveal measures applying in Australia and Canada that could be introduced in South Africa. The chapter begins by comparing tax incentives in South Africa, Australia and Canada, followed by a comparison of tax disincentives.

5.2 TAX INCENTIVES IN SOUTH AFRICA AND THE SELECTED COUNTRIES

KPMG (2025: Online) states that:

> The regulatory landscape is evolving rapidly, with governments worldwide introducing tax measures and incentives to positively impact the environment and combat climate change. These initiatives are part of their commitment to reduce greenhouse gas emissions. Globally, we are seeing the introduction of environmental taxes such as new carbon and plastic taxes, scope expansion of carbon pricing systems, and various funding opportunities to support green investments, like sustainable energy transitions.

Australia and Canada, together with South Africa, rank amongst the top twenty largest emitters of greenhouse gas emissions per capita over the past decade (Statista, 2023). South Africa, Australia and Canada, as parties to the Paris Agreement, are mandated in terms of Article 2 of the United Nations Framework Convention on Climate Change (1992:9) to take appropriate measures to stabilise greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. South Africa, Australia and Canada have all introduced a wide spectrum of tax incentives that were identified and discussed in Chapters 3 and 4. These incentives include a capital cost allowance and an enhanced capital cost allowance, carbon sequestration by trees, carbon capture, carbon utilisation and carbon storage, a hydrogen production allowance, an investment tax credit, a

clean technology manufacturing allowance, and research and development incentives. The similarities and differences in these tax incentives are discussed below.

5.2.1 Similarities in tax incentives between countries

South Africa provides taxpayers with an accelerated depreciation allowance on capital equipment used for renewable electricity generation (section 12B) and a deduction for expenditure incurred for roads constructed and fences erected in respect of renewable energy production (section 12U). Additionally, taxpayers are provided with an accelerated depreciation allowance for capital manufacturing equipment used in an industrial policy project that uses improved energy efficiency and cleaner production technologies (section 12I), an accelerated depreciation allowance for capital equipment used in the manufacturing of battery electric and hydrogen produced vehicles (section 12V), as well as a deduction for energy efficiency savings (section 12L), and a deduction for expenditure incurred on research and development (section 11D).

Canada provides taxpayers with accelerated capital cost allowances on clean energy generation and energy conservation equipment (Class 43.1 and 43.2 of Schedule II of the Canadian Income Tax Act), including an enhanced accelerated capital cost allowance (Class 43.1 or 43.2 of the Canadian Income Tax Act), a deduction for expenditure incurred for certain start-up expenses on clean energy generation and energy conservation projects (section 66.1(1) of the Canadian Income Tax Act), and a deduction for the manufacture of zero-emission technology (section 125.2). Additionally, taxpayers are eligible to claim a tax credit against tax payable or a refund for expenditure incurred on scientific research and development (section 127.3(1)(a) and (b) of the Canadian Income Tax Act), and clean economy investment tax credits, including clean hydrogen (section 127.48), clean technology manufacturing (section 127.49), clean technology (section 127.45), clean electricity (section 127.491), and an investment tax credit for carbon capture, carbon utilisation and carbon storage (section 127.44).

In Australia, taxpayers are provided with a deduction for expenditure incurred for carbon sequestration trees (section 40.1005), a deduction for carbon sequestration trees destroyed (section 40.1030), a deduction for clean hydrogen production (Division 421), and a deduction for research and development expenditure (section 355 of the Income Tax Assessment Act).

5.2.1.1 Renewable electricity generation and investment tax credit

South Africa and Canada have similar requirements for the deductibility of accelerated capital cost allowances and depreciation allowances. Those requirements are that the eligible capital equipment must be owned by the taxpayer, used to generate electricity or energy from renewable sources, including wind power, solar energy, small-scale hydropower, using fuel from organic waste, landfill gas or plant material, and high-efficiency cogeneration systems. In South Africa, an accelerated depreciation allowance is provided in terms of section 12B of the Income Tax Act for capital equipment used for renewable electricity generation from wind, solar, small-scale hydro and biomass, at the rate of 50: 30: 20 per cent over three years, and 100 per cent in the case of photovoltaic solar energy equipment not exceeding 1 megawatt. In Canada, an accelerated capital cost allowance is provided for in terms of Class 43.1 and 43.2 of Schedule II of the Canadian Income Tax Act at the rate of at the rate of 30 per cent on a declining basis over the useful life of eligible equipment.

South Africa and Canada both provide an enhanced capital allowance in the form of a full deduction in respect of any new and unused eligible equipment used in renewable electricity or energy generation from renewable sources, including wind power, solar energy, small-scale hydropower using fuel from organic wastes, landfill gas or plant material, and high-efficiency cogeneration systems. In Canada, taxpayers can claim the deduction of an enhanced accelerated capital cost allowance in terms of Class 43.1 and 43.2 of Schedule II of the Canadian Income Tax at an amount equal to 100 per cent if eligible equipment was available for use in 2023, 2024, and 2025; if the equipment is available for use in 2026 and 2027, the amount qualifying for deduction is 75 per cent and 55 per cent respectively.

In Canada, taxpayers are also provided, in terms of section 127(491), with a refundable investment tax credit at the rate of 15 per cent on the cost of equipment used in clean electricity projects that commenced after 28 March 2023 and before 2034. This refundable investment tax credit is reduced by 10 percentage points if prevailing wage requirements and apprenticeship requirements are not met. An Atlantic investment tax credit at the rate of 10 per cent on the cost of qualifying equipment is also provided in terms of section 127(9) of the Canadian Income Tax Act for taxpayers who operate their corporation in the Atlantic Region (Province) in Canada.

Australia does not provide similar capital allowances or investment tax credits.

5.2.1.2 Clean technology manufacturing and investment tax credit

Both South Africa and Canada provide an accelerated capital allowance for investment in clean technology manufacturing equipment. In South Africa, an accelerated depreciation allowance is provided in terms of section 12I of the Income Tax Act for capital manufacturing equipment used in an Industrial Policy project that uses improved energy efficiency and cleaner production technologies, at the rate of 55 per cent of the cost of manufacturing equipment used in an industrial policy project with preferred status, or 100 per cent if the manufacturing asset is also located within a special economic zone, or 35 per cent if the manufacturing equipment is used in any industrial policy other than an industrial policy with a preferred status, or 75 per cent if the manufacturing equipment is located within a special economic zone.

Canada does not provide an accelerated capital cost allowance for clean technology capital manufacturing equipment. However, the Canadian government promotes investment in clean technology manufacturing by providing taxpayers with an investment tax credit and zero-emission technology manufacturing deduction. Taxpayers who invest in capital manufacturing equipment are eligible to claim a 30 per cent refundable investment tax credit in terms of section 127(49) of the Canadian Income Tax Act on the capital cost of eligible equipment used in manufacturing and processing, and critical mineral extraction and processing. In terms of section 125.2 of the Canadian Income Tax Act, zero-emission technology manufacturing taxpayers pay income tax at a reduced corporate income tax rate.

Australia does not provide similar capital allowances or investment tax credits.

5.2.1.3 Expenditure for renewable electricity generation

In South Africa, taxpayers are provided with a deduction for expenditure incurred in respect of the construction of any road or the erecting of any fence and foundation for the purpose of renewable energy production projects. The deduction is provided for in terms of section 12U(1)-(2) of the Income Tax Act at the rate of 100 per cent. Additionally, in terms of section 12U(3) of the Income Tax Act, taxpayers claim a deduction for expenditure incurred prior to the commencement of and in preparation for renewable energy generation projects. As soon as the project commences, taxpayers may deduct 100 per cent of the expenditure incurred.

In Canada, taxpayers are provided with a deduction for start-up expenses incurred for clean energy generation and energy conservation projects. The tax incentive is provided in terms of section 66.1(1) of the Canadian Income Tax Act at the rate of 100 per cent of the costs incurred.

Australia does not provide similar deductions.

5.2.1.4 Research and development allowance

South Africa, Australia and Canada all provide taxpayers who have incurred scientific research and experimental development expenditure for the purpose of gaining new knowledge with a deduction in the form of a capital allowance, tax offset, tax credit or refund. In South Africa, a deduction of 150 per cent for scientific and technological research and development expenditure, and research and development capital expenses at the rate of 50: 30: 20 per cent over three years is provided for in terms of section 11D.

In Australia, companies with an aggregated turnover of less than $20,000 claim a refundable tax credit equal to the entity's corporate tax rate, which is 25 per cent, plus an 18.5 per cent premium in terms of section 355.100(1). Taxpayers with an aggregated turnover of more than $20,000 are granted non-refundable tax credit equal to the corporate tax rate, which is 30 per cent plus a premium of either 8.5 per cent or 16.5 per cent depending on the percentage of research and development expenditure to total expenditure, in terms of section 355.100(1A) of the Australian Income Tax Assessment Act. Taxpayers with research and development expenditure of 2 per cent and less of total expenditure are granted a premium rate of 8.5 per cent, and entities incurring research and development expenditure exceeding 2 per cent of the entity's total expenditure are granted a premium of 16.5 per cent; therefore the non-refundable tax credit is either 38.5 per or 46.5 per cent depending on the amount of research and development expenditure incurred.

In Canada, certain Canadian-controlled private companies claim research and development expenditure as a tax credit or refund at the rate of 15 per cent or 35 per cent of the expenditure. The tax incentive is provided in terms of section 127(3) of the Canadian Income Tax Act.

5.2.1.5 Hydrogen production tax incentive

In Australia, the government plans to support investment in renewable hydrogen production through a hydrogen production tax incentive. The proposed tax incentive will be provided in

terms of Division 421 of the Australian Income Tax Assessment Act as a refundable tax offset against the income tax payable at AU$2 per kilogram of the produced hydrogen. The proposed hydrogen production tax incentive is scheduled to be implemented on 1 July 2027.

The Canadian government provides an investment tax credit incentive for clean hydrogen production, which was implemented on 28 March 2023. The tax incentive is provided for in terms of section 127(48) of the Canadian Income Tax Act and the investment tax credit rate varies depending on the carbon intensity of the production process, the year the equipment is acquired and available for use and is calculated on the cost of purchasing and installation of the equipment used in the clean hydrogen project.

The government of South Africa does not provide tax incentives for hydrogen production. However, a tax incentive is provided on the capital cost of equipment used in the manufacturing of battery electric and hydrogen-produced vehicles. The taxpayers may claim a 150 per cent depreciable allowance in terms of section 12V of the Income Tax Act.

5.2.1.6 Carbon sequestration

In Australia, taxpayers are provided with a deduction for expenditure incurred for establishing trees in carbon sink forests, and an additional deduction is provided for carbon sink forest trees that are destroyed. The deduction of expenditure incurred for carbon sequestration trees is provided for in terms of section 40.1005 of the Australian Income Tax Assessment Act as follows: established expenditure multiplied by (write-off days in the income year divided by 365 days) multiplied by 7 per cent. Taxpayers may also claim for trees destroyed in terms of section 40.1030. The trees must be clearly identifiable as carbon sink trees, and the land occupied by the trees must be at least 0.2 hectors or more, and at the time the trees are planted, it must be clear that they will attain a crown cover of 20% or more and will reach a height of at least two metres.

In Canada, taxpayers are eligible to claim the deduction of an accelerated capital cost allowance on eligible equipment used to capture, utilise and store carbon dioxide emissions (Class 57 and 58 of Schedule II of the Canadian Income Tax Act). An accelerated capital allowance is claimable at the rate of 8 per cent for Class 57 equipment and at the rate of 20 per cent for Class 58 equipment. In Canada, an investment tax credit is also provided in terms of section 127(44) at the rate of 60 per cent for equipment used to capture carbon dioxide directly from the ambient air, 50 per cent for equipment used to capture carbon dioxide that would otherwise be released

into the atmosphere, and 37.5 per cent for equipment used to transport, store and utilize carbon dioxide.

South Africa does not provide a similar capital allowance or deduction.

5.2.2 Differences in incentives between countries

This section discusses differences in tax incentives in South Africa, Canada and Australia, as discussed in Chapters 3 and 4.

5.2.2.1 Energy efficiency savings

In South Africa, taxpayers are provided with a deduction from taxable income derived from carrying on any trade for energy efficiency savings in respect of any year of assessment ending before 1 January 2026, and are eligible to claim a deduction in terms of section 12L of the Income Tax Act of an amount calculated at 95 cents per kilowatt hour or kilowatt hour equivalent of energy efficiency savings. Australia and Canada do not provide similar allowances.

5.2.2.2 Clean technology investment tax credit

In Canada, a refundable clean technology investment tax credit equal to 30 per cent of the capital cost of equipment is provided in terms of section 127(45) of the Canadian Income Tax for equipment acquired and available for use after 27 March 2023 and before 2034. In 2034, the investment tax credit will be reduced to 15 per cent and reduced to nil after 2034. Taxpayers are required to meet prevailing wage requirements and apprenticeship requirements and failing to meet these requirements, the rate is reduced by 10 percentage points. South Africa and Australia do not provide similar tax credits.

5.3 TAX DISINCENTIVES

This section discusses similarities and differences in tax disincentives in South Africa, Canada and Australia, as discussed in Chapters 3 and 4.

5.3.1 Similarities in tax disincentives between countries

In South Africa, the government imposes an environmental levy on the carbon dioxide equivalent of greenhouse gas emissions resulting from fuel combustion, fugitive emissions, and industrial processes, as well as a fuel levy. In Canada, the government imposes a price on the carbon dioxide equivalent of industrial greenhouse gas emissions and a fuel levy. In Australia, taxpayers do not pay a levy or price on carbon dioxide. However, taxpayers who do not comply with the requirements for an annual reduction in greenhouse gas emissions are charged a penalty.

5.3.1.1 Environmental levy on carbon dioxide

In South Africa and Canada, high emitters pay a tax or price on the carbon dioxide equivalent of greenhouse gas emissions exceeding the emissions limit or threshold.

In South Africa a carbon tax is imposed on carbon emissions resulting from fuel combustion, fugitive emissions and industrial processes. The carbon tax is levied in terms of section 4(1) of the Carbon Tax Act. The carbon tax rate for the year 2025 is R190 per tonne of carbon dioxide equivalent exceeding the threshold. Taxpayers are granted a sixty per cent basic tax-free allowance and a maximum of ten per cent allowance for trade exposure. Additionally, taxpayers who implement measures to reduce carbon dioxide are granted a maximum of ten per cent performance allowance, and a five per cent carbon budget allowance for those taxpayers participating in the carbon budget system. Taxpayers are also granted a ten per cent offset allowance in respect of fuel combustion and a five per cent offset allowance in respect of fugitive emissions and industrial processes. In total, the maximum tax-free allowance is equal to ninety-five per cent.

In Canada, a carbon price is imposed on carbon emissions resulting from industrial processes. The carbon price is levied in terms of section 174(1) of the Canadian Greenhouse Gas Pollution Pricing Act. The carbon price for the year 2024 is 80 Canadian Dollars per tonne of carbon dioxide exceeding the emissions limit. This amount equates to approximately R1 037,96 compared to the R190 carbon tax rate in South Africa.

The Australian government does not impose a carbon tax or carbon price on carbon dioxide emissions. Instead, Australia imposes a charge for non-compliance with Safeguard Mechanism

requirements. Taxpayers that emit more than 100,000 tonnes of carbon dioxide equivalent in a year must reduce their baseline greenhouse gas emissions by 4.9 per cent every year to 2030. Taxpayers who fail to comply with this requirement are liable for a maximum civil penalty of one unit per tonne of excess emissions per year, charged at 275 Australian Dollars per unit, plus the infringement notice charge of one-third of the maximum civil penalty, to a maximum of 150,000 penalty units.

5.3.1.2 Environmental levy on carbon dioxide emissions of motor vehicles

In South Africa, the government imposes an environmental levy on carbon dioxide emissions of new motor vehicles manufactured in or imported into the Republic. The environmental tax rates differ in relation to the size and purpose for which the motor vehicle is used. An environmental levy payable for passenger vehicles is R146 per g/kg of carbon dioxide emissions exceeding 95 g/km. For vehicles transporting goods, the environmental levy payable is R195 per g/km of carbon dioxide emissions exceeding 175 g/km.

A fuel levy is imposed in Canada on gasoline, diesel and propane fuels that emit greenhouse gas emissions. The fuel levy tax rate imposed in Canada is CA$ 80 per tonne of carbon dioxide equivalent. This amount equates to approximately R1 037,96, compared to the R146 or R195 rate in South Africa. Australia does not impose a similar environmental levy.

5.3.2 Differences in tax disincentives between countries

In addition to the carbon tax and fuel levy tax, South Africa imposes a levy on the carbon dioxide equivalent of greenhouse gas emissions from electricity generated in South Africa, and a levy on filament electric lamps manufactured in or imported into South Africa. The tax rate on electricity generated is 3,5 cents per kilowatt hour. The tax rate for filament electric lamps is R20 per lamp. Australia and Canada do not impose similar environmental levies.

5.4 FINANCIAL INCENTIVES

This section discusses similarities and differences in financial incentives provided by the public and private sector in South Africa, Australia and Canada, which were identified and discussed in Chapters 3 and 4.

5.4.1 The public sector

Australia and Canada both have various grants and funding in place, including grants and funding relating to energy efficiency projects that reduce carbon pollution, financial incentives to promote the construction of energy efficient buildings (retrofitting buildings), clean electricity generation projects, clean hydrogen production, technology adoption, clean manufacturing technologies, and carbon capture utilisation and storage projects. In South Africa, there are grants and funding related to clean energy generation; however, the government does not provide funding for carbon capture, carbon dioxide utilisation, or carbon storage projects.

5.4.2 The private sector

The private sector provides financial incentives for clean energy generation projects in all three countries.

5.4.3 Summaries of incentives and disincentives by the three countries

The following two tables provide comparative summaries of incentives and disincentives provided for in South Africa, Canada and Australia.

Table 5.1: Summary of tax incentives aimed at reducing greenhouse gas emissions in South Africa, Canada and Australia

Tax incentive	South Africa	Canada	Australia
Renewable electricity generation	A depreciation allowance is provided on the cost of equipment at the rate of 50: 30: 20 per cent over three years, and 100 per cent in the case of photovoltaic solar energy equipment not exceeding 1 megawatt.	A capital cost allowance is provided at the rate of 30 per cent on the capital cost of equipment on a declining basis over the useful life of the equipment. An investment tax credit is provided at the rate of 15 per cent on the cost of eligible equipment. An Atlantic investment tax credit is provided at the rate of 10 per cent on cost of eligible equipment.	Not provided for.
Renewable electricity generation	An enhanced depreciation allowance is provided at the rate of 125 per cent of the capital cost of equipment.	An enhanced capital cost allowance is provided at the rate of 100 per cent of the capital cost of equipment.	Not provided for.
Renewable energy roads and fences	A deduction at the rate of 100 per cent is provided in respect of roads constructed and fences erected.	A deduction is provided at the rate of 100 per cent for expenditure incurred for a start-up development project.	Not provided for.
Research and development	A deduction of 150 per cent is provided for scientific and technological research and development expenditure, and research and development capital expenses at the rate of 50: 30: 20 per cent over three years.	A tax credit or refund is provided at the rate of 15 per cent or 35 per cent for certain Canadian-controlled private companies.	Companies with an aggregated turnover of less than AU$20 million claim a refundable tax credit equal to 30 per cent corporate rate plus fixed 18.5 percentage points. Taxpayers with an aggregated turnover of more than $20 million a refundable tax credit equal to 30 per cent corporate rate plus either 8.5 percentage points or 16.5 percentage points depending on their total expenditure.
Carbon sequestration and carbon capture	Not provided for.	A capital cost allowance at the rate of 8 per cent and 20 per cent is provided on equipment used to capture, store, transport, and utilize carbon dioxide. An investment tax credit is also provided at the rate of 60 per cent for equipment used to capture carbon dioxide directly from the ambient air, 50 per cent for other capture equipment, and 37.5 per cent for	A deduction is provided for expenditure incurred for carbon sequestration trees: established expenditure multiplied by (write-off days in the income year divided by 365 days) multiplied by 7 per cent. Taxpayers may also claim for trees destroyed.

		equipment used to transport, store and utilize carbon.	
Renewable hydrogen incentive	A depreciation allowance is provided equal to 30 per cent of the capital cost of equipment.	An investment tax credit applies on equipment used in the production of clean hydrogen at the rate of 40 per cent of carbon intensity of less than 0.75 kg of produced hydrogen, decreasing to 25 per cent for 1.5 kg or more and less than 2 kg of produced hydrogen, and 15 per cent for 2 kg or more and less than 4 kg of produced hydrogen.	A tax incentive for clean hydrogen production is provided at AU$2 per kilogram.
Clean technology investment tax credit	Not provided for.	A new refundable clean technology investment tax credit is provided equal to 30 per cent of the capital cost of equipment.	Not provided for.
Clean technology manufacturing	A depreciation allowance is provided at the rate of 55 per cent of the cost of manufacturing equipment used in an industrial policy project with preferred status; 100 per cent if the asset is also located within a special economic zone; 35 per cent if the equipment is used in any industrial policy other than an industrial policy with a preferred status; or 75 per cent if the equipment is used in any industrial policy project other than an industrial policy with a preferred status located within a special economic zone.	A new 30 per cent investment tax credit is proposed for clean technology manufacturing and processing, and critical mineral extraction and processing. Zero-emission technology manufacturers are taxed at reduced corporate tax rates.	Not provided for.
Energy efficiency	A deduction against taxable income is provided in the form of an amount equal to the monetary value of proven energy efficiency savings.	Not provided for.	Not provided for.

Source: Own summary

Table 5.2: Summary of tax disincentives aimed at reducing greenhouse gas emissions in South Africa, Canada and Australia

Tax disincentive	South Africa	Canada	Australia
Environmental levy on carbon emissions	The carbon tax is payable at R190 per tonne of carbon dioxide equivalent.	The carbon price is payable at CA$80 per tonne of carbon dioxide equivalent.	A penalty is payable at the rate of AU$275 per unit of excess emissions per year.
Levy on carbon dioxide emissions of motor vehicles	The fuel levy is payable at R146 per g/km of carbon dioxide emissions exceeding 95 g/km on motor cars and R195 per g/km of carbon dioxide exceeding 175 g/km on goods transport motor vehicles.	The fuel levy is payable at CA$80 per tonne of carbon dioxide equivalent of motor vehicles.	Not provided for.
Levy on electricity generated	An environmental levy is payable on electricity generated by coal. The levy is imposed at a rate of 3,5 cents per kilowatt hour.	Not provided for.	Not provided for.
Electric filament lamps levy	An environmental levy is payable on electric filament lamps manufactured in and imported into the Republic. The levy is imposed at R20 per lamp.	Not provided for.	Not provided for.

Source: Own summary

5.5 CONCLUSION

This chapter discussed similarities and differences in tax incentives, disincentives and financial incentives aimed at reducing greenhouse gas emissions in South Africa, Australia and Canada. The discussion revealed that South Africa provides a variety of tax incentives, particularly in the form of accelerated depreciation allowances for capital equipment used in renewable electricity generation and the manufacturing of battery electric and hydrogen vehicles. Australia's implemented tax incentives are a mix of carbon sequestration and a deduction for expenditure on hydrogen production. Canada's implemented tax incentives are a mix of accelerated capital allowances for equipment used in renewable electricity generation, carbon

capture, utilisation and storage, and investment tax credits. The discussion also revealed that Canada and Australia provide a deduction for carbon sequestration, which South Africa does not provide. All three countries impose a tax, price or penalty on carbon dioxide emissions exceeding a threshold. South Africa implemented a wide range of tax disincentives in the form of a carbon tax, an environmental levy on carbon dioxide emissions of motor vehicles, an environmental levy on carbon emissions of electricity generated by coal, and an environmental levy on electric filament lamps. Australia's only tax disincentive is a carbon price. Canada has implemented tax disincentives including a carbon price and an environmental levy on carbon dioxide emissions of motor vehicles. In all three countries, taxpayers are provided with financial incentives by both the public and private sectors.

The next chapter concludes the thesis, summarises the research findings and makes recommendations for possible tax measures that could be introduced in South Africa based on incentive and disincentive measures implemented in Australia and Canada.

CHAPTER 6: CONCLUSION

6.1 INTRODUCTION

Chapter 1 explained that tax incentives promoting sustainability have gained the attention of many researchers globally. As far as could be ascertained, a comparative analysis of all available tax incentives and punitive measures, as well as other interventions aimed at reducing greenhouse gases and the consequent global warming in Australia, Canada and South Africa, has not been conducted, and for this reason this study compared and analysed these tax measures with the aim of identifying tax measures that could be introduced in South Africa, based on tax incentives and disincentive measures implemented in Australia and Canada.

The main goal of this study was therefore to compare tax incentives and disincentives, as well as other measures, introduced in South Africa, Australia and Canada that are aimed at combatting greenhouse gas emissions and mitigating global warming. The aim of this comparative analysis was to identify tax measures that are implemented in Australia and Canada but not implemented in South Africa to recommend additional tax measures to be implemented in South Africa.

The primary objective was achieved by addressing the secondary objectives. The secondary objectives of this study, including the chapters indicating where they have been achieved, were as follows:

- the identification and discussion of tax incentives and disincentives, and other measures available in South Africa that are aimed at combatting greenhouse gas emissions (addressed in Chapter 3);
- the identification and discussion of tax measures available in Australia and Canada that are aimed at combatting greenhouse gas emissions (addressed in Chapter 4);
- a comparison and commentary on similarities and differences in tax incentives, disincentives and other measures introduced in these three countries to combat greenhouse gas emissions (addressed in Chapter 5); and
- the recommendation of tax measures that could be introduced in South Africa, based on incentive and disincentive measures implemented in Australia and Canada (addressed in the present chapter).

6.2 OVERVIEW OF THE CHAPTERS

In Chapter 1, the study emphasised the importance of using tax policies to promote sustainability. Holtmann (2023:2) explained that tax incentives and punitive measures play an essential role in achieving sustainable goals for two reasons: first, to incentivise the desired behaviour and disincentivise undesired behaviour by companies and individuals; and secondly, an efficient tax policy can generate government revenue that allows the financing of necessary investments for sustainable transformation. Governments worldwide use tax policies and other measures to encourage the reduction in carbon dioxide and other greenhouse gas emissions, that may in turn help to reduce global warming and environmental degradation.

The research methodology applied in this study was described in Chapter 1 as a comparative literature review of tax incentives and punitive measures applying in South Africa, Australia and Canada, designed to combat global warming. A doctrinal research methodology was used to compare legislative measures in the three jurisdictions. This comparative analysis was based purely on documentary data, which consisted of legislation in the form of Income Tax Acts and Regulations in South Africa, Australia and Canada; Interpretation Notes, notices, government publications and similar pronouncements issued by the Revenue Services in South Africa, Australia and Canada; and textbooks, academic theses, journal and newspaper articles.

Chapter 2 presented a literature review providing an understanding of greenhouse gas emissions, climate change and global warming, and strategies and policies implemented by governments to combat greenhouse gas emissions. South Africa, Australia and Canada, as parties to the Paris Agreement, are mandated in terms of Article 2 of the United Nations Framework Convention on Climate Change to take appropriate measures to stabilise greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. South Africa, committed to reducing the country's net greenhouse gas emissions to 42 per cent below 2005 levels by 2025. Australia committed to reducing the country's net greenhouse gas emissions to 43 per cent below 2005 levels by 2030. Canada committed to reducing the country's greenhouse gas emissions to 40 – 45 per cent below 2005 levels by 2030. These three countries are each committed to net-zero emissions by 2050. Each of these countries has a wide range of tax incentives and disincentives, and other measures in place to help to achieve the Paris Agreement commitment goals.

In Chapters 3 and 4, income tax incentives, tax disincentive measures, and financial incentives implemented in South Africa, Australia and Canada to mitigate greenhouse gas emissions were discussed.

Chapter 5 presented a detailed analysis and comparison of the measures applying in the three jurisdictions with the object of revealing similarities and differences in tax incentives, disincentives and other measures introduced to combat greenhouse gas emissions.

The purpose of this final chapter of this study is to provide a summary of research findings, recommend tax measures that could be introduced in South Africa based on tax incentive and disincentive measures implemented in Australia and Canada, and identify future areas for research.

6.3 SUMMARY OF FINDINGS

This study has provided a comparative analysis of all available tax incentives and disincentives, as well as financial incentive measures by the public and private sector in South Africa, Australia and Canada, aimed at reducing greenhouse gases and the consequent global warming and climate change. These taxes and other measures are aimed at penalising taxpayers that are emitting greenhouse gases into the atmosphere, and incentivising taxpayers to concentrate on energy efficiency savings, decarbonisation using renewable energy and carbon sequestration.

6.3.1 Tax measures in South Africa

The South African government has implemented four main tax incentives aimed at combatting greenhouse gas emissions: renewable energy tax incentives, battery electric and hydrogen produced vehicle tax incentives, energy efficiency tax incentives, and research and development tax incentives. The renewable energy tax incentives provide an accelerated depreciation allowance on capital equipment used for renewable electricity generation, and a deduction for expenditure incurred for roads constructed and fences erected in relation to the production of renewable energy. Taxpayers are incentivised with an accelerated depreciation allowance on capital manufacturing equipment used in an industrial policy project that uses improved energy efficiency and cleaner production technologies. The tax incentive for battery electric and hydrogen produced vehicles provides for an accelerated depreciation allowance for capital equipment used in the manufacture of battery electric and hydrogen vehicles. The energy

efficiency tax incentive provides a tax deduction for energy efficiency savings measures. The research and development tax incentive provides a tax deduction for expenditure incurred on scientific and technological research and development.

The government of South Africa disincentivises taxpayers from emitting greenhouse gas emissions by imposing an environmental levy (carbon tax) on carbon dioxide emitted, an environmental levy on carbon dioxide emissions of motor vehicles, an environmental levy on carbon dioxide emissions of electricity generated by coal, and an environmental levy on electric filament lamps manufactured or imported into the Republic. The new Climate Change Act will impose a penalty on taxpayers who exceed their carbon budget, once the Act is fully operational. Furthermore, taxpayers who fail to prepare a greenhouse gas mitigation plan as required by the Climate Change Act are liable for a fine or imprisonment.

The public sector and two large financial organisations in the private sector play a role in the mitigation of greenhouse gas emissions by providing financial assistance to taxpayers who invest in renewable energy projects.

6.3.2 Tax measures in Australia and Canada

The Australian government has implemented three main tax incentives: carbon sequestration by trees, hydrogen production tax incentives, and research and development. The incentive for carbon sequestration by trees provides a tax deduction for trees planted for the purpose of carbon sequestration, and a tax deduction for carbon sequestration trees that are destroyed. The hydrogen production tax incentive grants a tax deduction per kilogram of hydrogen produced. The research and development tax incentive provides for a tax offset for expenditure incurred on research and development activities. The tax disincentive measure in Australia is a civil penalty on carbon emissions exceeding the legislated threshold.

The main tax incentives implemented by the Canadian government are renewable energy tax incentives, investment tax credit incentives, carbon sequestration tax incentives, and corporate tax reduction incentives. Renewable energy tax incentives provide taxpayers with an accelerated capital cost allowance on clean energy generation and energy conservation equipment, including an enhanced accelerated capital cost allowance, and a tax deduction for expenditure incurred for certain start-up expenses on clean energy generation and energy conservation projects. Taxpayers are eligible to claim a tax credit against tax payable or a refund

for expenditure incurred on scientific research and development. A refundable investment tax credit is provided for the capital cost of equipment acquired for use in clean hydrogen production, equipment acquired for use in clean technology manufacturing, equipment acquired for use of clean technology, equipment acquired for use in clean electricity generation projects, and an investment tax credit for the capital cost of equipment acquired for use in carbon capture, carbon utilisation and carbon storage. Carbon sequestration tax incentives provide taxpayers with an accelerated capital cost allowance for equipment acquired and used to capture, utilise and store carbon emissions. A reduced corporate tax incentive for zero-emission technology manufacturing is also provided. In Canada, the government disincentivises taxpayers by imposing a tax (carbon tax) on carbon dioxide emitted by taxpayers, and a tax on motor vehicle carbon dioxide emissions.

In both Australia and Canada, the public and private sectors play a role in the mitigation of greenhouse gas emissions by providing financial assistance to the taxpayers investing in renewable energy projects and decarbonisation projects.

6.3.3 Comparison of similarities and differences in tax measures in the three countries

Chapter 5 compares and discusses similarities and differences in tax incentives and disincentives, and other measures, introduced in South Africa, Australia and Canada, and demonstrates that all three countries have implemented various interventions aimed at reducing greenhouse gas emissions. South Africa provides several tax incentives, particularly in the form of accelerated depreciation allowances for capital equipment. These tax incentives aim to encourage taxpayers to emit less greenhouse gases, but there are no tax incentives that promote carbon sequestration from the atmosphere. Canada offers extensive incentives, including a clean economy investment tax credit, a reduced corporate tax rate for zero-emission technology manufacturing and carbon capture, and a utilisation and storage accelerated depreciation allowance. Australia incentivises taxpayers with tax deductions for carbon sequestration by trees and supports clean hydrogen production.

The comparison of tax disincentives in these countries revealed that South Africa has tax disincentives that do not apply in Australia and Canada. Those tax disincentives are a levy on electricity generated from coal and a levy on electric filament lamps. A tax disincentive that is implemented by all three countries is a carbon tax (carbon pricing). However, the tax exemption allowances for the carbon tax in South Africa make this tax ineffective.

6.4 POSSIBLE TAX MEASURES TO BE INTRODUCED IN SOUTH AFRICA

According to the International Institute for Sustainable Development (2022:v), in relation to South Africa's Energy Fiscal Policies, the current environmental taxes do not measure up to the social costs related to the burning of fossil fuels, and the Institute further states that "societal costs related with air pollution and greenhouse gas emissions from fossil fuels in South Africa are estimated to be a minimum of ZAR 550 billion (USD 33 billion) per year". In light of this, and based on the comparison of tax incentives and disincentive measures in the three jurisdictions dealt with in Chapter 5, the following tax incentive measures are recommended for implementation in South Africa:

- provide an accelerated depreciation allowance for carbon sequestration equipment; in Canada, taxpayers are eligible to claim an accelerated capital allowance for equipment used to capture, utilise and store carbon dioxide, as well as an investment tax credit on equipment used to capture, utilise and store carbon dioxide;
- grant a deduction for expenditure incurred for planting trees for carbon sequestration; in Australia, taxpayers are granted a deduction for expenditure incurred on planting carbon sequestration trees;
- grant taxpayers manufacturing zero-emission technology a reduced income tax rate; in Canada, zero-emission technology manufacturing taxpayers are taxed at reduced income tax rate;
- provide a clean technology investment tax credit; in Canada, taxpayers who use clean technology equipment are granted an investment tax credit;
- promote hydrogen production by granting taxpayers a reduced income tax rate; in Canada, taxpayers are granted an investment tax credit on equipment used in the production of clean hydrogen;
- based on the statement by the Department of Trade, Industry and Competition (2023:84), which compared the effective carbon tax rate in South Africa that varies between R6.00 (US$0.4) and R48.00 (US$4.22) per ton of carbon dioxide equivalent with the report by the World Bank that carbon prices of at least US$40-80 per ton of carbon dioxide by 2020 and US$50-100 per ton of carbon dioxide by 2030 are required to cost-effectively reduce emissions in line with the temperature goals of the Paris Agreement, the recommendation is made to reduce the allowances granted in respect of the carbon tax, to make the measure more effective;

- reinstate section 12B, which provided an accelerated depreciation allowance for capital equipment used in the generation of renewable energy, the final date having been 1 January 2025; and
- extend the application date for section 12L, which provides a deduction for energy efficiency savings, beyond 1 January 2026.

Based on the following recommendation by the Department of Trade, Industry and Competition (2023:86-87), further measures could be considered:

- section 12B(1)(h) should be amended to include machinery, plant, implements, utensils or articles used in the production of green hydrogen, extend sections 11D and 11A to include green hydrogen research and development, provisions in section 12C(1)(gA) could be applied to existing machinery to be retrofitted for green hydrogen storage, provisions in section 13(1)(b) could apply to buildings used in carrying out research and development for green hydrogen projects, and section 12I could be amended to include green hydrogen projects as Industrial Policy projects in order to receive the additional investment and training allowances.

6. 5 LIMITATIONS OF THE PRESENT RESEARCH

This research discussed tax incentives and disincentives, and other measures implemented and proposed to be implemented for taxpayers operating in South Africa, Australia and Canada, but did not analyse tax measures applying in other countries. Tax incentives for the mining sector are excluded from this study, as these incentives deal mainly with preventing land and water degradation.

Within the scope of this half-thesis, it was not possible to conduct an enquiry into the effectiveness of the measures discussed in the thesis.

6.6 SUGGESTIONS FOR FUTURE RESEARCH

Suggestions for future research could include:

- assessing the effectiveness of the measures applying in South Africa to reduce global warming;

- extending the countries in research to broaden the scope of available measures used to combat climate change; and
- evaluating and comparing the effectiveness of measures introduced in South Africa and in various countries.

6.7 CONCLUSION

This study provided a comparative analysis of tax incentives and disincentives, as well as other measures, introduced in South Africa, Australia and Canada that are aimed at combatting greenhouse gas emissions and mitigating global warming. This study has shown that while South Africa's tax incentives are commendable, they largely focus on reducing greenhouse gas emissions only, rather than removing carbon dioxide from the atmosphere. Australia and Canada have implemented targeted incentives for carbon sequestration through natural and technological means. Although South Africa imposes tax disincentives, including various environmental levies and a carbon tax, the effectiveness of its carbon tax levy is diminished due to generous exemption allowances.

A recent report in Daily Maverick (2025: Online) revealed that Rachel Reeves, the British Minister of Finance, had announced a £28,7 million investment by the National Wealth Fund in a carbon capture project, and the report continued, stating that in 2024 it was announced that funding of up to £21,7 billion would be dedicated over 25 years to curb emissions from industry. This indicates the commitment by Britain to reducing carbon emissions and the ongoing commitment by countries to address global warming.

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