



An evaluation of a tax incentive for business owners for investment in electric vehicles

MP Oosthuizen

 **orcid.org/0009-0006-4641-2846**

Mini-dissertation accepted in partial fulfilment of the
requirements for the degree **Master of Commerce in Taxation**
at the North-West University

Supervisor: Mrs CE Meiring

Graduation: May/June 2026

DECLARATION

I, Marthinus Philipus Oosthuizen, hereby declare that this mini-dissertation titled “An evaluation of a tax incentive for the investment in electric vehicles by business owners”, submitted by me to the North-West University in partial fulfilment of the requirements set for the degree “Master of Commerce in Taxation”, is my own work and has been text-edited in accordance with the requirements, and has not already been submitted to any other university.

DEDICATION

This mini-dissertation is dedicated to my two late grandfathers, Oupa Tien (passed away in 2013) and Oupa Badie (passed away in July 2024). I dedicate this mini-dissertation to them as a show of appreciation for everything that I had the privilege of learning from them and to carry forward these lessons in my life and to the lives of my own children and grandchildren in the future.

You are missed every day.

ACKNOWLEDGEMENTS

I would like to acknowledge the following persons for their contribution and support towards the writing of this mini-dissertation:

- First and foremost, I would like to thank my Heavenly Father for the opportunity to be able to attempt this Master's degree in taxation, a subject field which I love.
- My parents, sister and grandparents. Your continued support for the duration of this mini-dissertation has been invaluable. I appreciate every ounce of motivation you have given me and the opportunities my parents have provided me with throughout my university career. I love you all.
- My best friend, Jolize Jansen, your endless support and motivation is greatly appreciated. You had to sit through countless repetitions of me discussing my research with you and bouncing my ideas off of you, even though you had no idea of what I was really saying. I love you a lot.
- Mrs Corrie Meiring, my research supervisor, your inputs and commentary whilst writing this mini-dissertation are greatly appreciated. It was a rocky start with a change in topic and the rewriting of my proposal, but you were open to the change and have provided insightful feedback and input for the duration of this mini-dissertation.
- Ms Jenny Lake, my language editor, for ensuring that this mini-dissertation is of top quality from a language perspective.
- Tannie Louise Frylinck, for assisting me with any issues I had with Word throughout the writing of this mini-dissertation.
- My colleagues in office 214 I appreciate all of you and your continued support does not go unnoticed. Special mention also goes to Andreas van Heerden, who triggered the idea of writing about electric vehicles, from a discussion he heard in a 2nd year Tax class.
- A special thanks also goes to my PGDA lecturers, who provided me with the opportunity to be an Academic Trainee for 2024.

ABSTRACT

The world is moving towards more energy-efficient methods of transport and some countries have started to implement tax incentives to promote and encourage the adoption of electric vehicles to facilitate the transition. The number of electric vehicles on the roads of South Africa is increasing but not at the rate seen in countries such as the United States of America. South Africa has yet to implement incentives to promote this change and increase the number of electric vehicles on the roads. Announcements have been made to implement an incentive to promote the manufacturing of electric vehicles in South Africa, to protect the automobile market, but there has been no mention of an incentive to encourage the adoption of electric vehicles for the users thereof. This study aimed to evaluate and recommend an incentive for possible implementation that could facilitate this transition from internal combustion engine to electric vehicles in South African business.

To achieve this objective, a qualitative research method was used to gather information which was mostly acquired from government sources, explaining the legislation implemented in the countries compared, such as the United States of America, China and Canada. Furthermore, academic literature was used to evaluate the effect that the incentives had in these countries and to investigate which, if any, could be applied in the South African context.

The market for electric vehicles in South Africa does exist but is growing at a rather slow pace. This growth rate could be increased by implementing a relevant tax incentive. This study concluded with a recommendation of an incentive to be considered for implementation that is aimed to be beneficial for both business owners and the government.

Key terms

Tax incentives; Electric vehicles; Internal Combustion Engine; Greenhouse gas emissions; Rebates

LIST OF ABBREVIATIONS

ANC	– African National Congress
ARF	– Additional Registration Fee
ARRA	– American Recovery and Reinvestment Act
BC	– British Columbia
BEV	– Battery Electric Vehicle
BGR7	– Binding General Ruling 7
CAA	– Clean Air Act
CEM	– Clean Energy Ministerial
EPA	– Environmental Protection Agency
EU	– European Union
EV	– Electric vehicles
EVI	– Electric Vehicle Initiative
GHG	– Greenhouse gas
GM	– General Motors
GNU	– Government of National Unity
HEV	– Hybrid Electric Vehicle
ICE	– Internal Combustion Engine
IGR	- Inter-Governmental Structures
iMHZEV	– Incentives for Medium- and Heavy-Duty Zero Emission Vehicles
IRC	– Internal Revenue Code
IRS	– Internal Revenue Service
ITA	– Income Tax Act 58 of 1962
iZEV	– Incentives for Zero-Emission Vehicles
MIR	– Market Intelligence Report
MTIC	– Minister of Trade, Industry and Competition
NAAMSA	- National Association of Automobile Manufacturers of South Africa
NAAQS	– National Ambient Air Quality Standards
NEV	– New electric vehicles
OECD	– Organisation for Economic Co-operation and Development
OMV	– Open market value
PHEV	– Plug-In Hybrid Electric Vehicle
PIT	– Personal Income Tax
SAAM	– South African Automotive Masterplan
SARS	– South African Revenue Service

USA	– United States of America
VAT	– Value-Added Tax
ZEV	– Zero Emission Vehicle

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CHAPTER 1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

1.1.1 Background to the research area

Electrical vehicles (EV's) have been around for a substantial amount of time, first invented in the 19th century, then replaced by internal combustion engines (ICE's) in the early 20th century (any petrol or diesel motor vehicles as we commonly refer to it) and ultimately seeing a move back to EV's in the 21st century. As the world has evolved and research has continued, the last few decades have led us to ask questions about the environmental impact of the petroleum-based transportation infrastructure (Liu *et al.*, 2012).

In recent years the electrical vehicle market has shown an upward trend, with one of the main reasons for that being the evolution in the world of the electrification of vehicles. Tesla, for example, is a front-runner in this regard (Sofana *et al.*, 2022).

During November of 2023 the South African Minister of Trade, Industry and Competition (MTIC), Mr Ebrahim Patel, mentioned in his foreword of the recently released *Electrical Vehicles White Paper* that South Africa is in a pivotal stage and is facing challenges with how to transition both its automotive market and productive capacity to EV's, while at the same time achieving the objectives of the South African Automotive Masterplan (SAAM) (Department of Trade, Industry and Competition, 2023). In the SAAM, six objectives were identified, one of which is to deepen the value addition within South African Automotive value chains. In this objective, mention is also made of the movement towards EV's (Department of Trade, Industry and Competition, 2018).

Seen globally, the market for EV's has grown quite significantly since 2010, supported by incentives to make the use of and transition to EV's attractive to consumers. This has resulted in a global shift towards the use of EV's which stems from the advancement of technology and the improvement of affordability. Governments have also introduced regulations and policies surrounding the reductions of greenhouse gases (Reddy & Radmore, 2023), as transportation is the second largest producer of greenhouse gases globally (Tongwane & Moeletsi, 2021).

To reduce the greenhouse gas emissions resulting from road transport, many countries are investing large amounts of resources to electrify their transport industry in switching from using fossil fuels to electricity (Tongwane & Moeletsi, 2021). One such incentive in the South African context has been the introduction of the 150% tax deduction incentive that entities that manufacture EV's will get as a deduction, announced by the MTIC that will become effective from

March 2026. The 150% tax deduction will be introduced to encourage the production and investment in the development of EV's in South Africa in an effort to not only systematically move away from fossil fuel, but to also preserve the country's automotive market (BusinessTech, 2024).

As the world is actively transitioning from ICE's to EV's, proactive policies are needed to ensure that the change taking place is effective. A change to EV's would impact the government financing model, reducing revenue generated from fuel-related activities but also reducing expenditure due to improved balance of payments, reduction in transport costs and improved health (Dane *et al.*, 2019).

One of the policies and legislative changes that would have to be implemented constitutes changes to the Income Tax Act 58 of 1962 (ITA). One such change has been the above-mentioned 150% tax deduction on qualifying investments to produce EV's, to ensure the enhancement and protection of the automotive market in South Africa. Furthermore, the government of South Africa has reprioritised an amount of R964 million over the medium term to support the transition from ICE vehicles and into the new age of EV's. This stems from the National Budget Speech delivered by the Minister of Finance, Mr Enoch Godongwana on the 21st of February 2024 (National Treasury, 2024).

An incentive, as defined in the Cambridge Dictionary, is something that encourages a person or organisation to do something, which is the case with the implementation of the 150% tax deduction in South Africa that can be seen as an incentive. The implementation of a tax incentive for business owners could encourage the transition from ICE to EV in order to ensure more contributions to a more energy-efficient environment.

The move to EV's in South Africa is hindered by the ongoing electricity crisis faced daily by South Africans, whether as an individual or a business owner. Eugene Herbert, CEO of MasterDrive, has identified three challenges with the implementation of EV's in SA. The one of importance for this report is the infrastructure concern, referring specifically to the unreliable energy supply from Eskom, which constitutes a unique challenge facing South Africa with the development of the country's EV infrastructure (BusinessTech, 2023).

The transition to EV's is already in full flow in countries like the USA, and it is predicted that by 2030, 64% of the light-vehicle sales will comprise EV's, while currently 24% of light-vehicle sales in the USA are already EV's. This transition has brought improvements to employment statistics in the USA since it is estimated that an increase of between 130 000 and 350 000 jobs could be seen by 2030, in the battery manufacturing industry, as well as in the construction, operation and

maintenance sectors involved in the new infrastructure necessitated by the move to EV's (Becker *et al.*, 2009).

Currently, the ITA does not make any special provision for the use of EV's for business owners, apart from the deduction of the cost of the vehicle in terms of s11(e) of the ITA, which is the allowance of wear and tear that can be claimed as a deductions against taxable income on the capital cost of a vehicle, irrespective if the vehicle is an ICE or an EV. This has resulted in a gap in the Income Tax legislation as business owners could acquire EV's for purposes of right-of-use to employees, in terms of the Seventh Schedule to the ITA, where there is a taxable benefit involving the accounting for fuel cost for private use of that vehicle, resulting in the fact that there are no additional incentives for purchasing an EV or ICE. This could lead to the South African Revenue Service (SARS) and the taxpayer being affected negatively (SARS, 2023).

As is evident from the above information, a transition to EV's in South Africa is inevitable as the world is moving towards more sustainable forms of energy. However, the South African government must adjust tax legislation to incentivise the transformation over the next couple of years, in line with the principles of a good tax system to ensure the tax incentives are beneficial to both the fiscus, manufacturer and the business owner or acquirer of an EV. This should be done to prevent the economy from sustaining economic pressure due to the failure to transform the automotive industry. The first step in this direction has been the tax incentive of 150% to be introduced during March of 2026, to protect the motor vehicle manufacturing market in South Africa. Furthermore, the protection and incentivisation of the industry is one thing, but to further transition to EV's, a tax incentive for business owners buying EV's, to be used in the production of income, should be implemented to encourage the acquisition of EV's intended for business purposes.

1.1.2 Literature review

1.1.2.1 Existing theses and dissertations in the field

A search was done of completed theses and dissertations, peer-reviewed articles and journals, by scrutinising the library of the North-West University and expanding the search to libraries worldwide. No apparent and directly connecting theses and dissertations were found in the area of research relating to the tax effects of EV's in South Africa.

Harmse (2023) researched development of the regulatory framework that is required to implement the use of EV's to mitigate climate change in South Africa. This is a relatively new study that makes mention of two tax reform strategies for the consumer, namely reducing value-added tax

(VAT) and a change in the local customs duty for EV's originating from the European Union (EU). In this study, the manufacturing of EV's is discussed, and incentives provided in a tax context, as referenced in the *Auto Green Paper*, focused on the manufacturing of EV's. No reference is noted in the dissertation to the development of an incentive for business owners. The author concluded that multifaceted EV policies should be incorporated in the short to medium term, with a mention of fiscal incentives for company fleets as well as public transport (Harmse, 2023).

Gordon (2024) investigated the impact of recent technological, economic, and other changes to the taxation of travel allowances in South Africa, in terms of s8(1) of the ITA. Included in the study, the advancements of EV's are noted as well as shifts, in a global context, in travel preferences. Gordon's study contains legislative comparisons to Australia and Canada, to shed light on the differences and similarities between the approaches taken by these countries in deducting travel allowances, to improve the policy currently implemented in South Africa. The study found that s8(1) does indeed have shortcomings as it excludes EV's from the definition of a motor vehicle and several other shortcomings and administrative burdens for taxpayers (Gordon, 2024).

Mohubedu (2021) researched the factors that could contribute towards stimulating the adoption of EV's in South Africa by developing a framework to be used by policy makers when assessing policies that could be implemented to stimulate growth of the EV market. The study noted some factors that contribute to the slow adoption rates of EV's, such as the high purchase price thereof. The study concluded that one other contributor towards the slow EV growth in South Africa are the lack of tax incentives implemented to encourage the growth of the EV market in South Africa (Mohubedu, 2021).

No dissertations or theses were noted that relate to the area of taxation incentives for investment in EV's for business owners using EV's in its production of income specifically. Although Gordon (2024) does refer to EV's and the dissertation contains a discussion thereof, the main purpose of the study was to analyse travel allowance in terms of s8(1) of the ITA, meaning that the study was quite dissimilar to the research performed in this study.

Mohubedu (2021) researched overarching reasons and techniques for promoting EV adoption but did not directly propose various taxation incentives to assist in encouraging the growth of EV adoption in South Africa. Thus, although similar in nature, there is no direct connection between Mohubedu's 2021 study and this study. This study aims to propose a tax incentive for the acquisition of EV's for business owners, while Mohubedu (2021) aimed to develop a framework to be used by policy makers when considering policies evaluated for implementation to stimulate EV growth, thus the two studies differ in the aspects being researched.

1.1.2.2 Articles

Nian *et al.* (2019) stated that in Singaporean legislation, heavy taxes accompany the acquisition of a motor vehicle, whether it is an ICE or an EV. The reason for this is the effect on road congestion and the need for cleaner and more efficient road transport. Mention is also made of different countries that have already incentivised the adoption of EV's, e.g. China, France, Germany, USA, etc. This review discusses the incentives provided by the different countries as well as when they were implemented. The author also reviews how the adoption of EV's can contribute to reducing pollution and greenhouse gas (GHG) emissions as EV's are more energy efficient, although the cleanliness of EV's ultimately depends on the city's power source, e.g. fossil fuels used in the production of electricity. The study ultimately researched a business model to counteract the disadvantage that EV's have over ICE vehicles, when measured in terms of initial purchase- or capital cost, and how government incentives could bring a change (Nian *et al.*, 2019).

Hauff *et al.* (2018) examined various European vehicle taxation systems to develop a methodology to allow a comparison and overview by calculating CO₂ based taxation steps. The article is relevant to European countries and the methods used to calculate vehicle taxes comprise CO₂, engine power, engine displacement, electrical driving range, weight, list price and fuel type. Findings from this article revealed that every gram of CO₂ emissions has the same impact on the environment and when seen from this perspective, there is no reason to have varying levels in vehicle taxation corresponding to certain CO₂ levels, as is the case in most of these countries. The methodology introduced provides a comprehensive overview of the complexity of the vehicle taxation landscape. The methodology aims to compare the CO₂ gradients of different countries and compare these with private and business customers for different vehicle segments (Hauff *et al.*, 2018).

Xu *et al.* (2021) refer to the exemption of battery electric vehicles from traffic restrictions, examining the impact thereof on the markets and environment under Pigouvian taxation. This article is mainly focused on China and Pigouvian taxation, in the context of this article, offers a negative incentive in order to persuade the buyer of a vehicle to switch from a conventional vehicle (i.e. an ICE) to an EV (Xu *et al.*, 2021).

Nong (2020) considered the development of a carbon price mechanism with full emission coverage to enhance the capacity and accuracy for climate change, to examine the potential impacts of the carbon tax policy in South Africa. Findings of this study indicated that when incorporating non-CO₂ emissions to the model, it substantially alters the results at which the South African economy experiences higher costs as compared to when only CO₂ emissions are

added to the model. The results reveal that South Africa experiences small trade-offs from introducing carbon tax, as South Africa would be able to reduce emission levels by 12%-15%. Fossil-based industry sectors are, as a result, the worst off, while the renewable energy sectors are expanding, indicating that SA would likely move to a lower carbon-sustainable economy (Nong, 2020).

By 2009 fiscal policies in favour of EV's were an attractive incorporation for the Brazilian Government, but by 2010 no such policies had been implemented. During a Brazilian Seminar on Technologies for Electric Vehicles held during June of 2011, the Brazilian government intentions were made clear that they want to adopt a seal that ranks vehicles based on emissions and fuel consumption. For future reference they would use the seal to grant other incentives, such as a 25% reduction in federal VAT on the purchase of EV's. One of the main goals of this journal article was to discuss the possibility of environmental protection through the implementation of tax incentives and to present tax-policy models aimed at environmental protection in the Brazilian context (Domingues & Pecorell-Peres, 2013).

An increased interest has been seen in the taxing of particular vehicle characteristics with the wider aim of protecting the environment, i.e. governments have searched for more ways to tax vehicles to protect the environment. Studies have also shown that the implementation of such taxes is somewhat ambiguous in the literature due to weaknesses, being the ill consideration of environmental aspects of transport on road taxes. Nel and Nienaber (2012) have revealed that such taxes are not efficient for passenger vehicles and might not in fact effectively reduce emissions to achieve the country's environmental goals. Taxes, however, are still the most effective way to alter prices to match societal costs. One example in this regard is a so-called 'pollution tax', that is referred to in South Africa as carbon tax implemented in 2019 in terms of the Carbon Tax Act No 15 of 2019. The article makes mention of the fact that the implementation of an acquisition tax has not been effective in reducing emissions, as it influences the consumer's decision to acquire the vehicle (Al-Rawi *et al.*, 2018).

With regards to all the above, no research was found, both internationally and locally, that considers the possible tax incentive to be provided to South African businesses for the acquisition of EV's to reduce CO₂ emissions in the transport sector. The inclusion of the articles in this section, provides insight into the research already performed on an international and national level with regards to how certain countries implemented incentives to promote the use and acquisition of EV's in attempt to lower carbon emissions, and the success thereof. These insights are valuable when considering and recommending a tax incentive that could be implemented in

South Africa for the acquisition of EV's, however not all measures noted in these articles would necessarily be applicable in a South Africa economic environment.

1.1.3 Motivation of topic actuality

The move towards EV's is clear in their being a more energy-efficient option to ICE's, when considering the effects on the environment (Perdiguero & Jimenez, 2012).

As the world is moving towards a more greenhouse gas friendly environment, legislation and businesses need to adapt accordingly. One of those adaptations is incentivising the user or business owners to embrace this change through tax legislation that encourages investment in EV's and their acquisition. The evidence is clear that the transport industry, that contributes more than 28% of greenhouse gases globally, making it the second largest producer of greenhouse gas emissions, therefore governments should encourage policy development to incentivise the acquisition of EV's (Oladunni *et al.*, 2022).

By governments implementing legislation that not only curbs, but also incentivises acquisition of EV's, the effect of these greenhouse gas emissions could be reduced. Furthermore, unless such incentives are implemented, the acquisition of EV's will remain unattractive to the consumer due to its higher costs (Perdiguero & Jimenez, 2012). Naturally this also has the benefit of improving quality of life on this beautiful planet that we live on, as the oxygen we inhale will be cleaner.

Several countries have already implemented incentives to promote the acquisition of EV's. The countries selected for this study are the USA, China and Canada, who's governments have all implemented legislation over the past years to assist with the facilitation of this transition from ICE's to EV's and to establish a more energy-efficient transport infrastructure.

The countries listed, USA, China and Canada, were selected because they have either implemented policies relating to EV's quite recently or because policies on EV's have been part of the legislation for some years already. The USA has implemented a tax credit for the purchase of a new EV by consumers in 2023 (US Government, 2023). The inclusion of China as a country of interest for this study stems from its membership to BRICS, of which South Africa is also part. China has an economy that outweighs the other members of BRICS (Hooijmaaijers, 2021). With the inclusion of China as part of the study and the relationship between South Africa and China with regards to BRICS; policies implemented in China could potentially be beneficial for implementation in South Africa. The South African government could rely on their relationship with China to assist with implementing tax incentives. Furthermore, China also has long implemented incentives for the adoption of EV's, starting as early as 2009, which subsequently

resulted in China constituting the world's largest EV market (Yang, 2023). The inclusion of Canada in the study offers a different view on the incentives provided for EV's adoption. The Canadian government applies a federal incentive in addition to that which is offered by the Canadian provincial governments (Transport Canada, 2024), a concept that could potentially be beneficial in South Africa. Canada also offers incentives for charging infrastructure, which is critical to ensure that the EV market grows, as charging infrastructure is essential to the operation of an EV. Canada has prioritised the development of charging infrastructure to assist in the electrification of the transport industry (Perera *et al.*, 2020).

As stated in the *EV White Paper 2023*, the changes in technology are not sufficient to facilitate the transition of the transport sector towards a more zero-emission environment. Countries have adopted policies, the above to list a few, to facilitate this transition (Department of Trade, Industry and Competition, 2023). As such South Africa would have to consider their own policies to ensure transition to an emission-free environment.

In conclusion, an income tax incentive for South African business owners could be fruitful in reducing the country's CO2 footprint, and by adapting some of the tax policies implemented in the above-listed countries, South Africa will also be adapting to the direction in which the rest of the world is travelling, with regards to EV's and environmental sustainability.

1.2 Problem statement and research question

As it stands, the ITA does not make any provisions for incentivising the use of EV's, something that has become prominent over the last couple of years on an international scale, as the world is moving towards more environmentally sustainable policies. South Africa experiences certain unique challenges concerning electricity and the generation thereof, with frequent load-shedding and the expenses that businesses incur to ensure that their operating activities do not cease because of power interruptions, which in turn could make the implementation and acquisition of EV's a challenge. One such way to facilitate a transition could be to implement tax incentives to promote and encourage the move to EV's.

The research question that will be attempted to be answered in this study is: Can South Africa implement similar tax incentives for business owners to facilitate the transition to EV's, as seen in the USA, China and Canada?

1.3 Research objectives

1.3.1 Main objective

To evaluate the tax laws of the USA, China and Canada to recommend appropriate tax incentive for South African businesses to transition from ICE vehicles to EV's.

1.3.2 Secondary objectives

The following secondary research objectives are formulated to address the main objective of the study:

- I. To analyse the tax legislation of the USA, China and Canada, to determine what tax policies have been implemented to incentivise and facilitate the transition and adoption of EV's in those countries and the success of these incentives by evaluating the effect the incentives had on the transition to EV's (Chapter 2).
- II. To gain an understanding of the EV market in South Africa and what legislation has been implemented or is set to be implemented in future to encourage the adoption of EV's, that could be further complimented with the introduction of additional appropriate tax incentive to encourage the sale of EV's in South Africa. A basic understanding of the development of policy in South Africa is also necessary (Chapter 3).

1.4 Research methodology

When conducting research, gaining an understanding of ontology and epistemology is important.

Ontology concerns assumptions about nature and reality and the extent to which ontological assumptions shape the way in which we conduct and study the research objects. It therefore determines how we see the world and the choice of research to be conducted (Saunders *et al.*, 2019).

Epistemology on the other hand refers to assumptions about knowledge and what is acceptable and legitimate knowledge (Saunders *et al.*, 2019).

The above encapsulates the meaning and basic understanding of ontology and epistemology, but when conducting research there needs to be a distinction between these sets of assumptions. The poles to these assumptions can be categorised as 'objectivism' and 'subjectivism'. Objectivism is the assumption of natural sciences, making the argument that the social reality being researched is external to us, meaning that for ontology, objectivism embraces realism (Saunders *et al.*, 2019).

Subjectivism is the assumption of the arts and humanities, claiming that social reality is compiled from the perspective and perceptions as well as consequent actions of people. In an ontological sense, subjectivism embraces the concept of nominalism. Nominalism is the order and structure of the social phenomena that we study, created by researchers through the use of language, conceptual categories, perceptions, and actions (Saunders *et al.*, 2019).

From the above, it is noted that there are two extremes that get identified for ontology. Objectivism and subjectivism are also applicable to epistemology. Saunders *et al.* (2019) refer to the question 'What is the world like?' in terms of ontology, when referring to the two extremes of objectivism and subjectivism, with 'external' relating to the former and 'socially constructed' to the latter.

When referring to taxation, McKerchar (2008) describes it as not being a discipline within its own, but rather a social phenomenon which can be studied through various disciplinary lenses. Taxation researchers often have backgrounds relating to law, accounting, and economics, which are narrow disciplinary fields.

For this study, a more subjective approach was followed, as the study comprises the analysis of legislation to recommend a policy for implementation in South Africa. Thus, it is subjective in an epistemological sense as, based on information gathered, a conclusion was made to recommend a policy for implementation in South Africa for encouraging the acquisition of electric vehicles, based on the policies or provisions implemented in the legislation of other countries.

1.4.1 Research paradigms

Research is conducted in a specific paradigm. A paradigm is defined as being inclusive of several components, namely ontology and epistemology, as has already been introduced (Alharahsheh & Pius, 2020).

As Saunders *et al.* (2019) describe, positivism relates to the philosophical stance of the natural scientist and entails working with the observable social reality to produce law-like generalisations, while interpretivism is emphasised by humans, which are different from physical phenomena as they create meaning.

To simplify the above definitions, positivism can also be defined as the philosophy that factual knowledge can only be gained through observation, including measurement, being limited to data collection and interpretation (Dudovskiy, N/A). With reference to the above, the study falls within the positivism paradigm, as the research does not contain any data collection, which means that no interpretation is required. Information was gathered in the form of reports and articles of an academic nature, along with policies, of the countries mentioned earlier, which were analysed

and interpreted to form the conclusion. The above approach could form part of the interpretivist paradigm, as by doing this research a conclusion was formed based on what was found and through individualistic ideas that have sprouted from the research performed, especially considering the main objective of the study as listed in section 1.3.1.

1.4.2 Research methodologies

Quantitative research is defined as the numerical representation of observations for the purpose of providing an explanation of the result derived from the phenomena as derived from the observations (Sukamolson, N/D).

Qualitative research is defined as research that is aimed at addressing questions concerned with developing an understanding of the meaning of aspects in a taxation context (Fossey *et al.*, 2002). Another way of describing qualitative research would be to define it as an approach that allows the researcher to examine people's experiences, by using a set of research methods such as interviews, group discussions, content analysis, etc. (Hennik *et al.*, 2020).

With regards to the above, the study analysed incentives implemented in different countries, to develop an understanding of the rationale behind the implementation of these incentives to encourage the acquisition of EV's. Thus, the research would be qualitative in nature.

1.4.3 Methods

The Merriam-Webster dictionary defines 'literature' as the production of literary work as an occupation and the body of written works and 'study' as the reading of information, in detail, with the intention of learning. From this definition, the present study was a literature study as the prior literature, in the form of legal documents and legislation, were analysed, studied, and evaluated, forming part of the study's qualitative aspect.

This study focused on the possible recommendation of appropriate incentive for the ITA for the acquisition of EV's, to encourage a transition from ICE's to EV's to contribute to a more sustainable and greenhouse gas-friendly environment. In this study the use of the comparative research method was applicable as a mere analysis and evaluation of tax legislation from the identified countries was conducted to provide a recommendation for the possible implementation of a tax incentive. Thus, no comparison of tax legislation was made between South Africa and, USA, China and Canada, the identified countries, as South Africa does not currently have any tax legislation relating to EV's, i.e. tax incentives, implemented, which could be compared to that of the selected countries. The evaluation of Carbon Tax policies of the above listed countries and a

comparison thereof is outside the scope of this study, with only a brief discussion provided relating to the Carbon Tax Act implemented in South Africa.

The method of doctrinal research was implemented to analyse the wording of the law; this method could also be used to understand the rationale behind the implementation of the incentive.

Doctrinal research can be defined as the analysis of case law, ordering, arranging and systematic legal propositions as well as the study of legal institutions. This type of research also creates law through legal reasoning (Jain, 1982). In this study the use of case law was not necessary, as mainly the legislation of these countries would be used. The analysis of legal documents could also be used to obtain an understanding of the rationale behind the implementation of the incentives in these countries and the process followed to implement these policies.

In conclusion, the methods used in this study would be a literature study in combination with doctrinal research. The reason for the selected methods is the use of literature, legal documents and legislation, to analyse the different income tax incentives implemented and to further use these methods to recommend a possible incentive for implementation in South Africa.

1.5 Ethical considerations

This study is a purely qualitative study and as such no apparent ethical concerns could arise from the above information. No other form of data will be gathered which needs to be approved and for which permission might be sought. All information gathered for this study is available in the public domain. As no contact will be made with humans, there is little ethical risk involved in this study. Ethical clearance was obtained from the Ethics Committee of the North-West University.

1.6 Chapter overview

Chapter 1: Introduction

This chapter provides background to the study by providing a brief overview of the extant literature linked to this field of research. This chapter also contains the objectives and research methodology to explain the process and research that was carried out to reach the objectives of this study.

Contained within the background is information relating to EV's to create the context of the study and to justify the identified gap in the tax legislation which this research aims to fulfil.

Chapter 2: Incentives applied and implemented in selected countries

This chapter constitutes an analysis of the income tax incentives and policies being implemented in the USA, China and Canada. Furthermore, five other countries were also selected and briefly discussed to gain a broader perspective of the type of income tax incentives that have been implemented in other parts of the world. The effect of these income tax incentives was not discussed in detail, as it is merely provided to broaden the landscape to be considered when recommending an income tax incentive for South African purposes in Chapter 4.

An analysis was performed of the research conducted by other authors to gain an understanding of the effectiveness thereof relating to the adoption of EV's in the mentioned countries.

The first secondary research objective, as identified in par.1.3.2(i), will be addressed in this chapter.

Chapter 3: A South African analysis

In this chapter the relevant taxes implemented in South Africa were briefly analysed, such as taxes that relate to environmental sustainability (e.g. a brief overview of the carbon tax that has already been implemented).

Also included in this chapter is an analysis of the challenges faced in SA with regards to the implementation of EV's, such as political instability and loadshedding, which is currently resulting in the slow transition to EV's. A brief analysis of the transport industry is also provided. Furthermore, a brief discussion pertaining to policy development is provided to grant an understanding of the process that is followed when legislation or policies are being considered in South Africa. This discussion includes an overview of the principles of a good tax system, to be applied when the recommended incentive is provided in Chapter 4.

This chapter aimed to answer the second of the study's secondary objectives mentioned in par. 1.3.2(ii).

Chapter 4: Conclusion

The conclusion describes the study's findings and the eventual recommendations given in line with the principles of a good tax system, after careful consideration and analysis and evaluation of the information contained in Chapters 2 and 3. This is also linked to the research question and whether the objectives of this study were achieved.

Limitations encountered and possibilities for future research are also stated in this chapter.

CHAPTER 2 AN INTERNATIONAL OVERVIEW

2.1 Introduction

As mentioned in paragraph 1.1.3 of Chapter 1, the transition from ICE's to EV's is clear and because of that countries have implemented a range of tax policies and incentives to enhance and encourage this movement. The main goal with the implementation of these policies and incentives is to make the acquisition of EV's as affordable and beneficial to the consumer as possible.

The purpose of this chapter is to explain and analyse the tax policies implemented in the USA, China and Canada. This was done to gain an understanding and perspective of what kind of policies, relating to tax, have been implemented on an international level, in countries that already have long-standing policies or recently revised policies. This chapter will therefore address the secondary research objective as identified in par. 1.3.2(i).

The findings from the above analyses will then be used to recommend a possible incentive for South Africa, to align with the main objective of the study. A brief overview of tax policies implemented in other countries will follow to gain a broader understanding, apart from those analysed in depth, of what policies, relating to tax, have been implemented worldwide.

2.1.1 Background

The EV industry is a globally emerging industry that has gained monumental support from governments across the globe. Although governments have introduced numerous policies to incentivise EV adoption, general willingness to acquire an EV has remained low (Lui *et al.*, 2021). Between 2020 and 2021, EV sales have doubled and brought the total for battery electrical vehicles (BEV's) and plug-in hybrid electric vehicles (PHEV's) to around 16.5 million vehicles (International Energy Agency, 2022).

Between 2020 and 2021, BEV and PHEV (detail provided in table 2.1 below) sales more than doubled, resulting in the worldwide total of these EV's being approximately 16 million. Furthermore, with advances in battery technology, increased production rates, growing charging networks and federal and state government incentives, EV sales are expected to grow rapidly in the coming years. This growth may reduce the GHG emissions but could produce challenges for the countries' power grids as EV's will place additional stress on the power grid, which in turn will require transformation of the energy sector (Wong *et al.*, 2023).

The Electric Vehicle Initiative (EVI) is a multi-governmental policy that was established during 2010 under the Clean Energy Ministerial (CEM). The CEM is global high-level forum tasked with promoting policies and programmes to advance the use of clean energy technology. All three countries to be analysed in this chapter are members of the CEM, further displaying their commitment towards clean energy on a global scale (CEM, 2025). The main purpose of the EVI is the acceleration of EV adoption worldwide. The EVI also facilitates the exchanges between government policy makers, committed to supporting EV development (International Energy Agency, 2022). When considering the effect of the EVI, it is evident that there is indeed an impact worldwide, with worldwide EV sales expected to reach 17 million for 2024, as per the *Global EV Outlook 2024* report (International Energy Agency, 2024). One of the issues identified is that EV's are still more expensive than ICE's but are becoming cheaper within the EV market as the competition intensifies. The transition of ICE's to EV's will require that the motor manufacturing market produces more affordable EV's. When looking at China, around 60% of the EV's sold during 2023 were already at more affordable prices than ICE's, although in Europe and the USA EV's have remained 10% to 50% more expensive than ICE's (International Energy Agency, 2024).

As part of the analysis, it is important to understand the difference between the different types of electric vehicles.

Table 2-1: Types of electric vehicles

Type of electric vehicle	Description
Battery Electric Vehicle (BEV)	Vehicles that are fully electric with rechargeable batteries and no fuel engines. The energy used to run this type of vehicle is generated from a battery pack, being recharged from the electrical grid. Zero-emission vehicle, as no greenhouse gas emissions are generated.
Plug-In Hybrid Electric Vehicle (PHEV)	These types of vehicles contain both an engine, like the ICE and an electric motor. The main difference between PHEV's and HEV's (described below) is the inclusion of a larger battery which can be recharged from the grid, via a plug-in (as described under BEV's above).

Hybrid Electric Vehicle (HEV)	This type of vehicle consists of both a fuel-powered engine and an electric motor. However, all energy is generated through regenerative braking. These vehicles can't plug in to the grid to recharge the battery unit. Regenerative braking recoups the energy lost to braking to assist the fuel powered engine during acceleration.
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Source: EVgo (2024)

2.2 Country-specific tax policies

2.2.1 United States of America

During March of 2012, President Barack Obama announced the *EV Everywhere Grand Challenge*, which was an initiative to produce plug-in electric vehicles at an affordable and convenient price for American households. The USA is currently the world's leading market for EV's and is producing some of the most advanced EV's available on the market today (US Department of Energy, 2013).

The implementation of tax credits in the USA aligns with the broader objective of transforming the transport sector toward greater fuel efficiency and reduced emissions (Sherlock, 2019). Policies introduced at both federal and state levels in the USA have supported market growth by cutting fees and taxes, offering rebates, and promoting the expansion of public and private charging infrastructure (Tal & Nicholas, 2016). While the USA offers both federal and state tax incentives, this discussion will focus solely on the federal tax incentives.

2.2.1.1 Overview of the legislation

The USA Constitution provides Congress (the national legislative body) with the power to collect tax from companies, individuals, etc. This is performed through the enactment of federal tax law compiled in the *Internal Revenue Code* of 1986 (IRC) (US Government, 2024). The IRC is administered by the Internal Revenue Service (IRS).

The USA has the following credits implemented within their tax code:

Section 30D of the IRC offers a credit to individuals of up to \$7 500 (To provide perspective, this credit would amount to R132 388 in ZAR, on 1 November 2024 (OANDA, 2025)) for a new,

qualified plug-in EV or fuel cell EV. Fuel cell EV's are EV's that are powered by hydrogen. These types of vehicles are more efficient than ICE's, as they do not produce tailpipe emissions, only emitting water vapour and warm air (US Department of Energy, N/D). Currently the average cost of an EV in the USA for 2024 amounted to \$53 758 (Find my electric, 2025).

The *Inflation Reduction Act* of 2022 adjusted the rules for this credit for vehicles purchased from 2023 to 2032. This credit is available to both individuals and businesses (US Government, 2024).

In terms of section 30D of the IRC, the tax code provides for a credit against tax imposed with respect to each new qualified plug-in EV that has been placed in service by the taxpayer from 1 January 2023 to 17 April 2023. The amount eligible for this credit, for any new qualified plug-in electric vehicle, is a base amount of \$2 500. The amount determined under this section may not exceed \$5 000, from which a further credit is allowed under section 39D(b)(3) for a vehicle that draws propulsion energy from a battery with no less than 5 kilowatt hours of capacity. The amount of the credit is \$417, with an additional \$417 for each kilowatt hour of capacity more than 5 kilowatt hours.

For the period of 18 April 2023 onwards, the criteria for the credit have been adjusted to include a critical mineral and battery component requirement. The credit is now calculated as follows in terms of section 30D of the IRC:

- I. \$3 750 if the vehicle meets the critical mineral requirements only (defined in 26 US Code § 45X – Advance manufacturing production credit, subsection 6);
- II. \$3 750 if the vehicle meets the battery component requirements only, with reference to the battery from which the electric motor of such a vehicle draws electricity, the percentage of the value of these components contained in the battery that was manufactured or assembled in North America is equal to or greater than the applicable percentage (see Table 2-2);
- III. \$7 500 if the vehicle meets both the above.

Table 2-2: Battery components – Applicable percentage

Vehicle place in service	Percentage applicable (to qualify in terms of section 30D of the IRC for the tax credit)
Before 1 January 2024	50%
Calendar year 2024 or 2025	60%
Calendar year 2026	70%
Calendar year 2027	80%
Calendar year 2028	90%
After 31 December 2028	100%

Source: 26 US Code §30D(e)(1)(B)

According to the tax code, a ‘new qualified plug-in electric vehicle’ refers to a motor vehicle of which the initial use was with the taxpayer. For the EV to be considered a ‘new qualified plug-in electric vehicle,’ the taxpayer must comply with the following criteria: acquired the vehicle for personal use or lease, without the intention to sell the EV; made by a manufacturer; which is treated as a ‘motor vehicle’ in terms of the *Clean Air Act* (CAA); with a gross vehicle weight of less than 14 000 pounds and which is propelled to a significant extent by an electric motor and draws electricity from a battery, with a capacity of no less than 4 kilowatt hours and is capable of being recharged from an external source of electricity (US Government, 2024).

To qualify for the above credits, you must acquire the EV for your own use and not for resale, and use the EV primarily in the USA. You can also not transfer this credit to the following year of assessment, thus you cannot get back more in credit than what you own, and the excess may not be carried over (US Government, 2024).

Before further discussion, it is important to understand the purpose of the above-mentioned CAA. The CAA serves as the key federal law that regulates the sources of air emissions. The CAA authorised the US Environmental Protection Agency (EPA) to establish the National Ambient Air

Quality Standards (NAAQS) to protect the public health and environment (US Department of the Interior, 2024).

Another credit imposed by the IRS is a credit for qualified commercial clean vehicles, which are vehicles that encompass a broader spectrum of vehicles producing lower emissions, which could include EV's and other vehicle operating from alternative fuels (Metropolitan Washington, 2025). The section in the tax code that deals with this credit is section 45W of the IRC. The credit applicable in this section is an amount equal to the sum of the credit amounts determined in subsection (b) of section 45W of the IRC for each qualified commercial clean vehicle placed in service by the taxpayer. For each commercial clean vehicle, the tax credit amount is determined by whichever is lower: (A) 15% of the vehicle's cost, or 30% if the vehicle isn't powered by a gasoline or diesel engine, or (B) the additional cost of purchasing a clean vehicle compared to a conventional one. The incremental cost of such a vehicle is the amount equal to the excess of the purchase price for such vehicle over the price of an ICE, which is comparable in size to such a vehicle.

There are also limitations with regards to the above-mentioned credit, as the qualified commercial clean vehicle shall not exceed a gross vehicle weight rating of 14 000 pounds, or \$7 500 dollars (US Government, 2024).

The government of the USA provides a credit for the installation of charging infrastructure at a primary residence for up to 30% of the cost but limited to \$1 000, thus the credit claimed may not exceed \$1 000. If a business acquires charging infrastructure they may also be eligible for a tax credit. From the 1st of January 2023, for business properties, the IRS effected a change to the tax credit, increasing the amount allowed as a tax credit from \$30 000 to \$100 000 (US Government, 2024)..

Taking the above into consideration, it is clear that the USA has implemented thorough policies to encourage the transition to EV's, with numerous amendments since its initial implementation to align with the state of the economy at that stage. These tax credits are subject to certain criteria being met, which is set out briefly in this section for context. The USA government has implemented credits for both the acquisition of EV's and the installation of charging infrastructure, to make it more affordable to consumers in an attempt to get more people to convert to EV's.

2.2.1.2 Impact on the adoption of EV's

Jenn *et al.* (2018) stated that for every \$1 000 offered as a rebate or tax credit, the average sale of EV's in the USA increased by 2.6%. The development and adoption of EV's has been

increasing in both sales and model availability over the last few years (Jenn *et al.*, 2018). Mekky and Collins (2024) reported that the EV sales for 2022 increased by 55%, increasing the USA market share for EV's to 8%.

Tax credits for the acquisition of electric vehicles was first signed into law in 2008. This was part of the new *Emergency Economic Stabilisation Act* of 2008, which included the *Energy Improvement and Extension Act* of 2008, that contained the tax credits mentioned in the previous section (IEA, 2017).

A key point worth highlighting is that the federal income tax credit of \$7 500 dollars is only available for the first 200 000 EV's sold by a manufacturer. Tesla and General Motors (GM) already reached this threshold in 2019. The initial threshold was 250 000 but was limited to 200 000 vehicles per manufacturer as part of the *American Recovery and Reinvestment Act of 2009* (ARRA) (Sherlock, 2019). The ARRA was signed into law by President Obama during February of 2009 to respond to the financial crisis of 2008/09 (United States Government, 2024).

To evaluate the effectiveness of this credit, policymakers may consider the following factors (Sherlock, 2019):

- I. Whether the credit was successful in increasing the number of EV's sold and in use;
- II. who benefits from the credit; and
- III. the cost of the credit relative to the credit's benefits.

The above are factors that will be used to evaluate the effectiveness of the implemented policies.

As part of the motivation to the public to transition to EV's, President Biden set a goal of replacing the government vehicle fleet to reach the target of 50% EV sales by 2030 (Mekky & Collins, 2024). This initiative forms part of the *Build Back Better Agenda* and the above is only one step towards encouraging the acquisition of EV's by showcasing to the public that the government is committed to the global trend of transitioning to EV's (The White House, 2021).

An implemented provision that took effect from 1 January 2024, would allow, under §30D(g) of the IRC, that consumers may opt to transfer their permissible credit to the dealership as an immediate price reduction upon the date of purchase. This is more beneficial as the credit would be obtained immediately rather than being deferred to the date that the tax return is filed (Stekelberg & Vance, 2024). Stekelberg and Vance (2024) found that this policy change would grow consumers' intent to purchase EV's in comparison to the current law.

A survey performed by S&P Global Mobility found that, out of their pool of respondents, 44% stated that their main restraint in acquiring an EV was the lack of charging infrastructure. As of July 2024, there were approximately 177 000 charging ports which are accessible to the public. Public charging infrastructure increased from 22% in 2022 to 58% in 2023, the growth of which is attributed to the implemented federal and state incentives that have driven significant investments. Private charging infrastructure has shown slower growth on a year-by-year basis, but nonetheless still indicating a growth in investment in private charging infrastructure (Mathrani, 2024).

From the above it is clear that EV sales have gradually increased with the implementation of the tax credits. It seems as if the credits are reviewed on a frequent basis, as with the introduction of the transferrable tax credit, to ensure that it reaps the maximum effect possible to transition the transport industry in the USA to EV's.

2.2.1.3 *Equitability of incentives implemented*

As previously stated, PEV's, including PHEV's, are promising options for achieving the goal of reducing greenhouse gas emissions.

Surveys have shown that the implementation of EV incentives is important in encouraging buyers to purchase PEV's but, on the contrary, high-income buyers purchase EV's irrespective of the incentives offered, while the availability of incentives plays a larger role in the decision-making process of lower income households (Hardman *et al.*, 2021).

The USA is at the forefront of the worldwide transition from ICE's to EV's. Tax credits have been implemented to encourage this transition, which resulted in a slow but steady adoption from citizens and businesses. The growth and transition is not yet what has been expected, due to challenges faced by consumers, such as the high cost of acquisition and charging stations, contributing to some equity concerns that need to be addressed. The federal government has adjusted the policies on numerous occasions to benefit the adoption or to accompany a different act being implemented, as was the case when the ARRA was signed into law, lowering the number of eligible vehicles that could qualify for the tax credit. Despite this, the USA is determined to be successful in its transition to EV's with the government setting the example as they aim to transition the government vehicle fleet to EV's.

The following section provides insight into the policies implemented in China and how these policies have affected the growth of the EV market in China. China currently has the largest market share in EV's.

2.2.2 China

2.2.2.1 Introduction

During 2020, the National Energy Administration of China, indicated that the total CO₂ emissions had reached 10 billion tonnes, which was around 30% of global CO₂ emissions. President Xi Jinping stated, during September 2020 at the 75th United Nations General Assembly, that China had pledged to have a carbon peak by 2030 and to be carbon neutral by 2060. To achieve this goal, the Chinese government implemented a series of policies to incentivise the adoption of EV's (Lui *et al.*, 2023).

The Chinese government has implemented a series of incentives going back to 2009. These incentives were mainly classified as monetary-, privilege-, and charging incentives (Lui *et al.*, 2023).

2.2.2.2 Overview of legislation

The Chinese government launched the first round of a two-round commercialisation project for new EV during January of 2009, stretching to December of 2012. This project was implemented in 25 cities across China (Beijing, Shanghai, Dalian, etc.). The first focus of the project was public transportation, primarily buses and special vehicles, before being extended to private transport during May 2010 (Wang *et al.*, 2017).

The Chinese government introduced a range of incentives from 2009, which has reaped enormous results over the past decade in transforming and adopting EV's into everyday transport.

The following discussion provides an analysis of various incentives implemented by the Chinese government:

2.2.2.2.1 Monetary incentives

These incentive types mainly take the form of purchase subsidies and purchase tax deductions. This subsidy was implemented in 2009, by the Ministry of Finance, and was only applied to certain cities, which later expanded, and ultimately was adopted nationwide. As years went on, the amount of the subsidy was reduced for the purchase of a single EV. As mentioned before, the Chinese government adopted incentives for EV purchases to mitigate the economic and financial burden on private buyers to help curb the high acquisition cost and furthering the demand for EV's (Zhao *et al.*, 2024).

Along with the central government incentive mentioned above, cities have implemented an additional incentive to further promote the acquisition and use of an EV. The per EV subsidy implemented by the cities exactly matched that of the central government or was a ratio thereof. It was also found that it is not uncommon for cities to require additional criteria to be met to obtain the subsidy from the city (He *et al.*, 2018).

BEV's and qualified PHEV's are exempted from the annual Vehicle and Vessel Tax in China, in terms of the Regulations of the People's Republic of China on Vehicle and Vessel Usage Tax. These regulations state, in Article 3(7) that any vehicles or vessel approved by the Ministry of Finance will be exempt from this tax (AsianLII, 2025). This Vehicle and Vessel Tax is a tax levied in China on all vehicles and vessels at a fixed amount on a yearly basis. Transport vehicles are generally taxed on a fixed amount according to their weight, whereas passenger cars, buses and motorcycles are being taxed on a fixed amount per unit (PriceWaterhouseCoopers, 2024).

The Chinese Ministry of Finance announced during 2023 that all EV's purchased between 1 January 2024 and 31 December 2025, will be exempt from the vehicle purchase tax, after which, for the period from 1 January 2026 until 31 December 2027, the vehicle purchase tax will be reduced by 50%. This policy was implemented to support the development of the EV industry in China (Ministry of Finance of the People's Republic of China, 2023).

2.2.2.2.2 Privilege incentives

These types of incentives are applied to EV purchase licensing and EV road access, thus there are no restrictions on the purchase of an EV and no restrictions to road access for EV's, with effect from 2011 as announced by China's Ministry of Finance (Lui *et al.*, 2023).

The Chinese government has implemented road access controls, in terms of the Road Traffic Safety Law (AsianLII, 2025), based on the last digit of the vehicle license plate. This system operates in a manner that on odd-numbered days, private vehicles with license plates ending with an odd number are allowed on the road. The same applies for vehicle license plates ending with even numbers on even days. These restrictions have been lifted on EV's, as mentioned above (Lui *et al.*, 2023).

2.2.2.2.3 Charging incentives

The Chinese government has prioritised the establishment and improvement of the charging network for EV use. Since 2012, the government has issued a range of policies to encourage and improve the construction of charging infrastructure. Statistics gathered by the China Charging Alliance indicated that the national number of charging points has reached 1.7 million in 2020.

The Ministry of Finance, along with four other central agencies, developed a set of incentives for charging infrastructure development. This provided for a subsidy to cities building charging equipment but was only awarded after the city had met the threshold for EV deployment. The incentive is granted to the local city government for investment in charging infrastructure. This policy was implemented in 2016 (He *et al.*, 2018).

The discussion above pertains solely to the types of incentives provided by the Chinese government, which addresses the purchase of an EV; an incentive that relieves the acquirer from road access and other acquisition related costs, as well as an incentive to improve the charging infrastructure. These incentives have contributed to the adoption of EV's in China by making it more affordable and attractive to own such a vehicle.

The following section will provide a brief analysis of the effectiveness of these measures and examines the current state of China's EV market.

2.2.2.3 Impact on EV adoption

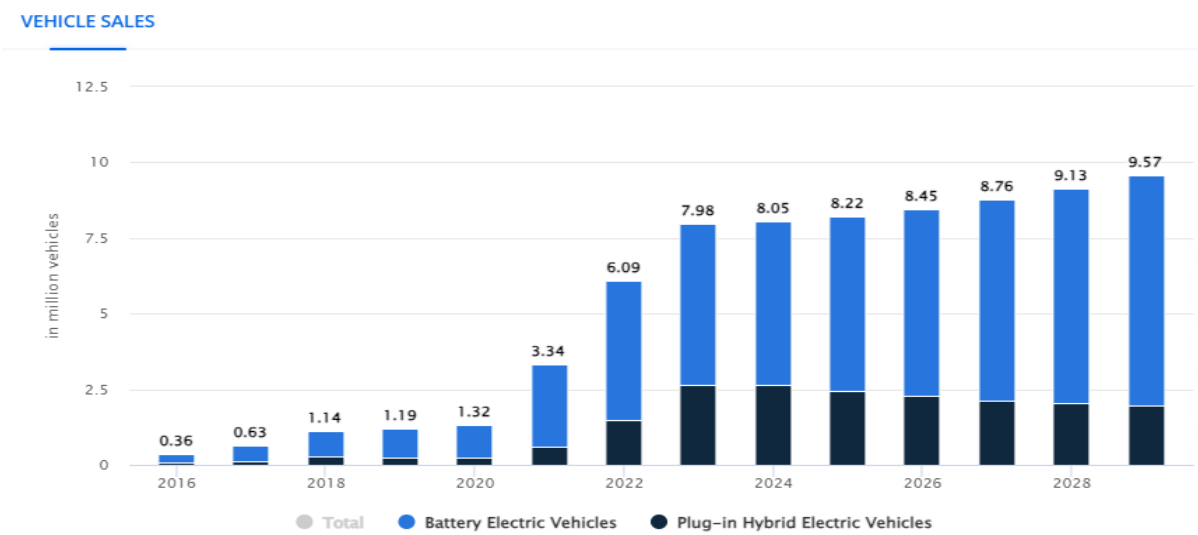
Since the introduction of incentives in 2009, the total number of household-owned EV's has grown steadily, although the long-term implementation of these policies has been constrained by fiscal capacity. The major concern is whether the government subsidises the research and development of the new energy vehicles, to enable these vehicles to compete with conventional vehicles on an equal level. An empirical analysis of the listed companies operating within the new EV industry in China, found that the government subsidises research and development within this industry (Zhao *et al.*, 2024).

Many Chinese cities suffer from severe air pollution and in 2015, only 9 of the monitored 74 cities had met the minimum national air quality standard. This in turn resulted in the EV market in these cities being unnoticeable. Notice was also made that the most efficient cities in adopting EV's were cities that are politically and economically powerful (He *et al.*, 2018).

The government has taken it upon themselves to drive the transition of EV's by prioritising their adoption across key public sectors including public transport, taxis, municipal services, postal operations and sanitation. Since 2009, the government has accelerated these efforts through initiatives such as the "Ten Cities and Thousand Vehicles Project". On 1 March 2021, the State Council Information Office announced that the public sector EV procurement surpassed the 550 000-vehicle mark and, as such, setting an example to encourage wider market adoption (Lui *et al.*, 2023).

As numbers are currently standing, with reference to the number of registered EV's, China is amongst the world leaders in EV adoption (Ehsan *et al.*, 2024). Below is a representation of the units sold in China as well as China's charging infrastructure.

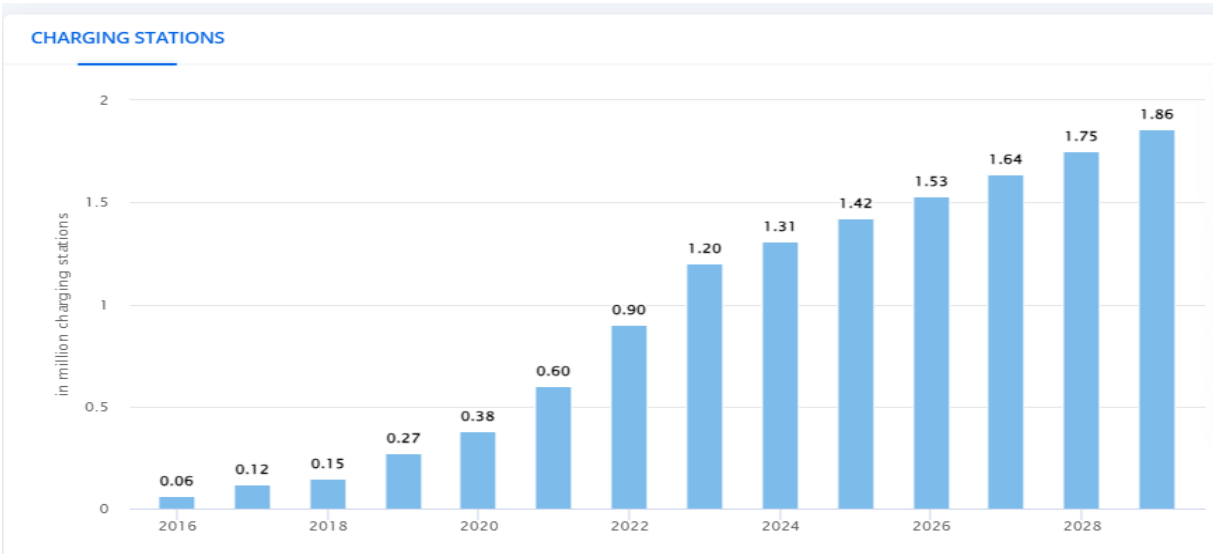
Figure 2-1: EV sales in China



Source: Statista, 2024.

The above graph sets out the sale of EV units in China. Steady growth is visible from 2023 to 2024. It is noted that although the total units of EV's sold has grown steadily, there has been a decrease in the acquisition of PHEV's, while simultaneously the number of BEV's is increasing, indicating that the consumers prefer the BEV over the PHEV, which is even more energy efficient. The above graph also indicates the growth expected until 2029, showcasing that analysts are anticipating steady future growth of EV's.

Figure 2-2: EV charging stations in China



Source: Statista, 2024.

The graph above indicates the number of charging stations and reveals continual growth on a year-by-year basis. This aligns with the increase in EV units, as more EV's on the road requires a greater number of accessible charging stations.

From the above information it is evident that EV adoption in China is increasing, which could be directly linked to the implementation of government subsidies and tax incentives, encouraging the adoption of EV's by making them more attractive to consumers. The growth noted is slow but by showcasing growth on a year-on-year basis, this indicates governments' commitment to reducing GHG emissions in China.

The section that follows analyses the policies implemented in Canada and the effect thereof on the adoption of EV's within the country.

2.2.3 Canada

2.2.3.1 Introduction

The Canadian government has implemented both federal and provincial incentives to promote the acquisition of EV's and make it more affordable for households and businesses. Transportation in Canada is the second largest contributor to GHG, accounting for a quarter of the total GHG emissions, with about half of it coming from cars and light trucks. The government of Canada knows that the upfront cost of acquiring an EV can hinder the acquisition of EV's and, as such, implemented the incentives below to make it more affordable (Transport Canada, 2024).

During the 2015 Paris Accord, Canada signed the agreement to set a target of reducing their GHG emissions by 30% in 2030. As such, a switch to electric mobility is seen as a key component to achieve these targets on a national and provincial level (Azarafshar & Vermeulen, 2020). Canada has also set a quite aggressive target to sell 100% of all vehicles sold, to be EV units by 2040, with interim goals of 10% by 2025 and 30% by 2030 (Thorne & Hughes, 2019).

The following section outlines the various incentives introduced by the Canadian government to promote and facilitate the adoption of EV's. These measures are designed to reduce financial barriers and accelerate the transition to cleaner transportation options.

2.2.3.2 Overview of the legislation

The Canadian government launched the *Incentives for Zero-Emission Vehicles (iZEV)* program during May of 2019, aimed at promoting the adoption of eco-friendly vehicles. This program includes two key components: the iZEV Program for light-duty vehicles and the iZEV Program for medium- and heavy-duty vehicles. A detailed discussion of how these incentives work follows, outlining their structure and the impact on different vehicle categories.

2.2.3.2.1 The iZEV Program for light-duty vehicles

Under this program, both individuals and organisations are eligible for a \$5,000 point-of-sale incentive, applied by the dealership, and this will appear on the invoice when the sale takes place, when purchasing a qualifying EV. This applies to battery electric vehicles (BEV's), hydrogen fuel cell vehicles, and longer-range plug-in hybrids with an electric range of 50 km or more. An incentive of \$2 500 is offered to shorter-range plug-in hybrid vehicles, thus with a range of under 50 km (Transport Canada, 2024). These rebates are provided for by the federal government and will continue until 31 March 2025 or until the funding is exhausted, whichever is earlier (Royal Bank of Canada, 2024).

In applying these incentives, there are also limitations as to how many incentives Canadians may benefit from under the iZEV program during the year. It is stated that individuals may be eligible for one incentive per year, whereas businesses may receive up to ten incentives per year. Provincial or territorial and municipal governments that operate fleets are also eligible for up to ten incentives, while car-sharing companies pre-approved by Transport Canada are eligible for up to 50 incentives (Transport Canada, 2024).

2.2.3.2.2 The iMHZEV Program for medium- and heavy-duty vehicles

The government launched the iMHZEV program during May of 2022 to encourage businesses to adopt medium and heavy-duty *zero-Emission Vehicles* (ZEV's). As with the iZEV, this is also a point-of-sale incentive. The incentive is based on the characteristics of the eligible vehicle as illustrated below in Table 2-3.

This federal incentive may be applied in addition to any provincial and territorial incentive offered, up to a maximum of 75% of the vehicles' Manufacturer's Suggested Retail Price (MSRP).

As with the above-mentioned incentive for light-duty EV's, there are also limits applicable to this incentive for medium- and heavy-duty EV's. Organisations may receive up to ten incentives or a maximum of \$1 000 000 per calendar year. These limits are applied at organisational level and not by department or division. Limits applied for spheres of government with fleets are applied by that level of government, rather than by organisation, which means that any sphere of government fleet may only use ten incentives of \$1 000 000 worth of incentives per calendar year. It is also important to note that unused incentives may not be carried forward to future calendar years (Transport Canada, 2024).

The table presented below illustrates the maximum incentive that would be applicable per class of commercial vehicles. The table also sets out examples of vehicles that would form part of that class along with the minimum weight of the vehicle to form part of the certain class.

Table 2-3: Incentive levels by class for commercial vehicles

Vehicle Type	Gross Vehicle Weight Rating (kg)	Vehicle example	Maximum incentive
Class 7/8 Coach Bus, Class 8 Fuel Cell EV	11 794kg +	Coach bus, fuel cell semi-truck	\$200 000
Class 8 (350 kWh and up)	14 970kg+	Dump, cement, heavy conventional, sleeper	\$150 000
Class 8 (under 350 kWh)	14 970kg+	Dump, cement, heavy conventional, sleeper	\$100 000
Class 7	11 794kg – 14 969kg	Furniture, medium conventional	\$100 000

Class 6	8 846kg – 11 793kg	Beverage, single-axle vans, rack	\$100 000
Class 5	7 258kg – 8 845kg	Large walk-in, city delivery, bucket	\$75 000
Class 4	6 351kg – 7 257kg	Large walk-in, conventional vans, city delivery	\$75 000
Class 3	4 537kg – 6 350kg	Walk-in, conventional vans, city delivery	\$40 000
Class 2B	3 856kg – 4 536kg	Utility vans, full-size pick-ups, step vans	\$10 000

Source: Transport Canada, 2024.

The above table sets out incentive classifications. EV's are classified in a certain class based on the gross weight of the EV. The table then further provides the user with the maximum incentive that the EV's are eligible for, based on the class to which it is classified. This is to help the user of the table to easily navigate the incentive for which it qualifies, to track it and ensure that the claimed incentives do not exceed the \$1 000 000 threshold mentioned earlier in this section.

Furthermore, Class 2B and Class 3 must meet the program's commercial EV criteria to be considered eligible for the above incentives. If the EV's does not meet the criteria, it will be considered a medium-duty EV, for which the incentive will be \$5 000 (Transport Canada, 2024).

Provincial incentives and subsidies have also been implemented in the provinces of Quebec, Ontario and British Columbia (BC), in terms of their respective provincial legislations and EV programs. In Ontario an incentive of \$14 000 was offered to consumers in the form of a purchase rebate, dependant on the battery size of the vehicle and number of seats. However, this incentive was cancelled with the election of a new provincial government in July 2018. Quebec and BC offer rebate programs (Thorne & Hughes, 2019).

The Canadian government implemented the Zero Emission Vehicle Infrastructure Program (ZEVIP) program, similar to those implemented for the acquisition of EV's, for the investment in charging infrastructure across Canada. As of 2016, the government has invested over \$1 billion to enhance the affordability of EV's and make chargers more affordable. A rebate of \$5 000 is

provided to Canadians to encourage them to transition from ICE's to EV's. This program will run until 31 March 2027 (Government of Canada, 2024).

This section sets out the incentive program implemented by the Canadian government to assist with the transition to EV's to reduce the GHG emissions from the transport industry. As noted in this section, the government has implemented the iZEV-programs but also allowed the different states of Canada to also apply further incentives to promote the adoption of EV's in the context of the state, resulting in the acquisition cost being much more affordable.

2.2.3.3 Impact on EV adoption

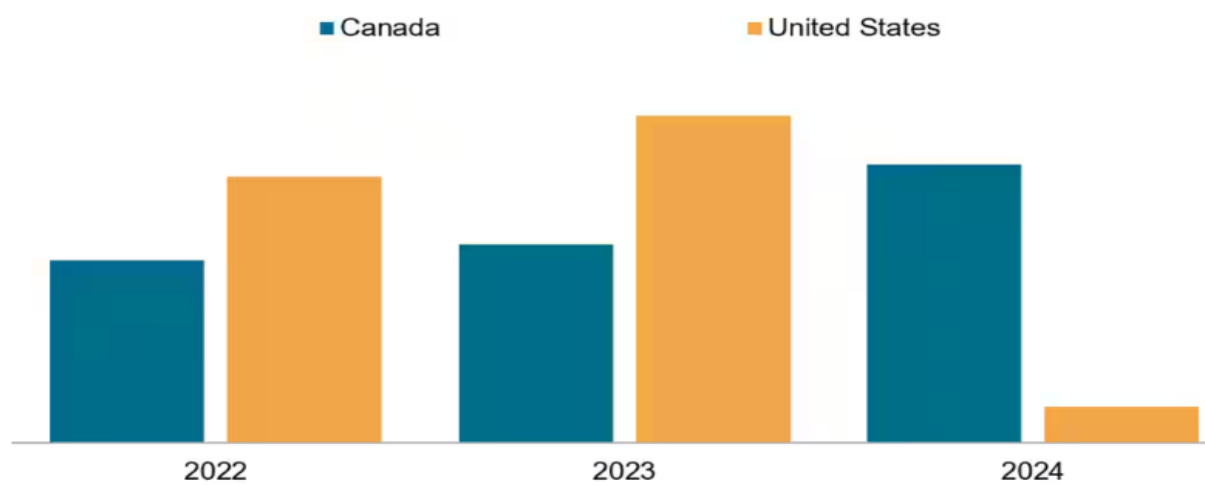
In Canada, consumers have been slow to adopt EV's. The slow adoption of EV's can be attributed to the high cost of acquiring and owning an EV. There are also other factors such as range limitations and the necessity for charging, along with the dropping efficiency in cold weather, which is quite frequent in Canada (Thorne & Hughes, 2019).

During the period of 2000 to 2018, a 27% rise in GHG emission was noted in the transport sector. The reason for this was the increase in the number of passenger light trucks and freight trucks, which in turn can be attributed to increased trade and globalisation (Razi & Dincer, 2022).

Canada has seen a gradual increase in the sales of EV's over the past few years. As reported in 2011, EV sales stood at 468, which then increased to over 18 500 in 2017, and in 2018 it was reported to exceed sales of 44 000 EV's, comprising 2.2% of all vehicle sales (Razi & Dincer, 2022). The Canadian government has further emphasised their commitment to the reduction of GHG emissions by investing \$300 million to purchase ZEV's and a further \$130 million for infrastructural developments (Razi & Dincer, 2022).

Canada only contributes about 2% of global EV sales but has expressed the highest annual growth rate between 2012 and 2018, twice that of the USA (Razi & Dincer, 2022). The adoption of EV's in Canada is currently at a higher rate than the adoption of EV's in the USA. Below is a graph illustrating indicating the EV volume growth between Canada and the USA.

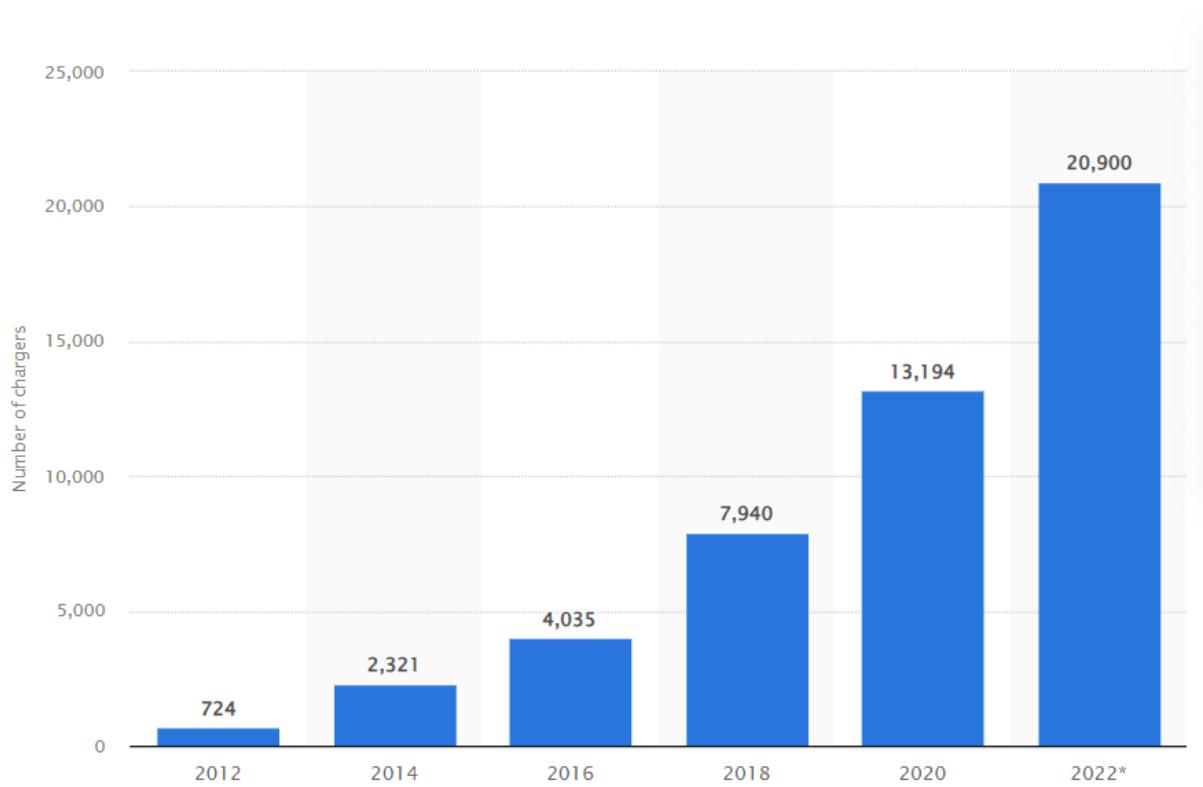
Figure 2-3: EV Volume adoption growth, Canada vs USA (January – April 2022, 2023, 2024)



Source: Brinley, 2024.

The above graph illustrates the growth volume of EV’s in Canada exceeding that of the USA. From 2023 to 2024 BEV registrations in Canada had increased by 57%, while PHEV’s had increased with an astonishing 75% (Brinley, 2024). The state of Quebec has followed a more aggressive approach, benefiting from a substantial amount of electricity received from hydropower. This excess of renewable energy has led to Quebec being able to show stronger support for BEV’s and implement more transparent incentives without income restrictions, unlike the stricter policies in BC. Income restrictions are merely a restriction stating that a part of the incentive is calculated based on the income of the buyer (Brinley, 2024).

Figure 2-4: EV chargers available to the Canadian public from 2012 – 2022



Source: Statista, 2024.

As noted in the graph above, an increase in the charging infrastructure is noted, with a sharper than before increase from 2016 onwards, which is the year that the government implemented the rebate for investment in charging infrastructure. The rise in charging infrastructure from 2020 to 2022 could be attributed to the implementation of the iMHZEV-program, launched in 2022. The launch of the iZEV-program also contributed to this increase in chargers, as more EV’s on the road results in more chargers required.

Although Canada has a lower market share than the USA and China, they do manage to show growth in the EV market as well as their nationwide adoption rates of EV’s. Canada follows a unique approach to EV adoption by encouraging residents and businesses to take part in this strategy by cleverly naming these programs and the mere fact of naming them makes them more inviting. Canada offers rebates or incentives on light-, medium- and heavy-duty EV’s, which results in the incentive program being inclusive to every industry, with some states implementing income restrictions providing assistance with regards to the equitability of the program since part of the incentive is based on the buyer’s income.

Table 2-4 below briefly summarises the incentives implemented by the USA, China and Canada to provide a general overview.

Table 2-4: Summary of incentives in the USA, China and Canada

Type of incentive	Countries		
	USA	China	Canada
Ownership	Tax credit of \$7 500 to an individual buyer.	Subsidy applied on the acquisition of an EV. The Chinese government exempted vehicle purchase taxes for the acquisition of EV's. Free from registration costs and road access restrictions.	Point-of-sale incentive provided on acquisition of the vehicle, applicable to light-, medium- and heavy-duty vehicles, through the iZEV-program.
Charging infrastructure	\$1 000 is offered as a credit for private installation.	The city receives a subsidy for the installation of charging infrastructure.	\$5 000 rebate offered for the investment in charging infrastructure.

Source: Author's compilation

After an in-depth discussion of the policies implemented in the USA, China and Canada, it is important to also gain a broad perspective on policies implemented in other countries. The following section will provide an insight into, and brief discussion of the policies implemented in the selected countries. These policies provide a brief description, rather than an in-depth discussion, only highlighting the key concepts of these incentives.

2.3 Other international incentives

On an international level, there are also several other countries who have implemented incentives to promote EV adoption.

2.3.1 Australia

Australia offers a fringe benefit tax exemption on the private use of an EV that meets the criteria set out by the Australian Tax Office. These criteria are, in terms of the *Treasury Laws Amendment (Electric Car Discount) Bill 2022 (Parliament of Australia, 2022)*:

- The vehicle must be a zero- or low-emission vehicle;
- The first time that the vehicle is both held and used is after 1 July 2022;
- The vehicle is used by a current employee or their associates, such as a family member;
- Luxury vehicle tax has never been payable on the importation of this vehicle.

A review of this exemption will be done by the Australian government by mid-2027 to determine whether it was effective as well as the effect it has had on the adoption of EV's (Australian Government, 2024).

Australia has also implemented state level incentives, with the state of New South Wales offering a cash rebate of \$3 000 for the purchase of BEV's or hydrogen fuel cell EV's. However, this rebate was only available until 31 December 2023 (New South Wales Government, 2024). Queensland state implemented the *Queensland Zero Emission Vehicle Strategy 2022-2032*, where the government of Queensland has committed \$45 million as rebates for the acquisition of EV's; a strategy that will last for as long as the \$45 million becomes exhausted. There is one rebate available per person per year and five rebates per business per year, to encourage individuals and businesses to acquire EV's instead of ICE's (Queensland Government, 2022). These are just two examples of state incentives offered in Australia. Other states, such as Victoria, also offer purchase rebates to individuals purchasing an EV.

As noted above, Australia has implemented a range of incentives at both federal and state level to encourage the adoption of EV's, showcasing their proactive commitment towards the global shift towards sustainable mobility. The federal fringe benefit tax exemption promotes the private use of EV's, while state initiatives further support consumers and businesses in the transition to cleaner and more energy-efficient transportation.

2.3.2 Singapore

The Singaporean government has introduced a few incentives to assist with the transition to EV's. One such incentive is the rebate of 45% that newly registered EV's would receive of the Additional Registration Fee (ARF) for the period 1 January 2024 to 31 December 2025, capped at \$15 000. The ARF is a tax imposed upon the registration of your vehicle, as prescribed as part of the Road Traffic Rules in Singapore, which is based on a percentage of the open market value (OMV) of the acquired vehicle. The OMV of a vehicle in Singapore, is the cost of the vehicle being imported into Singapore by the Customs department, considering the purchase price, freight, insurance and all other relevant costs for importation of the vehicle (Singapore Government, 2023). Thus, the cost of the ARF is subject to the value of the EV imported. Commercial EV's are also set to either receive a surcharge of \$15 000 for ICE's which are highly pollutive or an incentive of \$15 000 for EV's that are the least pollutive (Singapore Government, 2024).

The government of Singapore launched the *Singapore Green Plan 2030* during February of 2021. This document sets out an agenda for sustainable development with outlines of 50% green spaces within the city, quadrupling solar energy deployment and the electrification of 28 000 vehicles by 2030 (Amran *et al.*, 2023). Contained within the *Singapore Green Plan 2030*, mention is made of several targets set out by government, such as all new registrations for diesel ICE's will cease during 2025, with all new car and taxi registrations moving to cleaner-energy models from 2030, along with the deployment of 60 000 EV chargers nationwide (Singapore Government, 2024).

2.3.3 Germany

To promote the acquisition of EV's, the German government has implemented a ten-year vehicle tax exemption, applicable until December 2030. EV's are only subject to 0.25% of the gross list price for vehicles within the price range of €40 000 to €60 000, whereas the tax levied for the private use of ICE vehicles is 1% (German Association of the Automotive Industry, 2024). The beforementioned was implemented by the German government as an attempt to address the challenges associated with EV's being provided as company cars (European Commission, 2024). The act that governs these tax exemptions in Germany are the *Act on E-Mobility* of 2015 (Leutner & Becker-Boley, 2018).

2.3.4 Austria

On the acquisition of an EV, a VAT input deduction is applicable, applied in terms of the Austrian *Value Added Tax Act* of 1994, for the purchase of zero-emission passenger vehicles used for

business purposes. The VAT deduction applies in accordance with the gross purchase value (Driving Mobility for Europe, 2024):

- For a gross purchase value less than €40 000, a full VAT deduction is applicable;
- For a gross purchase value between €40 000 and €80 000, only the first €40 000 would be deductible for VAT purposes; and
- For a gross purchase value that exceeds €80 000, no deduction for VAT is applicable.

Furthermore, Austria also offers an exemption from ownership tax for ZEV's and an investment incentive of 15% of the purchase price, and a special depreciation also applies. The EV is also exempt from pollution tax and employees are not taxed on private use of the vehicle and the electricity to charge it (Driving Mobility for Europe, 2024).

Including Austria in this section provided insight into the use of a VAT deduction in promoting the adoption of EV's, along with a special depreciation. These are measures that could be considered in the South African context.

2.3.5 Nigeria

The Nigerian Government pledged to work towards all new sales of vehicles being ZEV's by the year 2040. This comes after the government signed the *Zero Emission Vehicles Declaration* at the International Transport Forum's 2024 Summit. The Nigerian government has implemented policy measures and are committed to achieving zero emissions by 2060. In 2022 they launched the *Energy Transition Plan*, which sets out and establishes the targets for EV adoption in the country (Accelerating to Zero Coalition, 2024).

Financial incentives such as reduced import taxes and tax breaks have been implemented to promote the production of EV's locally and to grow the economy. The government has also set a goal of installing 3 000 chargers annually but has acknowledged the challenge of access to electricity in some rural areas, making this goal a bit more challenging (Accelerating to Zero Coalition, 2024).

Nigeria has one of the largest economies in Africa, making it a suitable inclusion in this section as Nigeria is also a developing country. As it is a developing country, Nigeria can be directly compared to SA, with the added benefit of comparison to other African countries also. The use of reduced import taxes could be used in the South African context to promote the adoption of EV's, indicating that if Nigeria could implement such policies, SA could also consider it due to the nature of their economies.

Table 2-5 below outlines the main initiatives provided for by each country's government to assist with and encourage the transition to EV's. Contained in this table is a variety of incentives that differ slightly from those discussed for the main comparative countries in section 2.2.

Table 2-5: Summary of incentives from these other countries

Country	Type of incentive
Australia	Australia provides a fringe benefit tax exemption on the private use of EV's.
Austria	Austria provides a VAT exemption, subject to certain criteria, on the gross purchase value of the vehicle. The Austrian government has also exempted ownership taxes for EV's and provides a special depreciation for these vehicles.
Germany	The German government lowered the tax base of the tax imposed on the private use of EV's used as company cars. This tax base was lowered from 1% to 0.25%.
Nigeria	Nigeria implemented a reduction in import taxes and tax breaks with regards to promoting the production of EV's in the country.
Singapore	The Singaporean government provides a rebate of 45% of the ARF, capped at \$15 000.

Source: Author's compilation of information presented above

The incentives above serve as complimentary information to the main comparison discussion between the USA, China and Canada. These incentives provide a broader scope of incentives implemented worldwide to be used for consideration in the recommendation of incentives in the South African context.

2.4 Conclusion

As noted in this chapter, a comparison of the incentives, rebates or credits for moving to EV's was performed for the USA, China and Canada. A brief overview of five other countries was also provided under section 2.3. These discussions are important for understanding what policies have already been implemented in the world and the effect that they have had.

These discussions and analyses were provided to meet the secondary objective stated in section 1.3.2 (i). This objective set out to analyse the policies implemented in these countries as well as to discuss the effect thereof on the adoption of EV's. An in-depth discussion of the implemented policies is provided along with the impact that these have had on the adoption of EV's. Furthermore, an additional five countries were briefly discussed to gain an even deeper perspective on the policies implemented. This combined information provides sufficient ideas and background for enabling recommendation for possible incentives for South Africa.

Policies like those implemented above, in the USA, China and Canada, as well as the section on policies implemented in five other countries of the world, are crucial in reducing the CO₂ emissions in the transport sector. However, despite government backing, the adoption rates resulting from these initiatives have remained low (Pamidimukkala *et al.*, 2024). Significant progress is still required, as one of the primary challenges hindering the adoption of EV's is the limited range of batteries, which affects competitiveness with ICE's, despite the energy conservation capacity. Apart from this, researchers have found that policy incentives do exert a positive effect on the adoption of EV's and the promotion thereof. It has also been noted that a lot of research has been done analysing developed countries rather than developing countries, which could alter the current situation and is regarded as an increasingly important power in the EV market but appears slightly different to markers in the developed countries (Liu *et al.*, 2021).

The following chapter will discuss and analyse the current EV market in South Africa.

CHAPTER 3 A SOUTH AFRICAN ANALYSIS

3.1 Introduction

This chapter looks at South Africa and its transition to EV's, the challenges faced and provides recommendations for possible implementation of a tax incentive to encourage the acquisition of EV's for business owners, which addresses the secondary research objective as identified in par. 1.3.2 (ii).

To achieve the secondary objective of the study, a background discussion pertaining to the economic stability of South Africa needs to be performed, followed by an overview of the transport industry to gain an understanding of this industry as the study relates to the transport sector. The background information will be concluded with a discussion of revenue collection in South Africa. This information is necessary to sketch the South African context and is of use in further analyses for enabling the possible implementation of an incentive for EV's.

Following the background information provided, a discussion will be undertaken on the approach followed by the government in transitioning from ICE's to EV's, along with a discussion from a market report on EV's in South Africa. This will be concluded with a section containing an analysis of the current state of EV adoption in South Africa to better understand the country's current situation.

A brief discussion on policy development will be included in this chapter to understand the processes applicable when designing a policy, which is relevant for consideration, when referring to the main objective of this study. Finally, this chapter will be concluded with a brief discussion and analysis of already implemented policies in South Africa.

This chapter also contains information on the current slow adoption of EV's in South Africa and a brief overview of how the current economic state of the country influences the adoption of EV's.

3.1.1 Economic stability in South Africa

With the most recent National Election that took place on 29 May 2024, a new era in South African politics was entered as the African National Congress (ANC) lost its majority vote for the first time since 1994. This occurrence forced the ANC to form a Government of National Unity (GNU), comprising of 11 parties (SAnews, 2024) which could govern the country, with Mr. Cyril Ramaphosa elected as President.

Parsons (2024) is of the opinion that the GNU holds a positive and encouraging outlook from a governance perspective, which is likely to tilt SA towards being a more attractive consideration for investors motivated by efficiency, stability and consistency.

With the formation of the GNU, the issue of loadshedding remains a headache when considering the implementation of incentives for EV's. However, since 26 March 2024, loadshedding has been effectively suspended and has remained so throughout the winter months (Eskom, 2024). Eskom managed, through its Generation Recovery Plan, to reduce diesel expenditure in Open-Cycle Gas Turbines by around R8.08 billion (Eskom, 2024). Reports from Eskom also suggest that the operational efficiency continues to surpass expectations.

With the above taken into account, from an energy point of view, EV implementation might just be given a boost with the unexpected suspension of loadshedding.

3.1.2 Overview of the transport industry

The transport sector in South Africa forms a critical part of supporting the economy of the country and the connectivity between businesses, consumers and markets (Labour Research Service, 2023). The Climate Transparency Report of 2021 stated that 12% of GHG emissions are due to the transport sector through the use of fuel combustion (Sewpaul, 2023). South Africa has a growing transport industry, increasing the impact on resources such as land, water- and air quality, along with biodiversity. In the more urban areas of the country, the transport sector contributes largely to the air pollution, being rather visible when observing these brown dust-covered areas from a distance (Department of Transport, 2018).

Pillay *et al.* (2019) noted that projections have indicated that South Africa's transport industry could double CO₂ emissions by 2050. This calls for an urgent plan to introduce policies to reduce GHG emissions. South Africa introduced the *Green Transport Strategy* in 2016 which promotes the introduction of EV's within the transport sector. The effect of increasing EV usage on the electricity grid will result in ESKOM having to consider the impact on the environment if they are to continue the use of coal-generated electricity (Pillay *et al.*, 2019).

From the above it is clear that the transport industry contributes a large part of the GHG emissions in South Africa and a transition of the industry from ICE's towards EV's could result in declining emission levels over the next decade.

A brief discussion of the collection of revenue by the South African Revenue Service (SARS) will follow this section, as it is important to understand which areas in South Africa and which type of tax, e.g. personal income tax, corporate income tax or VAT, produce the most revenue. This is

important to clarify as the eventual implementation of an incentive will have to be financed by government and as such it could prove useful to determine where this incentive could be more likely to have a greater impact.

3.1.3 Revenue collection

Before an incentive is proposed, it is important to determine the contribution of revenue in South Africa and to what extent individuals and companies contribute to the total revenue collection of South Africa.

For the 2023/2024 fiscal year an amount of R1 740.9 billion was collected in revenue, an increase of 3.2% from the previous period. The amount of tax relief provided was R45.8 billion for a period of five years from 2018/2019 until 2022/2023 (SARS, 2023). This tax relief amount decreased with R3.2 billion during the 2023/2024 period. The collected revenue mentioned above, is contributed mostly by individuals in the form of Personal Income Tax (PIT) comprising 37.4% of all revenue collected, with VAT being the second largest contributor (25.7% of the total revenue). Companies only contributed 18.2% to the total revenue for the 2023/2024 period. On a deductions basis it was found that the largest allowances and deductions claimed for PIT contributed the travel allowance at R29 billion, comprising 18% of all the assessed allowances (SARS, 2024).

When observing the distribution of assessed natural person taxpayers and the taxpayers that contributed the most in terms of PIT, Gauteng emerged as the front runner with the highest average annual taxable income of R415 620, after which the Western Cape follows with R344 515. These figures represent the 2023 tax year (SARS, 2024).

As South Africa does not currently manufacture EV's, these vehicles have to be imported into the country and a basic understanding of the applicable import and customs rates is essential. Import duties on vehicles and automotive components in South Africa range from 25% for light duty vehicles and 20% for original equipment components (NAAMSA, 2024). In certain cases, these import duties are limited to only 18% for European Union countries (EU) due to an agreement between South Africa and these countries (NAAMSA, 2024). As EV's can be considered a luxury vehicle, an *ad valorem* tax is also added on these vehicles, which is essentially a tax that increases with the price of the vehicle.

Revenue collection forms a critical part of understanding where the money comes from. For this study, it is also important to note which provinces contribute the most tax, as this could be indicative of which cities and provinces could be more susceptible to implementation of a tax incentive for EV's.

The section that follows will consider the *Electric Vehicle White Paper of November 2023* to gain an understanding of the measures and views imposed by the government of South Africa with regards to EV adoption. Furthermore, a brief discussion of the *Market Intelligence Report 2024* will follow to gain insights into the EV market.

3.2 Electric Vehicle White Paper November 2023

The *Electric Vehicle White Paper* has been briefly mentioned in Chapter 1, but a more in-depth analysis of this document will be provided in this section.

In general, a White Paper represents the final comprehensive government policy position on a specific matter. A White Paper flows from a Green Paper which has been endorsed by Parliament, following a process of debates and voting. These papers do not have any legal binding as it merely reflects the government's position on specific matters of public concern (SA Government, 2020).

3.2.1 Purpose of the Electric Vehicle White Paper November 2023

As is stated in the *Electric Vehicle White Paper (EV White Paper)*, the primary goal of the document is to set a course for the transition of the automotive industry from using primarily ICE vehicles to a more dual usage with EV's, on both the manufacturing and consumption front by 2035. This document also aligns with South Africa's commitment to reduce the amount of GHG (Department of Trade, Industry and Competition, 2023).

This *EV White Paper* identified ten policy goals along with 16 policy actions to be implemented over a timeline stretching from 2023 until 2035, with the policy actions split as follows:

- I. Ten (10) actions to support the development of cost-effective EV production capacity in South Africa, and
- II. Six (6) actions which support the development of the local market for EV's.

As the focus of this study is the recommendation of a tax incentive for the investment in EV's by business owners, the focus will fall more on Chapter 5 of the *EV White Paper*.

3.3 Market Intelligence Report (MIR) 2024

The Market Intelligence Report of 2024 is mainly for the use of investors, equipment manufacturers, suppliers and technical advisors to highlight opportunities for investment within the EV market in South Africa. As per the *EV White Paper December 2023*, as discussed above in par 3.2, the government's focus is more towards the manufacturing industry of EV's. As

mentioned above in 1.1.1, the MIR also highlights the introduction of an investment allowance of 150% commencing on 1 March 2026, granted by the government to support and sustain the EV industry in South Africa, from a manufacturing perspective, as there are currently no EV's being manufactured in South Africa (Reddy & Radmore, 2024).

A growing trend has been noted within the EV market with regards to the adoption of these vehicles, which the MIR states is due to an increase in operational capacity (Reddy & Radmore, 2024). As per the MIR, BEV sales in South Africa grew with 85.46% from 2022, which represents a numerical increase from 502 EV's to 931 EV's sold.

The MIR also notes that due to EV's being imported into South Africa, a 25% import tax is being applied along with luxury goods taxes (applied to all vehicles with a value above R600 000). At present, there are no EV's being imported with a value of less than R700 000, with a luxury goods tax of between 18% and 30% applied on a sliding scale dependant on the value. This significantly increases the value for consumers in South Africa, which is also contributing to the slow transition from ICE's to EV's (Reddy & Radmore, 2024).

3.4 Current state of EV adoption in South Africa

EV's were introduced into the South African market in 2013, and the adoption rate thereof has been very low (Moeletsi, 2021). Scholtz *et al.* (2023) mention that various factors currently influence the adoption of EV's, such as South Africa comprising a large geographic area, the low number of public fast chargers and the high cost of EV's. South Africa is the only country in the world where the import tax on EV's is more than the import tax imposed on ICE's. Currently, the import tax on EV's is 7% higher than that of ICE's (Scholtz *et al.*, 2023).

As per the *EV White Paper* mentioned above, reference is made to Chapter 5, which contains information relating to support of the transition within the domestic market. The paper summarises three key issues with the adoption of EV's in South Africa:

- I. **Affordability:** Price premiums are deemed too high and at present disincentivises the acquirer. The high import duties add to the price that consumers have to pay in order to acquire an EV, thus demotivating consumers.
- II. **Range anxiety:** The state of charging infrastructure and the capacity of the grid, along with the limited range of a fully charged battery, is creating anxiety for users.
- III. **Availability of green energy:** The continued primary use of coal within the energy mix of South Africa, simply means that there is a reduction in emissions from the tailpipe of the

vehicle, but the driving of the car is still subject to emissions due to the charging of the vehicle.

At present the government is within the development phase of an incentive for consumers for charging infrastructure and would only consider consumer incentives once local EV production has been established, which could still be a few years in the making (Department of Trade, Industry and Competition, 2023).

The availability of charging infrastructure is a major factor in the slow transition to EV adoption. In mid-2023, South Africa had about 350 public charging stations and when considering this with the less than 3 000 EV's by June 2023, South Africa is on par with the global trend (Department of Trade, Industry and Competition, 2023).

A big concern for South African consumers has, for the longest part, been the range of EV's, as it is believed that the battery range is too short to cover daily commutes or long-distance travelling. This is, however, deemed somewhat illogical, as an EV can be charged when the owner is not using it, e.g. when at home or at the workplace. Furthermore, the distance that South Africans cover in a day consumes less than a fifth of the capacity of most EV's (Illidge, 2024). After gaining a further perspective on the EV market in South Africa, it is important to discuss the process followed by government when a new policy is being designed for implementation.

The next section of the study pertains to policy development, as the objective of this study is to propose a possible incentive for implementation to promote the acquisition of EV's.

3.5 Policy development

The term 'policy' is defined by the Cambridge dictionary as 'a set of ideas or a plan of what to do in particular situations that has been agreed to officially by a group of people, a business organisation, a government, or a political party' (Cambridge, 2024).

The above definition opens up room for discussion of the principles of a good tax system. These principles are often used in the design of a tax system or law to be implemented to evaluate the economic, societal and environmental goals of the jurisdiction imposing or implementing the tax (Nellen, 2012).

A working paper by Calitz *et al.* (2013) focuses on developing a framework methodology for analysing tax incentives in South Africa. The authors differentiate between two incentive types:

- I. General tax incentives: Incentives that apply across the board, without any exception to taxpayers, e.g. a reduction in the corporate tax rate.
- II. Selective investment tax incentives: These are incentives that form a deviation from the general tax, e.g. tax to benefit a certain group of taxpayers.

Furthermore, in an article referenced by Calitz *et al.* (2013), prepared by Zee *et al.* (2002), the main goal was to suggest a primer on the use of tax incentives in developing countries. The authors found that the spread of tax incentives has been fueled by the success thereof in certain Asian countries. Furthermore, the authors highlight the potentially serious adverse consequences of the use of tax incentives:

- I. Tax incentives erode the tax base. Erosion of the tax base happens through these incentives granted for investment, but the investment would have occurred irrespective of the incentive being granted. On another front, these incentives are granted to investments that are not eligible to receive the incentive, through ill management and abuse of such provisions by officials or investors.
- II. Tax incentives could distort resource allocation. This is the case where certain activities are encouraged over others which are not necessarily economically productive but have been granted a tax advantage.
- III. The granting of tax incentives opens the door for corruption and socially unproductive rent-seeking activities.

The above is important to note when recommending a tax incentive, as it would be ideal to mitigate the risk of any of the above concerns to have a major affect on the effectiveness of the proposed incentive.

Zee *et al.* (2002) also provide a definition of a tax incentive in the form of either statutory or effective terms. With regards to statutory terms, this would represent a special tax provision granted to qualified investment projects, only deviating slightly from the corresponding provisions generally acceptable. Effective terms would be a tax incentive granted in the form a special tax provision to a qualified investment project that has the effect of lowering the effective tax burden.

Stiglingh *et al.* (2023) describe the principles of a good tax system as set out in Table 3-1 below.

Table 3-1: Principles of a good tax system

Principle	Description
Equity	Taxes should be imposed in accordance with the taxability of a person.
Certainty	The timing, amount and manner of tax payments or receivals should be certain.
Economic efficiency	A tax should be designed in a manner not excessively influencing economic decision-making.
Administrative efficiency	A tax system should be designed in such a manner as to not impose unreasonable administrative burdens on the taxpayer as well as the authority collecting the revenue.
Flexibility	The tax system should be designed in such a manner that a change in economic circumstances does not adversely affect it.
Simplicity	The tax system should be set up in such a way that is easy to understand and apply.

Source: Stiglingh *et al.* (2023)

The above table sets out the six principles of a good and fair tax system which is used as a metric to evaluate a tax law that is being implemented. Also provided is a definition of each principle simplifying the meaning of each, which then results in better interpretation of the analysis of the law. Applying these principles to the recommendation or implementation of a new tax incentive ensures a balanced and equitable outcome.

Before a tax incentive can be proposed and subsequently implemented, it is important to understand the process which is followed when a new policy is considered for implementation in South Africa. The discussion that follows pertains to the *National Policy Development Framework 2020*, which was approved by cabinet on 2 December 2020.

3.5.1 National Policy Development Framework 2020

The *National Policy Development Framework 2020* serves the purpose of providing a framework that is reasonable and evidence-based for policies considered by government to effectively address socio-economic challenges. Although the ITA and VAT Act are not closely linked to this

framework, it is still important to adhere to these provisions to remain in good standing (The Presidency, 2020).

In South Africa there are four main stages concerned in policy making, namely policy development, policy adoption, policy implementation and policy evaluation. The following is a brief discussion of these four main stages (The Presidency, 2020).

3.5.1.1 Policy development

The policy development phase of the policy making process follows the approach of identifying problem areas that require intervention from government by exploring different options in addressing these areas of concern. Included in the identification of the problem areas is the analysis of the problem using appropriate evidence.

An initial impact assessment (IIA) is performed to understand the impact on the relevant groups in society that are being affected by these identified problems and to assist government in assessing the effect it has on the national priorities of inequality, poverty and unemployment. To perform the above analysis, government uses evidence obtained from research, practice-informed sources, citizen evidence (e.g. census) and evidence obtained from conducting evaluations of what worked in the past and why.

After this stage, policy practitioners should be able to develop a green paper (a draft policy document to communicate the government's position on a specific matter) to be used for further consultation (The Presidency, 2020).

3.5.1.2 Policy adoption

During the adoption phase of a policy, a draft policy is taken through the relevant approval structures. The first approval is usually internal, within the department and from the Minister to which the draft policy pertains, before any interaction takes place with Inter-Governmental Structures (IGS), which includes Ministerial Clusters. These structures are required to approve or recommend the policy prior to the implementation phase (The Presidency, 2020).

3.5.1.3 Policy implementation

Contained in the implementation phase is the conversion of a policy into an implementable programme that outlines the activities to be undertaken, such as the resources to be used and the institutional arrangements. The policy developers must build a detailed implementation plan

which sets out the responsibilities of developers, implementers and the persons responsible for the oversight thereof.

Furthermore, an estimated time for progress evaluations should also be addressed in the programme to ensure that proper steps are taken when intervention is necessary by the developers (The Presidency, 2020).

3.5.1.4 Policy monitoring and evaluation

The monitoring and evaluation of the policy are strongly tied to appraisal of the policy content by valuing its effectiveness during the implementation thereof. This phase is important as it is determined here whether the policy has value to continue or where ways are devised for how to modify the policy, if necessary. The evaluation phase serves the purpose of assisting the policy makers in assessing the design and implementation of these public policies on a systematic basis, by comparing it to predetermined policy objectives (The Presidency, 2020).

Considering the above discussion, a broader understanding is gained as to how policies are designed, implemented and eventually evaluated by the government. The phases in this process have briefly been discussed to assist in the understanding, as this is the process to be followed when a tax incentive is recommended and evaluated for eventual implementation.

The following section dives into the legislation that has presently been implemented in South Africa, providing insight into what the government has already put in place to assist in curbing the GHG emissions. These legislations are not specific to the transport industry but rather to gain a holistic view of the relevant policies implemented in South Africa.

3.6 Current legislation implemented in South Africa

3.6.1 Chapter 2: Section 24 of the Constitution of South Africa

The *Constitution of the Republic of South Africa, 1996* (Constitution), more specifically section 24 of Chapter 2, states that every citizen of South Africa has the right to an environment that is not harmful to their health or well-being. Furthermore, the environment is to be protected, not only for the generations of today but for future generations as well, through the use of legislative measures that prevent pollution, through promotion of conservation and through securing ecologically sustainable development and use of natural resources.

The Constitution is vitally important when considering the development of a tax incentive as it represents the rights of the citizens and by recommending a tax incentive, it must be ensured that

it aligns with what the Constitution prescribes. In this case, it would be recommending a tax incentive that could potentially improve quality of life as it would be considered as having a positive effect on the environment.

3.6.2 Section 11D of the Income Tax Act 58 of 1962

The section provides for the deduction of expenditures incurred, by private sector companies, for research and development activities to the value of 150% of the expenditure incurred. Section 11D allows companies operating in the private sector to claim a tax deduction equal to 150% of expenses incurred for purposes of research and development activities, provided that these activities are scientific or technological in nature. Keeping this in mind, the EV industry falls within the scope of this section and manufacturers could optimise this incentive by conducting research into EV's (SARS, 2023).

This incentive aligns with the global EV trend over the past two decades, as more countries have introduced and expanded their research and development support. Countries have internalised the rationale for government support for business-led research and development within their policies and this incentive emerged during 2003 after the Department of Arts, Culture, Science and Technology explored the possible benefits posed by such an incentive. At the time there was very little material available in South Africa, which resulted in debates on whether direct (grant-based) or indirect (tax-based) incentives would be more beneficial. The fiscal environment for research and development appeared relatively poor in comparison with countries that form part of the Organisation for Economic Co-operation and Development (OECD), particularly in terms of the tax rates applicable to these investments (National Treasury, 2021).

This incentive encourages research and development of scientific and technological areas, such as EV's. This section of the ITA could be linked to the incentive being provided, commencing 1 March 2026 of 150%, specifically for companies manufacturing EV's in South Africa. Although, this incentive speaks to the manufacturers only, it is important to consider in the context of the study, as this section of the chapter sought to discuss measures already implemented that could encourage the adoption of EV's in South Africa.

Following the above, a discussion will follow pertaining to the Carbon Tax Act 15 of 2019, an act implemented to curb the GHG emissions in South Africa and encourage more sustainable transport and environment policies.

3.6.3 Carbon Tax Act 15 of 2019

3.6.3.1 What is carbon tax?

The Carbon Tax Act 15 of 2019 (the Carbon Tax Act) is a relatively new tax act, implemented as recently as 2019, as a response to climate change and was a relatively large update to the previously imposed Vehicle Emissions Tax implemented during 2010. This tax is aimed at reducing greenhouse gas emissions in a sustainable and cost-effective manner. The tax works on the polluter-pays-principle, resulting in firms and consumers accounting for the negative costs of climate change when making future production and investment decisions (SARS, 2023). The South African government enacted this policy to ensure a safe and healthy environment through effectively regulating the emission of activities that cause pollution (Abel *et al.*, 2023).

3.6.3.2 Carbon tariffs and their effect

Carbon tariffs in South Africa follow a phased approach to manage the transition to net zero carbon emissions. With implementation in 2019, the tariff was originally set at R120 per tonne of CO₂ emissions, which was subsequently increased to R134 by the end of 2022. However, this tariff falls effectively between the ranges of R6 to R48, due to tax-free allowances that cushion adverse impacts on energy-intensive sectors, e.g. mining. The tariff also only covers direct emissions and with that Eskom has also been exempted. To place this in comparison with the USA, the effective tariff in South Africa is between US\$0.30 and US\$2.60 compared to the USA US\$6, as of 2022 (Gasealahwe *et al.*, 2024). An increase in the carbon fuel levy, which is effectively included as part of the Carbon Tax Act, increased to 11 cents per litre of petrol and 14 cents per litre of diesel. The year 2024 also marked an increase in the carbon tax levy of 19.49% to an amount of R190 per tonne of CO₂ (Kotze *et al.*, 2024).

South Africa has a 1% share of the global GHG emissions, which ranks South Africa as the 15th highest carbon emitter worldwide. Thus, South Africa has a high carbon intensity but a rather low carbon price. The impact of this is that it exposes the country to possible climate-related trade restrictions (Gasealahwe *et al.*, 2024).

At present the revenue gathered from carbon tax makes up a mere 0.2% of the total revenue collected in South Africa, at R1.6 billion, as of 1 February 2023. The initiative behind the Carbon Tax was to recycle the revenue into creating and investing in green initiatives. The impact of the carbon tax could be greater when the second phase is implemented during 2026 (Deloitte, 2023).

The relevance of this carbon tax on the transport industry is evident through the carbon fuel levy which is levied on the petrol and diesel used in ICE vehicles. Although the levy is not significant,

it has to be considered whether owners would rather keep on paying this indirect tax as part of the cost of fuel, or whether it would be cheaper, from the perspective of a consumer, to charge an EV.

3.6.3.3 Taxation Laws Amendment Act 2024

On 24 December 2024, the government released in the Government Gazette no. 51826, the amendments to be made to the Income Tax Act 58 of 1962. Included in these amendments are the inclusion of s12V '*Deduction in respect of production of battery electric and hydrogen powered vehicles*'. S12V allows for the deduction of costs incurred to affect the manufacture of EV's. The amount of the deduction is 150% of the cost incurred for any building, new and unused machinery and plant, as well as improvements to these machinery and plants. This section would be effective from 1 March 2026 (Taxation Laws Amendment Act, 2024).

Also included in the above amendments, are an expansion of the provisions of s8(4), recoupments to be included in the gross income of the taxpayer. These provisions include the disposal of any asset included in the scope of s12V, under s8(4)(nB & nC) (Taxation Laws Amendment Act, 2024).

The above amendments to the legislation provide insight into the progress and steps being taken to encourage the adoption of EV's in South Africa. These sections are however outside the scope of this study as it pertains to manufacturers rather than users.

3.7 Conclusion

This chapter served to achieve the secondary objective stated in section 1.3.2 (ii), i.e. to achieve a deeper understanding of the EV market within South Africa. As the main objective of the study is to eventually recommend a tax incentive to encourage the adoption of EV's, it is important to briefly understand the process that is followed when government designs and considers a policy.

To achieve this secondary objective, a discussion is provided pertaining to the economic stability of South Africa, as it is important for the economy to be relatively stable before a tax incentive could be considered. It was found that the newly imposed GNU could provide South Africa with some economic stability, as outlooks for positive governance could impact investment opportunities. Furthermore, concerns about EV adoption stemmed from the electricity crisis that the citizens and businesses of South Africa experienced but, since late March 2024, loadshedding has been suspended, which in turn could motivate business owners to adopt EV fleet vehicles. This development in South Africa's politics and energy reliability could suggest that a tax incentive for EV's may be favourably received by business owners.

Given that EV's could be perceived as a type of a luxury vehicle, it is important to consider the revenue collection of South Africa and to what extent revenue is collected from different types of tax, as well as what provinces contribute the largest part of the revenue collected. A discussion in that regard is important for understanding the areas of South Africa which could be used as potential test areas for the initial implementation. Areas such as Gauteng and the Western Cape contribute more greatly to the revenue and business owners are more likely to be able to make the investment in EV's, to ultimately further the transition from ICE's to EV's in South Africa.

Understanding the process of policy making in South Africa is important as it contributes to the method of thinking when designing and thinking about policy changes or policy creation. This section is then accompanied by commentary from research papers on the general effect of tax incentives, listing different incentive types and analysing their effectiveness. Two types of incentives are mentioned in this discussion, general- and selective tax incentives, both of which should be considered and evaluated when recommending an incentive. This consideration is important as it helps to determine whether everybody, or only a certain group, would be eligible for the incentive. This discussion also focussed on certain concerns noted from the implementation of incentives, such as the erosion of the tax base. The chapter is concluded by analysing the policies implemented to encourage EV adoption, by incentivising the research and development thereof, or to curb GHG emissions, such as section 11D of the ITA and the Carbon Tax Act 15 of 2019.

Brief reference is made to *The Constitution* as the consideration thereof is important to the development of policy as it mentions what the residents of South Africa have the right to, i.e. a healthy environment for purposes of our focus. By considering the above, the secondary objective of the study has been achieved and contributes towards fulfilling the study's main objective.

The following chapter aims to propose a few incentives that could be considered for implementation and then evaluated against the principles of a good tax system to provide insight into an incentive that could be most suitable for recommendation.

CHAPTER 4 CONCLUSION

4.1 INTRODUCTION

This chapter is the concluding chapter of this study, comprising the recommended or proposed incentives to be considered in South Africa set against the principles of a good tax system. This aligns with the main objective of this study stated in section 1.3.1, which concerns the evaluation and possible recommendation of an incentive for investment in EV's by business owners.

The main objective has been achieved by fulfilling the secondary objectives stated in section 1.3.2. These secondary objectives are discussed in Chapter 2 and Chapter 3, evaluating and analysing international incentives implemented (Chapter 2), followed by an analysis of the current economic state in South Africa, the policies already implemented in South Africa and the effect of these on the adoption of EV's as it currently stands (Chapter 3).

The section that follows provides a summary of the incentives discussed in Chapter 2 that will be used to recommend an incentive for South Africa.

4.2 Summary of incentives contained in Chapter 2

As mentioned above, this part will, in short, summarise the incentives implemented in the countries discussed in Chapter 2. The focus will fall on incentives in the USA, China and Canada, as these countries were the main focus of Chapter 2.

Table 4-1: International incentives implemented

Type of incentive	Countries		
	USA	China	Canada
Ownership	Tax credit of \$7 500 to an individual buyer.	Subsidy applied on the acquisition of an EV. The Chinese government exempted vehicle purchase taxes for	Point-of-sale incentive provided on acquisition of the vehicle, applicable to light-, medium- and heavy-duty vehicles, through the iZEV and iMHZEV programs.

		the acquisition of EV's. Free from registration costs and road access restrictions.	
Charging infrastructure	\$1 000 is offered as a credit for private installation.	The city receives a subsidy for the installation of charging infrastructure.	\$5 000 rebate offered for the investment in charging infrastructure.

Source: Author's compilation

The table above indicates the different policies implemented in these countries. It is noted that all these countries provide an acquisition incentive, with China also furthering the promotion of EV acquisition by exempting EV's from registration taxes and from road access restrictions. With regards to charging infrastructure, the USA offers a tax credit for the private installation of these charging ports, while the Chinese government promotes the installation of charging infrastructure in public places so as to be accessible for public use.

It is also important to note that the other countries discussed under section 2.3 offer a few different tax incentives, such as a fringe benefit exemption applied in Australia on private use of an EV. Another example of such an incentive is the VAT deduction implemented in Austria, as well as the exemption of ownership taxes. In the African context, Nigeria reduced import taxes and tax breaks for EV's.

The following section proposes incentives that could be implemented in SA, as compared to those implemented in the countries previously discussed and tailoring it for the SA context.

4.3 Proposed incentives

To propose incentives, it is important to differentiate between incentives for the acquisition of EV's and incentives for promoting the use thereof, i.e. incentives for developing the charging infrastructure.

4.3.1 Acquisition of EV's

4.3.1.1 Purchase subsidy

As noted in the discussion in previous chapters, a direct purchase subsidy is a frequently used method to encourage the adoption of EV's. A subsidy such as this could be considered at point-of-sale, such as in Canada, or as a rebate during the completion of one's tax return. This subsidy could be applied to business owners upon purchase of the EV's.

Complexities tend to arise with the implementation of such subsidies as this would need to be financed by government, since the subsidy would provide for a lower purchase price received by the vehicle dealership which in turn would then affect their profit margins and commission received by the salesperson.

South Africa already has a variety of subsidy programs that are resulting in further strain on the economy and the national budget. To implement this subsidy, the fiscus will need to recover the allocated funds from the taxpayers, both companies and individuals, which could have a negative impact, as some other taxes could potentially be imposed, or other governmental programs could see a reduction in funding.

Another basis on which a subsidy could be applied, as found with Canada, is on a provincial basis. Implementing an incentive for EV's in the high GDP regions first could ease the effect on the economy and would result in a phased approach. This would allow the fiscus to evaluate these regions over a period and then conduct research on whether it would be feasible to expand the subsidy to other regions. For instance, in South Africa, the subsidy might first be implemented in Cape Town and Johannesburg, as these cities are regarded as the main economic hubs of the country's economy.

4.3.1.2 VAT Input deduction

As seen with Austria, a VAT deduction for businesses could encourage the adoption of EV's. Currently, the *VAT Act* 89 of 1991 of South Africa includes EV's as part of the definition of a 'motor car' described in section 1(1) of the *VAT Act* and is not specifically excluded from this definition (SARS, 2023).

At present a 'motor car,' as defined, is not a permissible deduction in terms of section 17 of the *VAT Act*, resulting that the business owners acquiring these vehicles are not permitted to claim the input tax on these vehicles, generally because there won't be output tax levied as the vehicles are not used for the purpose of making taxable supplies, apart from businesses that are in the

business of buying and selling cars (s17(2)(c)(i) of the *VAT Act*). Furthermore, section 17 does provide circumstances, as mentioned above, where the input tax for vehicles is allowed to be claimed, for example, a vehicle acquired for demonstration purposes or temporary use prior to a being a taxable supply (s17(2)(c)(ii) of the *VAT Act*). Another provision stated in the *VAT Act* under s17(2)(c)(iii), reads that a 'motor car' acquired for the purpose of awarding said motor car as a prize, the input tax would be deductible (SARS, 2023). Government could consider reducing the import duties on EV's, to make them more affordable for consumers to acquire.

Allowing a VAT deduction on the acquisition of EV's for registered VAT vendors could result in the adoption rate of EV's growing steadily as business owners would be encouraged by the prospect of lowering their VAT liability to SARS by investing in an EV fleet to be used by the employees for business purposes.

4.3.1.3 *Income Tax: Accelerated depreciation allowance*

Currently in the ITA, assets such as vehicles are only subject to a section 11(e) allowance, dependant on the type of asset an allowance write-off period is provided for by Binding General Ruling 7 (BGR7). At present the BGR7 does not provide for EV's, and they are treated the same as motor vehicles. Currently, the write-off period for motor vehicles is 4 years.

Section 12C provides an acceleration allowance for assets used directly in the process of manufacturing. Where the asset is new and unused, this allowance increases to 40% for the first year, rather than the 20% if it had been second-hand or used for purposes other than manufacturing. For the remaining three years the allowance is 20% per year. Government could also consider a capital allowance equal to the abovementioned to promote EV adoption as it could seem more attractive to business owners since the allowance in the first year is larger than usual.

Austria provides for a special depreciation, which is a policy that could be implemented in this regard. The ITA in section 12E provides for a capital allowance equal to the cost of any plant or machinery brought into use for the first time in the context of a small business corporation. The principle contained in this section could be applied to the wear-and-tear / capital allowance of an acquired EV, to promote the acquisition of an EV for business owners as they would be able to claim a deduction worth the purchase price of the EV. This would then be applicable for only a one-year period. The above recommendation is similar to the new inclusion in the ITA, s12V, that provides for a 150% deduction of costs incurred in the manufacturing of EV's. These costs relate to the buildings, machinery and plants used in the manufacturing process. When adapting s12V to consider business owners as the acquirers of EV's, the resultant tax incentive would be similar to the principle of the provision in s12E.

4.3.2 Charging infrastructure

4.3.2.1 *Installation incentive for businesses*

Governments in the USA and China provide incentives for investment in charging infrastructure in the form of a subsidy in the USA, while China offers a subsidy where the federal government awards the local city government a subsidy when they meet a certain target of charging port installations.

To apply this to the South African context, the national government could allocate a portion of the budget to the provincial government on a ratio of the GDP per capita for that province. Another allocation method could also be the ratio of EV's sold per province, which would then result in more charging infrastructure required. This type of subsidy opens up the possibility of ill-allocation of funds from national government level to the provincial government, but this type of subsidy could also promote investment in public charging infrastructure, e.g. at shopping centres or public parks.

Another alternative could be similar to the tax credit provided in the USA or in the form of a tax deduction in terms of section 11(e) of the ITA, which will apply to the business. This infrastructure would then be depreciated using an accelerated period, e.g. two years, thus resulting in 50% of the cost price being deducted from taxable income for the first two years of operation. This is more beneficial, as this type of infrastructure is usually depreciated for tax over a period of at least four to five years. This could be introduced as part of section 11(e) of the ITA, or a new section could be introduced for a limited period, more or less the same as the introduction of section 6C solar credit for natural persons introduced during the 2024 year of assessment, which was only effective from 1 March 2023 until 29 February 2024.

These proposed incentives could be evaluated against the principles of a good tax system to ensure that they are deemed fair and reasonable to both the taxpayer and the fiscus.

4.4 Principles of a good tax system

The above-mentioned incentives proposed are to be evaluated against the principles of a good tax system as set out in Table 3.1. Table 4.2 below will briefly apply these principles to the proposed incentives to evaluate the fairness and reasonableness thereof.

Table 4-2: Evaluation of the proposed incentives

Type of incentive	Principle applicable	Discussion
Purchase subsidy	Certainty	This principle would be fair to both the fiscus and business owners as there are clear indications as to when the subsidy will be received, i.e. on the day that the sale occurs.
	Administrative efficiency	The above incentive would ease the administrative burden on SARS as it is applied once at the point of the sale. Whereas, if this was in the form of a rebate applied at the end of the tax period, taxpayers would need to provide proof of the purchase and SARS would need to perform verifications as this rebate could be substantial. Thus, a rebate could prove to be an administrative burden to both parties.
	Equity	This incentive holds the potential to reduce other subsidy programs offered by the government that are of greater importance to the livelihoods of South African residents and businesses, thus it does not necessarily seem equitable from the perspective of the government.
VAT Input deduction	Certainty Administrative efficiency	There is certainty with regards to the timing of this incentive, as it would be claimed within the relevant VAT period.
	Economic efficiency	This incentive would not influence economic decision-making, as the fiscus does not have to contribute to funding this incentive, as is the case with the subsidy mentioned above. However, the fiscus may need to consider the

		fact that revenue collected from VAT could be less, due to the deduction granted.
	Simplicity	An incentive like a VAT deduction is simple to understand and non-tax specialists would also be able to understand the effects of the incentive.
Accelerated depreciation allowance	Equity	This tax incentive would be available to any business owner who purchases a vehicle to be used in the operations of the business, thus making this incentive equitable to all businesses. This incentive would also reduce the taxable income of the business, which in turn would result in a lower amount of tax being paid to SARS.
	Certainty	Business owners would already have certainty as to when a depreciation allowance would be applicable, as this is calculated at the end of the relevant income tax period.
	Simplicity	Businesses would likely already own other assets which are subject to the same depreciation allowance legislation, thus being simple to understand and implement. Concerns could arise if the allowed depreciation differs from the already imposed allowances mentioned in section 4.3.1.3.
	Flexibility	Changes in the economic environment would not significantly affect this incentive as it is calculated purely on the cost of the EV.
Charging infrastructure:	Equity	As with the subsidy, government might not provide sufficient funding for this investment in the selected provinces due to the funding being prioritised elsewhere, resulting in the recipients

Installation incentive		of the specific funds being negatively impacted should the charging infrastructure subsidy be implemented. This type of subsidy also does not benefit the majority, as only a very small number of people would be able to use these chargers (i.e. the small amount of people who would be able to afford EV's).
	Simplicity Administrative efficiency Flexibility	The method of allocation could be an arbitrary process with a few variables to consider, depending on how government decides to allocate these funds, resulting in the public having a poor understanding of how the allocation works, which in turn could deter consumers from buying EV's. This would then mean that there would be no reason to install charging infrastructure since there would be no use for it. The local governments responsible for these installations might also experience difficulty in budgeting as they could be uncertain about how the portion is calculated. A change in the provincial economic circumstances would directly affect this incentive received, as it would alter the portion received from the national government, e.g. if the GDP of the Western Cape decreases, the share allocated to the Western Cape would also decrease.

Source: Author's own application of the principles

The table above briefly evaluates the proposed incentives against the principles of a good tax system. Although this is not an in-depth evaluation, it does provide insight into where possible

issues with each policy could arise. It was noted that pursuing the implementation of a purchase subsidy could put strain on the government and potentially adversely affect the subsidies that the government already has in place. However, a subsidy in this form holds fewer administrative burdens. Furthermore, it was noted that an incentive in the form of an input VAT deduction or accelerated depreciation allowance could prove to be beneficial, due to the business owners already possessing an understanding of these incentives and legislation.

An indication is also provided as to which policy could be the most suitable for recommendation, based purely on these principles. The following section discusses the proposed incentive which would likely be most beneficial in South Africa to encourage the adoption of EV's for business owners.

4.5 Recommended incentive

Implementing a VAT input deduction would provide business owners with the most incentive to invest in EV's as they could reduce their VAT liability for the relevant VAT period. This incentive also holds the smallest administrative burden and is straightforward to understand. Implementing a VAT input deduction on a vehicle is currently scoped out of the *VAT Act*, which could result in business owners viewing this change as positive and highly encouraging. This incentive is also not subject to change soon after implementation, as the economic effect is likely to be very low, making it beneficial for business owners to plan their acquisitions and for the government to still collect most of the generated VAT revenue. A reduction of import duties could result in a potential indirect double incentive as the VAT, in terms of this recommendation, is already provided as a deduction against output tax. Thus, reduced import duties would result in the fiscus losing income for the same transaction on two occasions.

On the charging infrastructure front, business owners would be responsible for installing chargers for these vehicles at their premises but would be able to claim an accelerated depreciation allowance for the installation of charging infrastructure at the premises of the business.

The above incentives are merely a recommendation of tax incentives, from those proposed, that could be implemented to assist in increasing the number of EV's on the roads in South Africa and transitioning away from ICE vehicles.

The following section addresses the study's limitations.

4.6 Limitations of this study

This study was conducted by using a qualitative research methodology. This entailed that all information provided was gained from academic literature, news articles and legislation obtained from government sources. No recent quantitative data could be collected due to the nature of this study, and opinions and facts were supported by data obtained from sources which dated back to 2023. Some of the gathered data also comprised projected figures. These factors limited the study to a mere recommendation of an incentive as it was not possible to gather information to specifically evaluate the most beneficial incentive to recommend. Thus, the principles of a good tax system offered the only criteria of evaluation.

Research with regards to EV's and the incentives imposed in South Africa is very limited, which restricted the sources for utilisation during this study, which meant that the study is merely a recommendation. The draft legislation for income taxation law amendments, issued during October 2024, has been considered and referred to where applicable. These newly implemented provisions were not applicable to the scope of the study as it refers predominantly to a tax deduction for manufactures of EV's.

4.7 Prospects for future studies

Upon completion of this study, the following areas for future research were identified:

- I. A study of the tax incentives that could be offered to the individual taxpayer. This study has a primary focus of evaluating and recommending a tax incentive for business owners, as encouragement to invest in EV's. Incentives for the individual taxpayer did not constitute the main objective of this study and could be researched further.
- II. A study could be performed based on the perception that business owners have with regards to these incentive types and whether they are actually aware of such an incentive. This study would naturally only be feasible if and when such an incentive has been implemented by the government.
- III. Possible future research could be conducted on the impact of electric powered agriculture equipment and the promotion thereof from a taxation perspective as well as the ultimate impact that it could have on farming operations.
- IV. A more in-depth study could be performed, evaluating how local and provincial governments could tailor their own policies on EV adoption to assist the national government in assessing the effectiveness of tax incentives for EV adoption.

4.8 Conclusion

This chapter aimed to conclude on having achieved the main objective of the study, i.e. evaluating the tax laws of the USA, China and Canada in terms of the incentives provided in these countries to facilitate the transition to EV's, for purposes of recommending an incentive for South Africa in order to encourage a transition from ICE's to EV's.

This main objective was accompanied by secondary objectives, pertaining to the discussion of incentives implemented in the above-mentioned three countries along with five other countries to gain a deeper perspective of a range of other incentives implemented (Chapter 2). It was noted from this chapter that the USA, China and Canada have all implemented purchase subsidies for consumers of EV's, which has directly contributed to the increase in EV sales in these countries. The major difference noted is when this subsidy is applied, as the USA applies it as a tax credit, while Canada applies the subsidy at the point-of-sale. Furthermore, all these countries provide an incentive for charging infrastructure, with the standout example being China that awards this incentive to the city and not to a single person or business. This method was implemented to encourage local city governments to invest in charging infrastructure to ensure that the consumers acquiring EV's are able to charge their vehicles in public.

Chapter 3 analysed the South African context, evaluating the current EV market as well as residents' issues and concerns relating to the adoption and use of EV's. It is important to understand the process of policy development as this study aimed to recommend an incentive for potential future implementation.

Both the above-mentioned secondary objectives were met, as this chapter concluded with the ultimate recommendation of a tax incentive for possible implementation, after a few incentives were proposed and evaluated against the principles of a good tax system. This evaluation process aided in eliminating the incentives that could possibly have a negative impact on both the business owners and the government, and the most beneficial incentive was proposed for implementation. This recommendation thus satisfied the main objective of the study.

In conducting this study, a deeper perspective was gained on EV's and the effect that they currently have in transforming the transport industry worldwide to reduce their share of GHG emissions. A more concise understanding of the concerns of the public, both locally and internationally, can influence the adoption of EV's worldwide. These concerns have to be addressed by the governments of the different countries to ensure a smooth transition to EV's. Several countries have implemented goals to be carbon free by determined periods in time, intensifying their determination to transition from ICE's to EV's.

From a South African perspective, the transition has been slow. This has mainly been due to political instability prior to the election on 29 May 2024 and the unreliability of the electricity grid. These concerns have been addressed by the newly formed GNU and the suspension of loadshedding since March 2024. These aspects have re-opened the conversation about EV's, as the government has announced an investment through the use of an incentive for the manufacturing of EV's in South Africa, with the main reason being protection of the automobile market. The government offered their stance on EV's in the *Electric Vehicle White Paper November 2023*, where they highlighted their plans and goals to transition from ICE's to EV's.

This study indirectly contributes to the goals of the *White Paper* as it recommends an incentive for implementation which could encourage business owners to invest in acquiring EV's to conduct their business.

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STATEMENT BY LANGUAGE EDITOR

18 November 2024

Statement by Language Editor

I, Jennifer Lake, hereby certify that I language edited a mini-dissertation for the degree Master of Commerce in Taxation by MP Oosthuizen, with the title:

“An evaluation of a tax incentive for business owners for investment in electric vehicles”

Jennifer Lake

A handwritten signature in black ink, appearing to read 'Lake' with a stylized flourish.

Accredited Professional Text Editor, SATI (APEd)
Membership no: 1002099
M. St. Linguistics (OXON)