

# The Role Of Tax Incentives In Reducing CO<sub>2</sub> Emissions – Evidence From Vehicle Manufacturers

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## ABSTRACT

*The objective of the study was to consider the role of tax incentives (deductions and allowances in terms of the South African Income Tax Act) in reducing carbon dioxide ('CO<sub>2</sub>') emissions in the automotive industry. The objective was achieved in the light of qualitative empirical evidence obtained from South African vehicle manufacturers. A questionnaire was circulated to nine South African vehicle manufacturers and the responses were interpreted to establish whether current tax incentives provide an incentive to reduce CO<sub>2</sub> emissions. Findings highlighted the importance of tax incentives in reducing CO<sub>2</sub> emissions and suggest that vehicle manufacturers regard tax incentive-driven policies as the most effective tool in reducing CO<sub>2</sub> emissions. However, since it is difficult to qualify for current tax incentives, this approach might not provide the necessary incentive to reduce CO<sub>2</sub> emissions. It is recommended that tax incentive policies either be simplified or alternative initiatives be introduced to encourage investments in the reduction of CO<sub>2</sub> emissions.*

**Keywords:** Carbon Dioxide Emissions; CO<sub>2</sub> Emissions; South Africa Vehicle Manufacturer; Tax Deductions; Tax Incentives; Vehicle Emissions Tax

## 1 INTRODUCTION

There is increased pressure on both the energy and transport sectors because these are the only sectors in which CO<sub>2</sub> emissions are rapidly increasing (Van Essen, 2010:203). Hughes and Haw (2007:36) submitted that the transport sector showed large potential to save energy, but significant pressure from government on vehicle manufacturers, vehicle owners and public transport co-ordinators would be required.

In an attempt to reduce the CO<sub>2</sub> emissions in the transport sector in South Africa, a separate vehicle emissions tax on passenger vehicles was introduced effective 1 September 2010 (National Treasury, 2010a:191). The objective of this vehicle emissions tax is to attempt to change consumer purchasing decisions by discouraging the acquisition of vehicles that emit high CO<sub>2</sub> emissions. DeCicco (2006) concluded that CO<sub>2</sub> emissions could be reduced by encouraging and informing consumers to use energy-efficient vehicles. The introduction of the vehicle emissions tax has, however, been met with concern and criticism. The South African automotive industry, represented by the Retail Automotive Industry ('RMI') and the National Association of Automobile Manufacturers of South Africa ('NAAMSA'), has expressed concern about the possible negative implications of this vehicle emissions tax for employment in the vehicle retail, manufacturing and component industries. The RMI and NAAMSA also questioned whether this tax would be effective in reducing CO<sub>2</sub> emissions (ABR, 2010; NAAMSA, 2010). The focus of the vehicle emissions tax on consumers who may not always realise the impact of their actions on the environment has also been identified as a possible weakness which could negatively affect its ability to reduce CO<sub>2</sub> emissions (Nel & Nienaber, 2011).

Apart from vehicle owners (targeted by the vehicle emissions tax), vehicle manufacturers could also contribute towards reducing CO<sub>2</sub> emissions in the transport sector by developing fuel-efficient technology and

reducing CO<sub>2</sub> emissions by improving their manufacturing processes. The National Treasury (2006:70) identified the encouragement to develop fuel efficient technologies as a possible incentive mechanism in reforming existing environmentally-related taxes. The importance of vehicle manufacturers is emphasised by the fact that they form part of the automotive industry, which is South Africa's largest manufacturing sector (Gastrow, 2008:1), and the fact that plans have been implemented in an attempt to double vehicle production in South Africa by 2020 (Lamprecht, Rudansky-Kloppers & Strydom, 2011:72). It is thus important that the expected significant growth is sustainable and should also take into account the environmental impact (including CO<sub>2</sub> emissions). Findings by Du Plooy (2012:48) suggest that South African vehicle manufacturers expect there would be a change in the way they conduct business as a result of CO<sub>2</sub> emissions over the next two to three years. Furthermore, such compliance with CO<sub>2</sub> emission initiatives could also translate into incremental costs for manufacturers (Callan & Thomas, 2007:161; Du Plooy, 2012:48). Potential cost savings were noted as a factor that influence decision-making when it comes to changing behaviour in favour of the environment (Van der Merwe, 2010). Providing tax incentives (deductions and allowances) could result in cost savings which could encourage behaviour in favour of the environment.

It is submitted that vehicle manufacturers could also contribute to reducing CO<sub>2</sub> emissions and the effect of the increased cost of investments in reducing CO<sub>2</sub> emissions could be mitigated by allowing tax incentives (deduction and allowances). As a starting point, this study highlights the important role of tax incentives in reducing CO<sub>2</sub> emissions and then merits the argument that such tax incentives could also encourage vehicle manufacturers to reduce CO<sub>2</sub> emissions.

## **2 RESEARCH OBJECTIVE, RESEARCH METHODOLOGY AND DEMARCATION**

The objective of the study was to consider the role of tax incentives in reducing CO<sub>2</sub> emissions in light of qualitative empirical evidence obtained from South African vehicle manufacturers. The objective was achieved by investigating the following:

- the importance of tax incentives in reducing CO<sub>2</sub> emissions
- current tax incentives available to vehicle manufacturers to invest in reducing CO<sub>2</sub> emissions

A literature review was performed and a questionnaire formulated in order to achieve the intended objective. Findings based on the questionnaire were discussed and interpreted based on the literature review. The questionnaire was circulated to nine South African vehicle manufacturers (BMW, Fiat, Ford, General Motors, Mercedes-Benz, Nissan, Toyota, Volkswagen and Volvo) registered with the National Association of Automobile Manufacturers of South Africa (NAAMSA). Of the nine potential participants, seven valid responses were obtained, one declined to participate, and one did not respond. Confidentiality concerns were cited as the reason why one of the vehicle manufacturers declined.

Tax incentives for the purpose of this study were demarcated and should not be construed to include all possible tax incentives. Only sections of the Income Tax Act which could be linked to investments relating to CO<sub>2</sub> emissions were included for consideration. These tax incentives refer to those which encourage vehicle manufacturers to invest in:

- developing fuel-efficient technology (for example, engines that emit lower CO<sub>2</sub> emissions). Vehicle manufacturers could contribute to reduce CO<sub>2</sub> emissions by improving current fuel-efficient technology incorporated in vehicle manufactured and driven in the transport sector
- reducing CO<sub>2</sub> emissions by improving manufacturing processes. In recognition of the fact that South African vehicle manufacturers might not always be in a position to develop fuel-efficient technology, they could still contribute to reduce overall CO<sub>2</sub> emissions by affecting improvements to their manufacturing processes.

As a starting point, the importance of tax incentives in reducing CO<sub>2</sub> emissions was considered, followed by an analysis of current tax incentives available to vehicle manufacturers which are linked to investments in reducing CO<sub>2</sub> emissions. Findings of the questionnaire were then interpreted to conclude on whether the current tax incentives are utilised by vehicle manufacturers and thus play a role in encouraging behaviour of vehicle manufacturers in favour of reducing CO<sub>2</sub> emissions.

**3 LITERATURE REVIEW**

**3.1 The Importance Of Tax Incentives In Reducing CO<sub>2</sub> Emissions**

According to National Treasury (2010b:25), the two main policy approaches used to address environmental challenges are command-and-control regulations and market-based instruments. Market-based instruments include tax charges, tax incentives and trading schemes.

Regulation (command-and-control) measures usually specify standards for emissions or prescribe technologies that polluters should use to maintain emissions below a certain limit. In principle, market-based instruments are favoured above mere command-and-control regulation due to greater flexibility, greater incentive for further innovation and the ability to raise revenue (National Treasury, 2012b:25). Johnson (2006:3115–3118) also submitted that regulation, in the form of a cap-and-trade policy, only caps CO<sub>2</sub> emissions at a specific level, whereas an incentive could create a climate of stable investments with sustained incentives for reduced CO<sub>2</sub> emissions over the long term. Thus, it is recognised that market-based instruments are increasingly being used to complement regulatory measures to support improved environmental outcomes (National Treasury, 2010b:14). PWC (2010:9) also concluded that tax incentives are considered to be a more effective tool than regulation at encouraging a business to reduce its environmental impact, followed by tax charges (see Table 1).

**Table 1: Effectiveness of Tools At Encouraging Business To Reduce Its Environmental Impact**

<b>Tools</b>	<b>Effectiveness Of Tools</b>
Regulation	83%
Tax charges	74%
Tax incentives	86%
Market trading schemes	59%
Voluntary agreements	45%



Source: PWC (2010:9)

Tax charges in respect to CO<sub>2</sub> emission in the transport sector consist mainly of the recently introduced vehicle emissions tax (or environmental levy). Local manufacturers of new motor vehicles are liable for payment of the tax, but it remains a tax borne by the purchaser of the vehicle. The prospects of the vehicle emissions tax achieving its objective of reducing CO<sub>2</sub> emission have, however, been questioned (ABR, 2010; NAAMSA, 2010; Nel & Nienaber, 2011). National Treasury (2010b:55) is also in the process of investigating other carbon taxes, but none are yet effective. It is submitted that because current tax charges aimed at reducing CO<sub>2</sub> emission in the transport sector may not be sufficient, incentives aimed at reducing CO<sub>2</sub> emission could be considered.

Hayashi, Button, and Nijkamp (1999) contended the merits of incentives in order to develop vehicles that emit lower CO<sub>2</sub> emissions. Furthermore, Hayashi, Kato, and Val (2001:125–126) indicated that policies that are incentive-driven have the potential to persuade vehicle manufactures to favour low CO<sub>2</sub> emission alternatives by researching and developing low emission-type vehicles. Incentives to vehicle manufacturers for investing in reducing CO<sub>2</sub> emissions can be achieved by:

- providing direct funding from the government to invest in CO<sub>2</sub> emission reduction
- allowing deductions for expenses incurred to invest in CO<sub>2</sub> emission reduction in terms of the Income Tax Act No. 58 of 1962 (‘the Act’)

Direct funding from the government could provide the necessary incentive, but such funding is currently not specifically earmarked for investments in the reduction of CO<sub>2</sub> emissions. Current direct funding in South Africa encourages the export of vehicles, facilitating growth, increasing production, and creating employment (Black & Mitchell, 2002; Karrim, 2009). Under the new Automotive Production and Development Plan (‘APDP’) that was announced in September 2008, the South African National Treasury allocated funding amounting to ZAR870 million to the automotive industry in the form of production subsidies over three years (Karrim, 2009). The APDP, which replaced the motor industry development plan, is aimed at facilitating growth, increasing production, creating employment and encouraging investment in the local motor vehicle industry over time (Karrim,

2009). This is undoubtedly a significant allocation, but considering the current economic status of the automotive industry, these funds will most likely be allocated toward securing jobs and maintaining sales first. These production subsidies were also not specifically earmarked to be invested in reducing CO<sub>2</sub> emissions. Therefore, other initiatives apart from direct funding should be considered in attempts to reduce CO<sub>2</sub> emissions in the automotive industry.

In contrast to direct funding, the Act also allows, subject to specific requirements, expenditure to be deducted when calculating taxable income. Tax deductions could result in cost savings to the taxpayer, which would encourage behaviour in favour of reducing CO<sub>2</sub> emissions (Van der Merwe, 2010; Gastrow 2008:10). The National Treasury (2006:89) also identified the review of specific tax provisions as an incentive mechanism relevant to promoting positive environmental outcomes. However, findings by PWC (2010:21) suggest that although tax incentives are favoured, the current criteria to qualify for such incentives are too onerous and there might even be uncertainty regarding which incentives exist. It has not yet been established whether the same holds true with regard to South African vehicle manufacturers.

The next step would be to consider to what extent the current incentives in terms of the Act (deductions and allowance as discussed in 3.2) are utilised by vehicle manufacturers and whether (or not) these provisions provide the necessary incentive to invest in the reduction of CO<sub>2</sub> emissions.

### **3.2 Current Tax Incentives Available To Vehicle Manufacturers To Invest In Reducing CO<sub>2</sub> Emissions**

The National Treasury (2006:89) recognised the need to investigate the role that (tax) incentives could play in achieving environmental outcomes. An analysis of sections of the Act were performed to assess whether, in theory, such deductions or allowances would be accessible to vehicle manufacturers as incentives to invest in reducing CO<sub>2</sub> emissions. The following sections were subsequently discussed:

- General deductions allowed in the determination of taxable income (Section 11(a))
- Deductions with respect to scientific or technological research and development ('R&D') (Section 11D)
- Deductions with respect to certain machinery, plant, implements, utensils, and articles used in farming or production of renewable energy (Section 12B)
- Exemption of certified emission reduction (Section 12K)
- Special allowance for energy efficiency savings (Section 12L)
- Deductions with respect to environmental expenditure (Section 37B)

#### *3.2.1 General Deductions Formula (Section 11(A))*

According to Section 11(a), expenditure and losses actually incurred in the production of income can be deducted from income derived from carrying on any trade, provided that such expenditure and losses are not of a capital nature. With reference to vehicle manufacturers and expenditure for investments in reducing CO<sub>2</sub> emissions, it is necessary to consider whether such expenditure would be in the production of income.

In *Port Elizabeth Electric Tramway Co Ltd v CIR* (1936 CPD), it was held that for an expenditure to be in the production of income, such expenditure must be necessary and closely connected to the activities carried on by a taxpayer in carrying on a trade (a necessary concomitant of their trade). For vehicle manufacturers to claim a deduction, they should therefore prove that the expenditure incurred for investments in reducing CO<sub>2</sub> emissions was a necessary function (or requirement) of their trade (manufacturing vehicles). The fact that investments in reducing CO<sub>2</sub> emissions are currently voluntary and not required by any law could, however, make it more difficult for vehicle manufacturers to argue that expenditures relating to such investments are closely linked (a necessary concomitant) to their trade. Therefore, it appears that it may be difficult for a vehicle manufacturer to fulfil the burden of proof, in terms of Section 102 of Tax Administration Act, that the expenditure was incurred in the production of income and for the purpose of a trade.

Furthermore, a vehicle manufacturer should be able to prove that an investment in reducing CO<sub>2</sub> emissions is not of a capital nature. It was held in *BP Southern Africa (Pty) Ltd v CSARS* (69 SATC 79) that an expenditure, which created or preserved any capital asset in the hands of the taxpayer and which provides an enduring benefit,

would be capital in nature. Any investments in reducing CO<sub>2</sub> emissions that constitute a fixed or capital asset would therefore also not be deductible in terms of Section 11(a).

Although the general deduction formula could provide a possible tax incentive (deduction) for investments in reducing CO<sub>2</sub> emissions, the onus of proof on the taxpayer will be subject to the specific facts and circumstances of every taxpayer. It would not be possible to discuss all possible arguments for such deductions if reference is made to the different vehicle manufacturers. This study focused on specific deductions contained in the Act (3.2.2 – 3.2.6) and not on a detailed discussion of the general deduction formula contained in Section 11(a). For the purpose of the questionnaire, specific questions regarding this section were therefore not included as Section 11(a) could not be directly linked to investments in reducing CO<sub>2</sub> emissions.

### *3.2.2 Deductions In Respect Of Scientific/Technological R&D (Section 11D)*

It is recognised that market liberalisation, value-chain integration, and multinational corporation-ownership increased integration into global value chains in the automotive industry. Gastrow (2008:5), however, submitted that the aforementioned did not reflect a simple case of imported knowledge replacing local knowledge. It is also suggested that South African automotive producers integrated with global value chains at a lower level than producers in other developing countries (Gastrow & Gordon, 2011:2007).

It is therefore submitted that R&D in the South African automotive industry continues and its investment in R&D is relatively stable over time based on R&D expenditure incurred (Gastrow, 2008:6; Gastrow & Gordon, 2011:2012). Gastrow (2008:11) indicated the following as key areas where R&D is still performed in South Africa:

- Those manufacturers that have been designated lead engineers for certain models carry out a high level of R&D.
- Older models that remain in production provide a consistent demand for development (these include Citi Golf, Toyota Tazz (*now discontinued*), Mazda Midge, and Corsa Lite).
- Other important areas include hot weather testing, component testing, and adaptation to local conditions.

Tax incentives for R&D were found to encourage investments in R&D, as in the case of General Motors South Africa, as such an incentive would be less of a cost burden and the accelerated write-off of investment in R&D would result in significant savings (Gastrow, 2008:10). Hayashi, Kato, and Val (2001:125–126) also indicated that policies that are incentive-driven (for example, tax deductions) have the potential to persuade vehicle manufactures to favour low CO<sub>2</sub> emission alternatives by researching and developing low emission-type vehicles. According to Rudman (2008:15), the automotive industry could also contribute to the reduction of CO<sub>2</sub> emissions through enhanced engine concepts, alternative fuels development, and “beyond engine technology”. Vehicle manufacturers might currently not be geared toward contributing much to alternative fuels development, but rather to enhanced engine concepts and “beyond engine technology”. Enhanced engine concepts would include electric vehicles, the fuel efficiency of engines, and hybrids (all of which could contribute to reducing CO<sub>2</sub> emissions). R&D of such a nature will, however, require a fair amount of time, ingenuity, and financial investment. From an income tax perspective, there are tax incentives for such investments in terms of Section 11D, subject to certain requirements.

Section 11D of the Act (applicable at the time of the study prior to the promulgated amendments effective on or after 1 April, 2012) allows for two categories of deductions: 1) a deduction of 150% of the current expenditure (not capital assets acquired for purposes of the research) and 2) an accelerated capital allowance over three years (50% in year 1, 30% in year 2, and 20% in year 3) on any building, part thereof, machinery, plant, implement, utensil or article, or improvement thereto acquired specifically for R&D. The specific requirements, *inter alia*, are that the R&D activities pursued by the taxpayer should result in the following:

- the discovery of novel, practical, and non-obvious information
- the devising, development, or creation of any
  - invention, as defined in Section 2 of the Patents Act No. 57 of 1978



- design, as defined in Section 1 of the Designs Act No. 195 of 1993 that qualifies for registration under Section 14 of that Act
- computer program, as defined in Section 1 of the Copyright Act No. 98 of 1978
- knowledge essential to the use of such invention, design, or computer program

This information, invention, design, computer program, or knowledge should also be of a scientific or technological nature, and the taxpayer's intention should be for it to be used in the production of his or her income, or discovered, devised, developed, or created by the taxpayer for purposes of deriving income.

For vehicle manufacturers investing in R&D to reduce CO<sub>2</sub> emissions, the R&D should result in something novel (or "new"), an invention, or design in order to be considered within the terms of Section 11D.

Patentable inventions in terms of Section 25 of the Patents Act (No. 57 of 1978) require that the invention must be something new, which does not form part of the state-of-the-art immediately before the priority date of that invention. This entails that the invention cannot be similar to any other invention/information which has already been made available to the public (whether in the Republic or elsewhere) by written or oral description, by use, or in any other way. A design in terms of Section 1 of the Designs Act (No. 195 of 1993) could be an aesthetic design or a functional design. *Aesthetic* refers to the cosmetic design (which appeals to and is judged solely by the eye) and which would most likely not include design aimed at CO<sub>2</sub> emissions reduction. A *functional* design means any design applied to any article having features which are necessitated by the function that the article, to which the design is applied, is to perform. It is submitted that investments in the reduction of CO<sub>2</sub> emissions could therefore result in a functional design if such a design contributes to the article (for example, engine of vehicle) emitting less CO<sub>2</sub> emissions and the article is marketed and sold on the basis that it will emit less CO<sub>2</sub> emissions.

If a vehicle manufacturer succeeds in researching and developing engine concepts that are either "new" (ground-breaking) inventions or functional designs which reduce CO<sub>2</sub> emissions, there could be a possible tax deduction in terms of Section 11D. Qualifying for these tax incentives would, however, require much time, ingenuity, and financial investment. It should be kept in mind that, according to the second requirement of Section 11D of the Act, such invention or design should also be incurred in the production of income. Consumers do not always fully value the impact of their actions on the environment as it appears they seem unwilling to pay a premium for investments in reducing CO<sub>2</sub> emissions (Rudman, 2008). Therefore, if vehicles are manufactured (which incorporates the R&D aimed at reducing CO<sub>2</sub> emissions), the direct and immediate result will most probably not be that consumers will buy these vehicles. There is currently also no enacted legislation that forces vehicle manufacturers to reduce CO<sub>2</sub> emissions. Based on interpretation of the wording in Section 11D and the expected behaviour of consumers, it could be argued that such R&D expenditure incurred is not in the production of income. The requirement of whether or not investing in R&D in reducing CO<sub>2</sub> emissions is in the production of income therefore seems to be contentious. The question is whether the fiscus would allow more grace when R&D expenditure is incurred and whether such research would be successful in reducing CO<sub>2</sub> emissions. Such tax incentives could result in cost savings and might motivate the manufacturer to make more energy-efficient vehicles.

Investments in developing fuel-efficient technology (for example, engines that emit lower CO<sub>2</sub> emissions) could therefore qualify for a deduction in terms of Section 11D. For the purpose of the questionnaire, specific questions regarding deductions claimed in terms of Section 11D were therefore included as these deductions could be directly linked to reducing CO<sub>2</sub> emissions.

### **Promulgated Amendments To Section 11D After The Date Of The Questionnaire**

Subsequent to the circulation of the questionnaire, amendments to Section 11D were promulgated in terms of the Taxation Laws Amendment Bill of 2011 with respect to R&D expenditure incurred on or after 1 April, 2012. The amendment to Section 11D relates to the procedures associated with the approval of activities as qualifying R&D under Section 11D and to simplify and streamline Section 11D for ease of use (SARS, 2011a:79; SARS, 2011b:6). The definition of R&D was wholly revised to incentivise activities that constitute technical and scientific R&D in a commercial sense, as opposed to routine upgrades or applications (SARS, 2011a:79). Under the revised regime, R&D must consist of systematic investigative or systematic experimental activities involving 'appreciable elements of novelty' or 'high levels of technical risk' that are carried on:

- to discover non-obvious scientific or technological knowledge
- to create, develop, or significantly improve inventions, designs, computer programs, or knowledge (as statutorily defined) to enhance a new or improved function or an improvement of performance, an improvement of reliability, or an improvement of quality

Furthermore, under the revised regime, the additional 50 percent uplift for non-capital qualifying R&D expenditure must be approved by the Department of Science and Technology in order to provide up-front certainty of the additional allowance.

It is submitted that these amendments would not invalidate the findings of the questionnaire as the incentive still exists for vehicle manufacturers to invest in R&D and the amendments are only to simplify and streamline Section 11D for ease of use and also to prevent misuse.

### *3.2.3 Deductions In Respect Of Certain Machinery, Plant, Implements, Utensils And Articles Used In Production Of Renewable Energy (Section 12B)*

Section 12B currently provides for an accelerated allowance over three years (50% in year 1, 30% in year 2, and 20% in year 3) for investments in renewable energy and the production of bio-fuels. Vehicle manufacturers that implement equipment which generates energy from renewable sources could therefore qualify for the allowance in terms of Section 12B. Generating energy from renewable sources could also have the added benefit of reducing CO<sub>2</sub> emissions if it results in the use of less fossil-fuel.

In addition, it was proposed in the 2009 Budget Tax Proposal (SARS, 2009:9) that investments by companies in energy-efficient equipment should qualify for an additional allowance of up to 15% on condition that there is documentary proof of the resulting energy efficiencies (after a two- or three-year period) certified by the Energy Efficiency Agency. Vehicle manufacturers that invest in energy-efficient equipment could, therefore, also qualify for the additional allowance if the proposal is implemented. Investing in energy-efficient equipment now would, however, only result in a benefit if and when the Energy Efficiency Agency certifies the energy efficiency after two or three years.

In theory, it is therefore possible for a vehicle manufacturer to affect changes to their production process in order to qualify for Section 12B allowances. Based on the extent to which energy-efficient equipment and equipment that generates energy from renewable sources are introduced, there could be tax incentives in terms of Section 12B. For the purpose of the questionnaire, specific questions regarding deductions claimed, in terms of Section 12B, were therefore included as such deductions could be directly linked to reducing CO<sub>2</sub> emissions.

### *3.2.4 Exemption Of Certified Emission Reduction (Section 12K)*

South Africa is one of 189 countries to have ratified the Kyoto Protocol which established emission reduction targets (Van Wyk, 2009:18). The Kyoto Protocol is an environmental instrument of the United Nations Framework Convention on Climate Change ('UNFCCC') which provides mechanisms to ensure that developed countries achieve their emission reduction targets by 2012. (The extension of the Kyoto Protocol beyond 2012 is also an issue currently under debate between the parties concerned.). One of the instruments that developed countries can use to meet part of their emission reduction targets is certified emission reduction (CER) credits, which can be traded and sold (UNFCCC, 2009). In terms of the proposed Section 12K of the Act, the revenue derived from the sale of such CER credits would be wholly exempted from normal income tax (Van Wyk, 2009:19). The establishment of clean development mechanism (CDM) projects allows emission reduction (or emission removal) projects in developing countries to earn CER credits. The Department of Energy is the designated national authority in South Africa responsible for the registration of CDM projects.

The registration of CDM projects is rigorous and the issuance process was designed to ensure real, measurable, and verifiable emission reductions that are additional to what would have occurred without the project (UNFCCC, 2009). Deriving any possible benefit for CER credits requires a substantial investment and focused effort. To date, there are only 21 registered CDM projects in South Africa as per the Department of Energy (2011), none of which included any of the South African vehicle manufacturers considered in this study.

In view of the rigorous registration process and significant investment required to obtain any possible benefit from CER trading, it seems unlikely that vehicle manufacturers would be able to obtain any benefit. However, for the purpose of the questionnaire, specific questions regarding exemptions claimed in terms of Section 12K were included as it could be directly linked to reducing CO<sub>2</sub> emissions.

### 3.2.5 *Special Allowance For Energy Efficiency Savings (Section 12L)*

Section 12L has been proposed but will only come into effect from a date to be determined by the Minister of Finance by notice in the Government Gazette. This section will provide a tax deduction (special allowance) for taxpayers who are considered to be energy efficient. However, this allowance will only apply in the first year when an energy saving is achieved and is dependent on an “energy efficiency savings certificate” subject to regulations issued by the Department of Energy.

Section 12L could therefore contribute to reduced CO<sub>2</sub> emissions by encouraging energy efficiency in the future. However, since the section is not yet effective (and no date has been fixed when it will become effective), it currently does not serve as an incentive to vehicle manufacturers and has therefore not been taken into account in the questionnaire circulated.

### 3.2.6 *Deductions In Respect Of Environmental Expenditure (Section 37B)*

SARS (2007:42) recognises that much of the tax law pre-dates environmental issues. Environmental capital expenditure of a permanent nature should be entitled to some level of depreciation, even though only ancillary to the process of manufacture. Environmental capital expenditure is a legal pre-condition for operation and should be encouraged as a matter of sound government policy. Section 37B was introduced to provide tax allowances in respect of environmental capital expenditure of a permanent nature and compulsory post-trade environmental expenses (decommissioning, remediation, and restoration) (SARS, 2007:42-43). Since the introduction of Section 37B(2), an allowance has been made for a deduction from income equal to:

- in the case of a new and unused *environmental treatment and recycling asset*, 40% per year of the cost and 20% over the next three years if the asset is used in the taxpayer’s trade and it is required by law
- in the case of a new and unused *environmental waste disposal asset*, 5% per year of the cost if the structure is permanent and used in the taxpayer’s trade and required by law

*Environmental treatment and recycling asset* refers to any air, water, and solid waste treatment and recycling plant or pollution control and monitoring equipment. *Environmental waste disposal asset* refers to any air, water, and solid waste site, dam, dump reservoir, or other structure of a similar nature, or any improvement thereto (RSA, 2010). Therefore, where a vehicle manufacturer has incurred an expenditure in respect of an *environmental treatment and recycling asset* or *environmental waste disposal asset*, a possible deduction could be allowed in terms of Section 37B(2).

The possible incentives provided for in Section 37B(2), with respect to an *environmental treatment and recycling asset* and *environmental waste disposal asset* as recycling, could contribute to the reduction of CO<sub>2</sub> emissions (The Economist, 2007). For the purpose of the questionnaire, specific questions regarding deductions/allowances claimed in terms of Section 37B were therefore included.

## **4 FINDINGS BASED ON QUESTIONNAIRE**

### **4.1 The Importance Of Tax Incentives In Reducing CO<sub>2</sub> Emissions**

The opinion conveyed in literature is that incentive-driven policies might be more effective in reducing CO<sub>2</sub> emissions than mere regulation or tax charges (Johnson, 2006; PWC, 2010; Hayashi et al., 1999; Hayashi et al., 2001). Respondent vehicle manufacturers indicated their perceived effectiveness of regulation, tax charges, and tax incentives as tools to reduce CO<sub>2</sub> emissions, as summarised in Table 2.



**Table 2: Effective Tools To Reduce CO<sub>2</sub> Emissions**

Tools	Not Effective	Somewhat Effective	Very Effective
Regulation	29%	71%	0%
Tax charges	0%	86%	14%
Tax incentives	0%	29%	71%

Source: Compiled by authors based on the questionnaires completed by respondents

Vehicle manufacturers indicated that they felt regulation could contribute to achieving CO<sub>2</sub> emissions targets if those were set by government. However, South Africa currently does not have regulations in the form of compulsory CO<sub>2</sub> emissions targets. Respondent vehicle manufacturers indicated that tax charges could be more effective in achieving these targets. This finding also correlates with findings by PWC (2010) that 95% of companies interviewed around the world agreed that regulation and tax could play some role in achieving targets on national greenhouse gas emissions.

With reference to tax charges, 71% of respondent vehicle manufacturers supported the recently introduced vehicle emission tax payable by consumers. In the questionnaire, these manufacturers maintained that more could be done to change behaviour in favour of environmental concerns. Although the respondents supported the vehicle emission tax, they were of the opinion that a vehicle emission tax would not have the desired effect of reducing CO<sub>2</sub> emissions. One of the respondents, who did not support the introduction of the vehicle emission tax, was involved in discussions with the Department of Trade and Industry, as well as the National Treasury, and said it had become clear that the vehicle emission tax is merely another tax burden under the guise of “going green”. Other authors have also questioned the prospects of the vehicle emissions tax achieving its objective of reducing CO<sub>2</sub> emissions (ABR, 2010; NAAMSA, 2010; Nel & Nienaber, 2011). Despite regulation and tax charges, the role of incentives from the perspective of vehicle manufacturers should therefore also be considered.

The respondent vehicle manufacturers highlighted the role of tax incentives as being important initiatives to reduce CO<sub>2</sub> emissions. Fifty-seven percent of respondents indicated that tax regulation plays a significant role in achieving targets on CO<sub>2</sub> emissions, while the remainder indicated that it played some role. In comparison with other regulations, tax regulations were also indicated as having the most significant role in achieving targets on CO<sub>2</sub> emissions. Findings summarised in Table 2 indicate that the majority of respondents (71%) support the view that tax incentives (which would encourage participation) are the most effective tool to encourage their businesses to reduce CO<sub>2</sub> emissions. The extent to which current tax incentives (available to vehicle manufacturers) encourage investments in reducing CO<sub>2</sub> emissions will subsequently be considered.

#### 4.2 Current Tax Incentives Available To Vehicle Manufacturers To Invest In Reducing CO<sub>2</sub> Emissions

South African vehicle manufacturers expect that CO<sub>2</sub> emissions would impact the way they conduct business in future and that future compliance with CO<sub>2</sub> emission initiatives is expected to result in significant costs to them (Du Plooy, 2012:48). The majority of respondent vehicle manufacturers (70%) indicated that they are currently investing in ways to reduce CO<sub>2</sub> emissions. With reference to tax incentives discussed under Section 3.2, respondent vehicle manufacturers were asked whether (or not) these tax incentives are utilised by them to invest in reducing CO<sub>2</sub> emissions. Their responses are summarised in Table 3.

**Table 3: Specific Deductions Used By Vehicle Manufacturers**

Specific Question To Vehicle Manufacturer	Yes	No
Has your company recently claimed tax deductions for R&D expenses relating to CO <sub>2</sub> emissions reduction [Section 11D of the Act]?	0%	100%
Has your company recently claimed tax deductions for incentives for investment in energy-efficient technologies (i.e., generating electricity from sunlight, wind or water,) which could reduce CO <sub>2</sub> emissions [Section 12B of the Act]?	14%	86%
Are you in the process of establishing a Clean Development Mechanism (‘CDM’) project which could result in tradable credits for certified emissions reduction [Section 12K of the Act]?	14%	86%
Has your company recently claimed tax deductions with regard to any environmental capital asset (environmental treatment or recycling asset) as required by law to protect the environment [Section 37B of the Act]?	0%	100%

None of the respondents claimed any tax deduction for R&D relating to CO<sub>2</sub> emission reduction in the recent years (Section 11D). However, one respondent indicated that they were in the process of R&D and might therefore claim these deductions in the future. Some of the respondents cited the fact that their parent companies do most R&D as a reason for not claiming. It is recognised that R&D is conducted, to some extent, by the international holding companies; however, other authors have indicated that R&D is still relevant and being conducted in certain areas by vehicle manufacturers in South Africa (Gastrow, 2008:6; Gastrow & Gordon, 2011:2012). It is therefore submitted that Section 11D could serve as an incentive to encourage R&D aimed at reducing CO<sub>2</sub> emissions in the key areas in which R&D is still being conducted in South Africa.

Only one respondent indicated that they had recently claimed tax deductions for incentives for investment in energy-efficient technologies in terms of Section 12B (for example, generating electricity from sunlight, wind, or water) which could reduce CO<sub>2</sub> emissions. Only one respondent indicated that they were in the process of establishing a Clean Development Mechanism (‘CDM’) project which could result in tradable credits for certified emissions reduction (Section 12K). None of the respondents recently claimed tax deductions with regard to any environmental capital asset (environmental treatment or recycling asset), as required by law, to protect the environment (Section 37B). Therefore, findings suggest that the vehicle manufacturers who participated in the questionnaire were not fully utilising the current tax incentive policies available in reducing CO<sub>2</sub> emissions. The reasons for not utilising current tax incentives therefore warrant further investigation.

PWC (2010:21) submitted that most businesses worldwide are in favour of tax incentives, but current criteria might be too onerous as it is unclear which incentives exist and whether these incentives might also not be sufficiently motivating. The reason could partly be attributed to the fact that it is an arduous process to qualify for tax incentives due to the strict requirements contained in the Act. Only 29% of respondent vehicle manufacturers agreed that it is clear how to apply for current tax incentives for investment in reducing CO<sub>2</sub> emissions (see Table 4). Furthermore, 75% of respondent vehicle manufacturers agreed that current tax legislation, with regard to tax incentives for investment in CO<sub>2</sub> emission reductions, is too time-consuming/complicated to make it worth applying for. Therefore, such tax incentives also did not sufficiently motivate them to make businesses change their behaviour (in favour of reducing CO<sub>2</sub> emissions).

**Table 4: Perception Of Vehicle Manufacturers On Tax Incentives To Reduce CO<sub>2</sub> Emissions**

<b>Questions To Vehicle Manufacturers About Environmental Incentives</b>	<b>Strongly Disagree</b>	<b>Slightly Disagree</b>	<b>Slightly Agree</b>	<b>Strongly Agree</b>
<b>Government needs to offer more incentives</b> to vehicle manufacturers to support investment in CO <sub>2</sub> emission reduction	0%	0%	57%	43%
It is clear which <b>tax incentives (deductions) currently exist</b> for investment in CO <sub>2</sub> emission reductions	57%	14%	29%	0%
It is clear <b>how to apply</b> for these <b>tax incentives (deductions) that currently exist</b> for investment in CO <sub>2</sub> emission reductions	57%	14%	29%	0%
Current tax legislation with regard to <b>incentives (tax deductions) for investment</b> in CO <sub>2</sub> emission reductions is too time-consuming/complicated to make it <b>worth applying for</b>	25%	0%	25%	50%
Current tax incentives for investment in CO <sub>2</sub> emission reductions are sufficiently <b>motivating to make businesses change their behaviour</b>	72%	14%	14%	0%

Source: Compiled by authors based on the questionnaires completed by respondents

Adam Smith (1950:310) indicated that one of the basic principles of any tax system is that individuals should be able to determine the amount of tax payable by them with certainty. The majority of respondent vehicle manufacturers indicated that it is not clear which tax incentives currently exist and how to apply for them. These findings suggest that there is currently no certainty regarding tax incentives available to investment in CO<sub>2</sub> emission reductions. Furthermore, respondent vehicle manufacturers indicated that the current tax incentives they are aware of are not adequate in motivating a change of behaviour in favour of reducing CO<sub>2</sub> emission reductions. Based on these findings, it is submitted that more awareness should be created with respect to current tax incentives and possibly also expand the current tax incentive regime in order to provide further incentives for vehicle manufacturers to invest in reducing CO<sub>2</sub> emissions.

## 5 CONCLUSION

The opinion conveyed in the literature considered is that incentive-driven policies are more effective in addressing environmental concerns than mere regulation (PWC, 2010:9; Johnson, 2006). Current incentives in the form of direct funding from government do, however, not provide direct incentives to reduce CO<sub>2</sub> emissions. Apart from direct funding, current tax incentives exist that could provide possible incentives. Findings suggest that, in principle, tax incentives could play an important role in reducing CO<sub>2</sub> emissions. Respondent vehicle manufacturers indicated tax incentives as a more effective tool than tax charges or other regulations in reducing CO<sub>2</sub> emissions (Table 2). The importance of tax incentives in reducing CO<sub>2</sub> emissions was therefore highlighted from the perspective of vehicle manufacturers.

Furthermore, findings suggest that current tax incentives available to vehicle manufacturers to invest in reducing CO<sub>2</sub> emissions may not be fully utilised (Table 3). The majority of respondents indicated that it is unclear which tax incentives currently exist for investment in reducing CO<sub>2</sub> emissions. Certainty regarding the tax incentives available, and the adequacy of such incentives to motivate behaviour in favour of reducing CO<sub>2</sub> emissions, were noted as possible reasons for the fact that these incentives are not utilised. These findings support those by Van der Merwe (2010) which also suggest that businesses are of the opinion that the criteria to qualify for current environmental tax incentives are too stringent and that these incentives do not motivate businesses sufficiently to change behaviour.

All respondents concurred that the government could offer more incentives to vehicle manufacturers to support investment in CO<sub>2</sub> emissions reduction (Table 4). It is submitted that an obstacle for vehicle manufacturers to invest in reducing CO<sub>2</sub> emissions appears not to be a lack of enthusiasm or willingness, but rather a lack of funding. Vehicle manufacturers are already struggling to maintain sales levels and to limit job losses; therefore, investing in CO<sub>2</sub> emissions reduction would understandably not be the first priority. The necessary funding could enable vehicle manufacturers to invest in reducing CO<sub>2</sub> emissions without placing additional pressure on their current financial situation. The main recommendation of this study is that current tax incentive policies in South Africa should be simplified or alternative initiatives should be introduced to encourage investment in the reduction of CO<sub>2</sub> emissions. Furthermore, awareness should also be created with respect to available tax incentives and how to apply for such incentives. If current tax incentives are simplified, it could provide the necessary encouragement for vehicle manufacturers to invest in the reduction of CO<sub>2</sub> emissions.

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**NOTES**